LIFE AND HEALTH ACTUARIAL TASK FORCE

Draft: 10/1/09

Life and Health Actuarial Task Force
Washington, DC
September 21, 2009

The Life and Health Actuarial Task Force met in Washington, DC, Sept. 21, 2009. The following Task Force members participated: Sandy Praeger, Chair, represented by Larry Bruning (KS); Scott H. Richardson, Vice Chair, represented by Leslie Jones (SC); Linda S. Hall represented by Katie Campbell (AK); Jim L. Ridling represented by Steven Ostlund (AL); Jay Bradford represented by Joe Musgrove (AR); Steve Poizner represented by Perry Kupferman (CA); Thomas R. Sullivan represented by Richard Marks (CT); Kevin McCarty represented by Dan Keating (FL); Glenn Wilson represented by Blaine Shepherd (MN); John Huff represented by David Hippen (MO); Ann Frohman represented by John Rink (NE); James J. Wrynn represented by Fred Andersen (NY); Mary Jo Hudson represented by Peter Weber (OH); Mike Geeslin represented by Mike Boerner (TX); and Kent Michie represented by Tomasz Serbinowski (UT).

1. Mortality Tables and Margins

Donna Claire (Claire Thinking, Inc.) and Tim Harris (Milliman Inc.) presented a report (Attachment One) by the Society of Actuaries/American Academy of Actuaries (SOA/AAA) Valuation Table Team (VTT). The VTT has continued testing on the 2008 Valuation Basic Table (VBT). Instead of focusing on the development of a valuation table, the team is looking at the impact of different forms of loading on the 2008 VBT for principle-based reserving. The VTT investigated the reserves for a 20-year term plan and a universal life insurance contract with secondary guarantees.

Several loading formulas were tested: 1) the Harris formula, which is the alternative formula in Appendix B and is similar to the loading formula used in the development of the 2001 CSO mortality table; 2) a flat 20% load in all durations; 3) a flat 10% load in all durations; 4) a load of 3.75 extra deaths per thousand divided by the curtate expectation of life; 5) mortality improvement of 1.5% per year; and 5) no loading.

The testing was done with three versions of the VBT: RR(70) is comparable to super preferred mortality; RR(90) is comparable to standard mortality; and RR(130) is comparable to substandard mortality.

Ms. Claire said the loading formula in the 2001 CSO table had little effect on reserves for a whole life insurance product; however, that loading formula did affect term insurance. The loading of 3.75 extra deaths per thousand, divided by the curtate expectation of life, is the low end of the range allowed in Canada. If a company includes mortality improvement in the pricing assumptions, there is already a margin in the experience mortality.

Mr. Harris asked if the VTT should provide a document to provide guidance to actuaries to set margins. The Task Force agreed that the VTT should work on that document. Mr. Keating asked for the number of companies covered by each loading formula. Paul Graham (American Council of Life Insurers—ACLI) said there might be more loading than is indicated, because a company might be blending company experience with an industry table. Ms. Claire noted that, because the other major assumptions also have margins, the mortality margins do not have to be as large as the margins in the 2001 CSO table. Mr. Musgrove said the formula for mortality margins should be as simple as possible and should include a range.

Attached is a letter from the VTT (Attachment Two) and a letter from John Bruins (American Council of Life Insurers—ACLI) (Attachment Three).

Ms. Claire presented a report from the SOA/AAA Payout Annuity Project Oversight Group (Attachment Four) on issues regarding a new valuation mortality table for payout annuities. There were three questions in the report directed to the Task Force: 1) Is a new payout annuity valuation mortality table needed? No member of the Task Force disagreed that a new table was necessary; 2) Should projections be included in payout annuity valuation mortality? The SOA/AAA group recommended that projections be included. No member of the Task Force disagreed; and 3) Should payout size be included in valuation mortality? The study showed that there were differences in mortality between smaller payouts and larger amounts; however, there are practical problems with implementing valuation mortality with differences by size. The SOA/AAA group recommended not tiering the valuation table by size. No member of the Task Force disagreed.

Mr. Andersen said the SOA/AAA group considered using a select and ultimate table, but decided it would not have a material impact on reserves, because the reserve is a function of the probability of survival. The group also wanted to avoid setting up incentives where an unhealthy insured could get a bigger payout; therefore, the SOA/AAA group decided to recommend one table.

2. Net Premium Reserves in VM-20

Mr. Bruins addressed the timeline (Attachment Five) for the development of the net premium reserve concept in VM-20. The proposal for scheduled premium products is finished and is being tested along with several variations. Companies are being asked to compare the reserves produced by the proposal to the current reserves and to an estimate of the deterministic reserve defined in VM-20: Requirements for Principle-Based Reserves for Life Products. Mr. Bruins said he anticipated presenting the proposal in mid-October. A similar proposal will be developed for flexible premium products. That proposal is being documented and will be tested — and it is anticipated that it will be presented in mid-November. A proposal and documentation for the major product lines of universal life, universal life with secondary guarantees, whole life and term life should be ready before the Winter National Meeting.

The proposed framework for reserves will consist of the greatest of three reserve calculations, with tests to determine if one or more calculation could be skipped: 1) Net premium reserve that does not vary by company and is based on prescribed assumptions; 2) Deterministic reserve, which is a gross premium reserve using company-based assumptions for many elements; and 3) Stochastic reserve based on modeling, using statistical testing of random investment returns.

The proposal will include the elimination of the mortality mapping that is currently in VM-20. The proposal will also reduce the prescription in the methods for determining assumptions and margins.

3. PBR Reinsurance (VM-20)

Mr. Bruning said Mr. Serbinowski had agreed to become the chair of the PBR Reinsurance Subgroup. Mr. Serbinowski said the Subgroup rejected one amendment proposal to require recognition of reinsurance counter-party credit risk in the calculation of reserves. The current language in VM-20 only requires a margin for counter-party credit risk when the reinsurance counter-party is known to be impaired.

Mr. Serbinowski said there was a tabled amendment regarding the relationship among the gross reserve, the net reserve and the reinsurance reserve credit. There was an outstanding issue about allocating the reserve by policy for bulk reinsurance.

Sheldon Summers (Claire Thinking, Inc.) said there was an amendment adopted that specified the stochastic reserve be calculated on a gross basis if the stochastic exclusion test was not met on a gross basis, even though it was met on a net basis. The allocation of reserves has been referred to the AAA Reinsurance Work Group.

4. Report of the Joint Capital Adequacy (E) Task Force/Life and Health Actuarial Task Force Subgroup

Ms. Jones said she would temporarily chair the joint subgroup. One role of the subgroup will be to review the principle-based standards and make sure that risks not covered by the PBR reserves are reflected in the RBC standards. The Joint Subgroup had a conference call (Attachment Six) to review the differences between the VM-20 and C-3 Phase 3 requirements. The PBR Life Subgroup of this Task Force will be reviewing the scenario generator.

5. PBR Process and Coordination (VM-00 and VM-01)

Mr. Boerner said the ACLI is working on recommendations regarding the Exhibit 5A instructions for the annual statement, the reserve development from the beginning of the year to the end of the year, and the reporting of actual to expected results.

The VM PBR Process and Coordination Subgroup requested that the AAA to review the proposed VM-21: Requirements for Principle-Based Reserves for Variable Annuities (Attachment Seven). The background information that is in Actuarial Guideline XLIII was deleted in the conversion to the proposed VM-21. Some of that deleted information may have to be brought back into the proposed VM-21.

Mr. Boerner said the VM PBR Process and Coordination Subgroup had released a version of VM-00: Valuation Manual for comment on its Aug. 19 conference call. Some of the changes were 1) updating the table of contents and some section titles; 2) providing for the corporate governance requirements in an Appendix VM-G — these requirements apply to contracts subject to Actuarial Guideline XLIII, even if the contracts were issued prior to the operative date of the Valuation Manual; 3) adding an exemption from PBR for pre-need life insurance policies; 4) adding alternative language for health and variable annuity contracts in case VM-25: Health Insurance Reserves Minimum Reserve Requirements and VM-21 are not ready when the Valuation Manual becomes operative.

Bob DiRico (ING) said the amendment proposal VM-00_090819_01 is a result of the discussion on the Aug. 14 conference call regarding which risks to reflect in reserves. The amendment proposed the following: 1) the deletion of the six statements of principle for PBR reserves; 2) a two-pronged statement of the risks that can be reflected in reserves; 3) a paragraph of the risks not to be reflected in reserves; and 4) a paragraph stating that no list can be comprehensive.

Mr. Boerner suggested the phrase "arise from future events that are" be deleted from the first sentence, because the phrase might be too limiting. He also suggested changing the phrase in the second paragraph, "those that are not specific to the insurance contract," to "those that are not associated with the policies or contracts being valued," to be consistent with the first paragraph.

Ms. Campbell asked about the words "reputation risk" in the last sentence of the third paragraph. She noted that if a company's reputation is damaged, new sales might be impacted and the risk might need to be reflected in the reserve. Mr. Andersen said there might be risk that normally would not be reflected in the reserve, but could affect reserves in some circumstances. Ms. Campbell suggested deleting the entire third paragraph from the proposal. Mr. Boerner suggested deleting only the last sentence of the third paragraph.

Ms. Jones said a risk might be reflected in reserves to a moderately adverse level, but the risk might still need to be reflected in capital.

Mr. Serbinowski said he had a concern about the second condition; i.e., risks that are determined capable of materially affecting the reserve. He asked how that condition would be determined and whether the wording means that, if an assumption had little effect on the reserve, the risk could be ignored.

Mr. Hippen asked at what point a particular risk should be reflected. For example, for many years smoking was not considered a material risk. Mr. DiRico said that 50 years ago there were few, if any, studies that showed there was extra mortality risk for smokers. The issue of materiality is a judgment call by the company.

Mr. DiRico said the number of risks that satisfy the first condition is limitless. The purpose of the materiality condition is to put some limits on the number of risks to be considered. The regulators review many companies and can identify risks that a particular company has not considered. The regulators could ask a particular company to justify the exclusion of those risks. Other risks that everyone agrees should not be material can be ignored. This is a common sense limitation. Mr. Musgrove said the assumption should be that a risk is material, unless the company can justify why it is not material. He added that by the nature of PBR, assumptions are not locked in; i.e., as evidence and experience emerges, assumptions can be modified.

Mr. Boerner moved, and Mr. Musgrove seconded, to adopt the amendment proposal with four changes: 1) the wording change in the first sentence; 2) the change in the second paragraph to make it consistent with the first paragraph; 3) the deletion of the last sentence of the third paragraph; and 4) a drafting note that the materiality wording needs to be discussed further. The motion passed unanimously.

Attached are proposed amendments to the Feb. 18 and Aug. 19, 2009, versions of VM-00 (Attachment Eight)

Mr. Boerner moved and Mr. Shepherd seconded to release the amended version of VM-00 for comment (Attachment Nine). The motion passed unanimously.

6. Report of the Accident and Health Working Group

Mr. Ostlund presented a report of the Accident and Health Working Group (Attachment Ten). The Working Group recommended continuing the 2009 charges, except for the revision of the Medicare Supplement Compliance Manual, and to add two new charges: 1) Develop a replacement for the 1987 Commissioners Group Disability Table; and 2) Review and update the Guidelines for Filing of Rates for Individual Health Insurance Forms (#134). Mr. Ostlund moved and Mr. Kupferman seconded that the Task Force receive the report, which included recommendations for the 2010 charges. The motion passed unanimously.

7. 2010 Charges

Mr. Andersen suggested retaining the 2009 charge to consider changes to the annual statement blanks to capture information regarding the reporting of channels of distribution needed to better establish Generally Recognized Expense Table factors.

Mr. Serbinowski moved, and Ms. Campbell seconded, to add a charge for 2010 to review certain aspects of the Standard Nonforfeiture Law for Individual Deferred Annuities (#805). Mr. Serbinowski suggested reviewing the definitions of maturity value, maturity date and net considerations. The motion passed unanimously.

Mr. Keating moved, and Ms. Jones seconded, to recommend continuing the 2009 charges and adding the review of the Standard Nonforfeiture Law for Individual Deferred Annuities (Attachment Eleven).

8. PBR Experience Reporting (VM-50, VM-51)

Mr. Andersen said there are two aspects of the experience reporting project. One aspect is the need to collect data that is used in creating industry tables to be used when a company does not have fully credible data. The other aspect is the need to have data to validate a company's PBR assumptions. There is consensus on the first aspect; i.e., that experience should be collected from the larger companies and the data should be used by an actuarial body, such as the SOA, to develop the tables. There is disagreement on the second aspect; i.e., some parties feel that the data to validate assumptions should be requested directly from the company by a regulator and that there should not be a database of company-specific experience data available.

Armand de Palo (Guardian) said that one of the issues is the funding of the project — and that there might be a problem tackling this issue on a state-by-state basis. He suggested that the Task Force explore the possibility of a centralized mechanism to collect funds from all companies for the expense of the statistical agents and the actuarial organization that develops the industry experience tables. Mr. de Palo added that there should be a limit of 50 to 150 companies whose data is used in a particular study. If there are multiple statistical agents, there should be a lead statistical agent to consolidate the data to turn over to the actuarial organization. If there is a global budget determined by the amount of funds collected, that could help determine the amount of data that is needed to develop the industry tables. In addition, he said, it is important that the reporting of experience data be mandatory and there be a standardized data format. Mr. de Palo said getting a company's experience directly from a statistical agent would not work, because reinsurance companies and smaller companies would not be submitting data to a statistical agent. As such, he said the regulator should go to the company to get experience data for reviewing a company's assumptions, because the company might have to explain which blocks of business are relevant.

Tom Rhodes (MIB Solutions) said he is on the SOA committee working on individual life insurance mortality experience, and stated that there are 300 million individual records in the latest study. In the collection of data, he said that 80% of the work done is to correct the data that was submitted. The members of the committee have said that for a study with 150 companies contributing data, it would take more than a year to "scrub" the data.

Mr. Andersen asked if regulators would feel comfortable in a review of PBR assumptions to receive a summary of experience, without having access to the underlying data, or would there be greater comfort in getting the data cleansed by a statistical agent. Several regulators indicated a preference to getting the data from a statistical agent. Mr. Bruning said the statistical agents would collect the experience data on behalf of the regulators. The NAIC would authorize the statistical agents to work with the companies to correct any errors in the data. The cleansed data would be used by the companies to summarize experience for the regulators to review.

Attached are two letters from Mr. Rhodes (Attachment Twelve).

9. PBR Economic Scenarios Subgroup

Mr. Andersen reported that the AAA created a set of interest rate scenarios from the new scenario generator. That set has been analyzed, and there were two observations: 1) there were not enough scenarios that decreased and stayed at a low level; and 2) there might not have been enough volatility within the scenarios. Discussions with the AAA Scenario Generator Work Group led to the conclusion that it is difficult to have both conditions satisfied. The low interest-rate environment of the past year has tended to be disadvantageous to universal life with secondary guarantees contracts. The scenario generator has a mean reversion element, so that when the interest rate is low in a scenario, the rates tend to increase, or revert back to the mean, so that the adverse scenarios tend to be less adverse with time.

Nancy Bennett (AAA) presented a report (Attachment Thirteen) with the background on the interest rate generator, statistics on the baseline generator, and some sensitivity tests. The generator is based on 55 years of data, which is all the data that is available. There is a soft cap of 18% on the long rate. The process begins with the initial yield curve and projects the 20-year U.S. Treasury rate. There is a process to complete the yield curve based on historical data. There is also an automatic process to update the mean reversion target. The robustness of scenario results is tested by looking at the dispersion of results across the scenarios with attention given to the amount of scenarios in the tail.

There is an input assumption on the strength of the effect of the mean reversion factor. Ms. Bennett said the generator is robust and captures enough scenarios to be tested.

Mr. Andersen said that, earlier in 2009, the AAA work group decided on a formula that produces a mean reversion target of 5.5%. He said that mean reversion is often thought of as a sine curve with the 20-year Treasury rate going higher or lower than the mean reversion target. Historically, he said, the 20-year Treasury rates have been like a pyramid, with the rates increasing from the 1950s to the 1980s and decreasing thereafter. Mr. Andersen said he was concerned that the mean reversion target was not a good number and suggested calculating the reserve by taking the greater of a run, using the current target and a run again using the current 20-year Treasury rate as a target.

Ms. Bennett said there is so much that enters into a reserve calculation other than the interest scenarios. Instead of changing the parameters of the generator, she said it might be better to require additional sensitivity tests for some products.

10. Default Costs on Existing Fixed-Income Investments in VM-20

Gary Falde (Pacific Life) and Alan Routhenstein (Milliman Inc.) presented a report (Attachment Fourteen) by the Asset Subgroup of the AAA Life Reserve Work Group (LRWG) on the "Proposed Methodology for Setting Prescribed Default Costs on Existing Fixed Income Investments in VM-20." The LRWG proposal was designed to meet the objectives set by the PBR Life Subgroup: 1) prescribe parameters so the default costs for similar assets are the same for all companies; 2) companies should not be able to lower reserves by investing in riskier assets beyond some threshold; 3) in the short run, default costs should reflect the current economic environment and can grade into the long-run costs; 4) the proposal should be simple; and 5) the method should produce reasonable results as market conditions vary. The Asset Subgroup added several objectives: 1) the default risk is measured as of the valuation date, not the original purchase date; 2) default costs are a function of credit rating, spread level and structural risk; and 3) the method should be internally consistent with respect to default costs on existing assets, gross spreads and default costs on new investments, and the market values on assets sold in the model.

The Asset Subgroup also looked at a proposal from the New York State Insurance Department that defined the net spread over the Treasury rate as the greater of 50 basis points, or 50% of the spread over the Treasury rate for an AAA for a bond-index asset with the same weighted average life (WAL) duration. The default costs are set when the asset is purchased, rather than at the current valuation date. The testing demonstrated that reserves are stable through the valuation dates, due to the fixed default cost; there is reserve strain; and the asset default costs vary substantially for the different cohorts, even though each cohort portfolio is virtually identical. A flaw in the method is that it produces sudden surplus gains or losses when the asset portfolio is liquidated, and same or similar assets are repurchased.

The Asset Subgroup made some changes to the LRWG methodology that reduced volatility and simplified the methodology. Because the spread-based adjustments are made for only a set number of years, the method might not always discourage riskier investments.

Mr. Andersen said he thinks the value of a liability should be independent of the assets backing the liability. Also, companies should not be able to lower reserves by investing in riskier assets. Mr. Andersen said he would like to set the Asset Subgroup work on adjusting the parameters in the LRWG methodology to duplicate the New York approach. Mr. Falde said it may be possible to do a "one point in time," but the two methods do not move together as markets change.

Mr. Rink moved, and Mr. Shepherd seconded, to direct the Asset Subgroup to move forward with the LRWG approach. The motion passed, with New York voting against the motion. Mr. Weber asked the Asset Subgroup to draft changes to VM-20 to implement the LRWG methodology.

Attached are proposed amendments to VM-20 (Attachment Fifteen).

11. PBR Reporting and Review (VM-30, VM-31)

Ms. Campbell reported that the VM PBR Reporting and Review Subgroup had two outstanding issues regarding VM-30: Actuarial Opinion and Memorandum Requirements. The first issue was included in an amendment proposal from the Washington State Office of the Insurance Commissioner, which asked for additional disclosure from the reliance statements given to the appointed actuary. The proposal does not place a greater burden on the appointed actuary.

Ms. Campbell said the second concern was from the AAA Life Practice Council. Tom Campbell (Hartford) presented a letter (Attachment Sixteen) and expressed concern with the Key Indicator section of the document, especially the requirement to describe the actuarial opinion by one of four terms: qualified; nonqualified; adverse; or inconclusive. He said those words might be confusing to the public and suggested removing the four options. He noted that the Task Force could include the four options in the Regulatory Asset Adequacy Issues Summary, because it is confidential; change the word to "modified/unmodified"; or add language that the Key Indicator section is intended to provide general language in the opinion.

Mr. Andersen noted that there is a question in the RBC requirements whether the opinion was qualified or nonqualified.

Attached are proposed amendments to VM-30 (Attachment Seventeen).

12. Actuarial Guideline XXXIII

John Engelhardt (NAIC) reported that there had been one comment on the draft of Actuarial Guideline XXXIII that was released for comment. The proposed language in the Introduction Section, shown below, might conflict with similar language in the Purpose Section.

Introduction Section:

> This law establishes the standards for annuity contracts (which therefore includes any riders or endorsements, and any or all components of which, such as premiums, benefits, contract charges, primary or secondary accumulation values or other components, either relating to annuity benefits provided by the contract or providing separate annuity benefits)

Purpose Section:

> However, life or health insurance riders attached to an annuity contract, where all components of the rider (e.g., premiums, benefits, contract charges, accumulation values and other components) are separate and distinct from the components of the annuity contract, should be treated as a separate life or health insurance contract not subject to this Actuarial Guideline

Jim Lamson (Actuarial Resources Corporation) suggested adding the word "annuity" before the word "riders" in the Introduction Section. Mr. Shepherd moved and Mr. Weber seconded that the actuarial guideline (Attachment Eighteen) be adopted with the addition of the word "annuity." The motion passed unanimously.

13. Completion of the Valuation Manual

Mr. Bruning said the Life Insurance and Annuities (A) Committee adopted the Standard Valuation Law (#820) on a recent conference call. There were two conditions attached to the adoption: 1) The Valuation Manual must be completed by Dec. 31, 2009; and 2) The Valuation Manual must contain a minimum floor reserve.

Mr. Bruning said he thought that if VM-20 could not be completed by the end of the year, the backup plan should be to use VM-21, the conversion of Actuarial Guideline XLIII – CARVM for Variable Annuities into Valuation Manual format. He said that there should be at least one section in the Valuation Manual with principle-based requirements. Mr. Boerner said that the approach would be the only way to get a complete manual by year-end 2009. Mr. Serbinowski asked if sections of the Valuation Manual could be updated during the period that the SVL is being considered by the state legislatures. Mr. Bruning said that until the Valuation Manual becomes operative by the terms of the SVL, changes could continue to be made.

Mr. Musgrove said he had reservations about presenting a Valuation Manual with only the section on variable annuities being purely principle-based. Mr. Bruning said that, by the time the Valuation Manual becomes operative, the sections defining principle-based reserves for variable annuities, life insurance and, perhaps, fixed annuities would be complete. Ms. Campbell said she would support presenting a Valuation Manual with VM-21 being the only section defining a principle-based system. However, she also would support including the current VM-20 because the entire structure is complete, even though there are details to the worked out.

Mr. Graham said there might be a downside to presenting a Valuation Manual with the current VM-20 included — because, if there are details to work out, legislators who do not think PBR is a good idea could use the fact that it is not complete to oppose the SVL changes. And, he said, if the SVL is not adopted, it would be harder to bring it up again in a legislature. VM-

21 is a way of showing how the Valuation Manual would work, but it affects only a small number of companies and a small number of states.

Mr. Bruning said the Kansas legislative committee is currently setting the agenda for the 2010 session. The Kansas Insurance Department will not ask for consideration of the SVL during the 2010 session of the legislature, and will instead wait until 2011. Mr. Serbinowski said the Utah Insurance Department will do the same thing. Mr. Bruning said he would inform the commissioners that adoption of the SVL could wait until 2010.

14. Other Matters

Mr. Bruning noted that the Interstate Insurance Product Regulation Commission (IIPRC) was setting up an actuarial advisory group. Mr. Bruning asked Mr. Serbinowski to provide quarterly reports on the activities of the IIPRC of interest to the Task Force.

Mr. Bruning said the Standard Nonforfeiture Law revisions, and the question of how to determine the change in reserve resulting from a change in method for variable annuities, would be discussed on a future conference call.

The Task Force received a report from the AAA Nonforfeiture Improvement Work Group (Attachment Nineteen).

15. Approve Minutes

Mr. Rink moved, and Mr. Serbinowski seconded, that the Task Force approve the minutes dated Sept. 3 (Attachment Twenty), Aug. 14 (Attachment Twenty-One) and Aug. 11 (Attachment Twenty-Two). The motion carried unanimously.

Having no further business, the Life and Health Actuarial Task Force adjourned.

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Preferred Mortality

September 21, 2009 LHATF

Valuation Table Team Update

Society of Actuaries & American Academy of Actuaries Joint Project Oversight Group

Tim Harris, FSA, MAAA, Chair of Valuation Table Team

Agenda

- Testing of Various Loading Formulae for 2008 VBT
- Background
  - Testing of Basic Table
  - Comparison of Test Loaded Table to Experience of Contribution Companies
  - Development of Actuarially Sound Margin Methodology to Achieve Targeted Coverage of Contributing Companies
  - Guidance on Mortality Margins for PBR

Testing Completed to Date

- Comparison of CRVM reserves for 20-Year term using 2008 VBT to those produced by 2001 VBT using a Valuation interest rate of 4% (See Appendix B)
- Comparison of 20-Year Term, Whole Life and UL CRVM including AXXX reserves using 2001 CSO table to those using 2008 CSO (See Appendix A)
- Comparison of 20-Year Term and UL reserves assuming different loading formulae

Comparison of Reserves Using Different Loading Formulae

- 20-Year Term and UL with Secondary Guarantee Reserves were calculated using the 2008 table and the loading methods shown below:
  - Tim Harris formula (Described in Appendix B)
  - 20% Load
  - 10% Load
  - 3.75 extra deaths per thousand divided by the curtate expectation of life
  - Assuming a ½% per year improvement in mortality
  - No loading

Assumption Summary - Term

- Term Pricing Assumptions
  - Investments into 10 year bonds purchased with a 100bps market spread over then-current treasuries. Defaults @ 25bps and investment expenses @ 5bps.
  - A single $100,000 policy is projected with an annual $65 policy fee
  - Level $290 annual premium (solves for a 12% IRR at issue)
  - Acquisition Expenses
    - 10% of Premium
    - $73.74 per Policy
    - $1.29 per $1,000 of Face

Assumption Summary – Term (cont'd)

- Term Pricing Assumptions (cont'd)
  - Other Expenses
    - Annual 2.5% of Premium
    - Annual $40 per Policy
    - $100 Per Death
    - $20 Per Surrender
  - 130% of premium FY commissions with lapse charge back in year 1
  - Lapse Rates by Issue Year: 7%, 7.5%, 6.5%, 6.5%, 6%, 6%, 6%, 5% (ultimate)
  - CRVM reserves @ 4% Valuation Interest, X-factor = 100%

Assumption Summary - UL

- UL Pricing Assumptions
  - Investments into 10 year bonds purchased with a 100bps market spread. Defaults @ 25bps and investment expenses @ 5bps
  - A single policy with a $100,000 Death Benefit is projected assuming starting account value is $0 at each valuation date. This policy has a lifetime secondary guarantee
  - Level $1,000 Annual Premium equal to the specified minimum premium (target premium = $1,100)
  - 3% annual crediting rate equal to the minimum guarantee

Assumption Summary – UL (cont'd)

- UL Pricing Assumptions (cont'd)
  - Loads
    - $90/policy to age 100
    - 6% or premium to year 10, 4% thereafter
    - $1.68 per $1,000 of Face years 1-10, $0.48 to age 100, $0 thereafter
    - Surrender Charges are 100% of target premium years 1-5, grading to 0% by year 15
  - Acquisition Expenses
    - 10% of FY Premium
    - $73.74 per Policy
    - $1.29 per $1,000 of Face

Assumption Summary – UL (cont'd)

- UL Pricing Assumptions (cont'd)
  - Other Expenses
    - Annual $50 Per Policy
    - Annual 2.5% of Premium
    - $100 Per Death
    - $20 Per Surrender
  - FY Commissions of 115%, 5% years 2-10, 2% thereafter
  - Lapses Rates by Issue Year: 5%, 4.8%, 4.6%, 4.4%, 4.2%, 4.0%(6-10), 2.8%(11-20), 2.2%(21-45), 2% (Ultimate)
  - CRVM reserves @ 4% Valuation Interest, AXXX methodology recognizes lapses and surrender charges, , X-factor = 100%

Assumption Summary - Conditions

- Most recent VM-20 proposal has suggested a discount rate for deficiencies equal to 105% of the 1-year treasury rate from each scenario. Our results reflect the prior discount approach, which is equal to the net asset earned rate along each scenario.
- The VM-20 proposal requires iteration to solve for the initial assets such that the CTE(70) GPVAD falls within a range of +/- 2% of the initial assets. We have instead assumed initial assets are zero, and solved for CTE(70) GPVAD. To the extent that a run-off of the positive initial assets including subsequent reinvestments would produce a different aggregate net yield than that produced on a portfolio of company loans and/or negative asset purchases, our results would also vary from the proscribed method. Because of the simplified asset model we used, we do not feel this difference is material enough to justify iteration.

Assumption Summary – Conditions (cont'd)

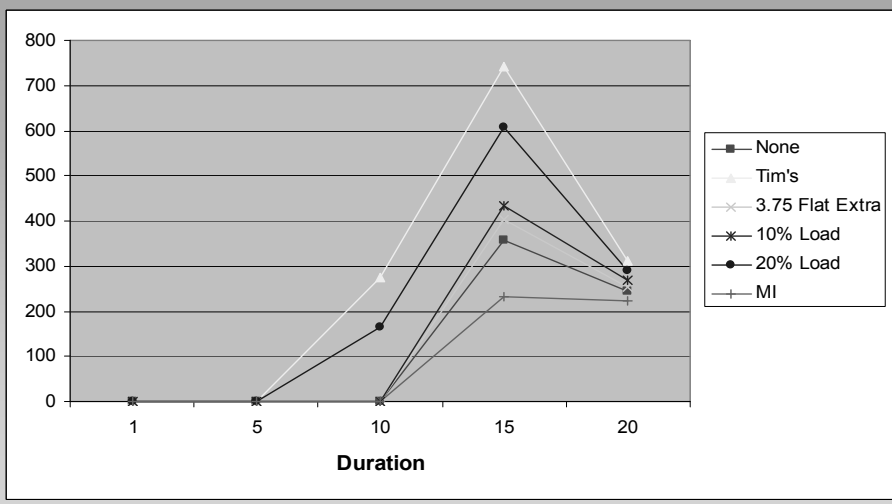
- We did not attempt to project a deterministic reserve calculation nor did we perform the stochastic exclusion test.
- Our assumptions have not been reviewed to determine whether they would qualify as prudent best estimates for a typical life insurance company.
- Since our UL model was projected with a fixed crediting rate (3%) that was not tied to the performance of the simulated investment portfolio, there will be less variation in the results and therefore the PBA reserve produced from our model is likely less conservative than it would be had we modeled credited rates as (NIER - spread).

UL Premium and Secondary Guarantee Assumptions

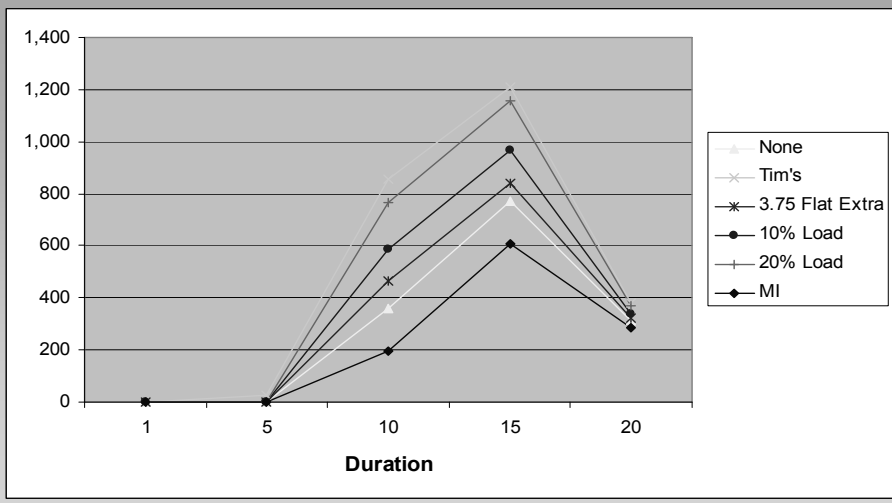
	Age 45	Age 75
Target Premium	$11.00	$58.00
Interim(1) Non-Lapse Guarantee Premium	$6.53	$47.50
Lifetime Non-Lapse Guarantee Premium	$10.00	$50.00
Guideline Premium	$19.53	$110.51

(1) Interim Guarantee is for the earliest of 20 years and attained age 80.

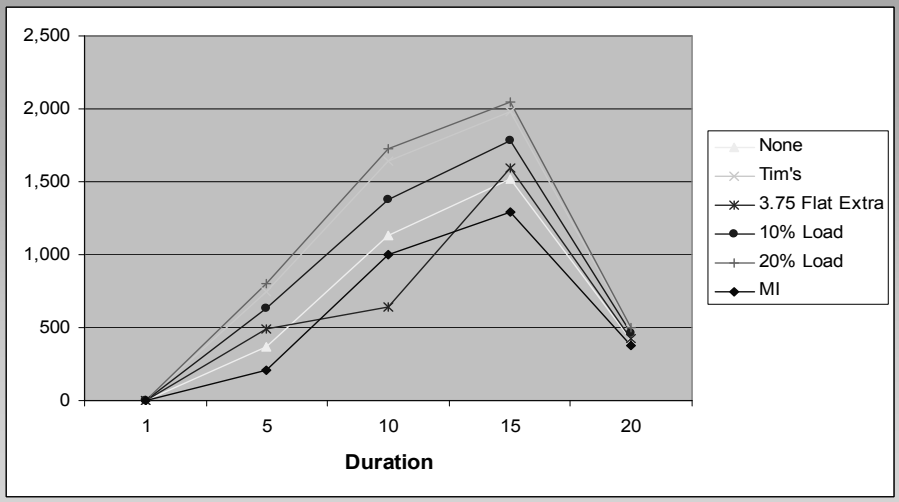
RR70, CTE(70) GPVAD Term Block, Male Age 45



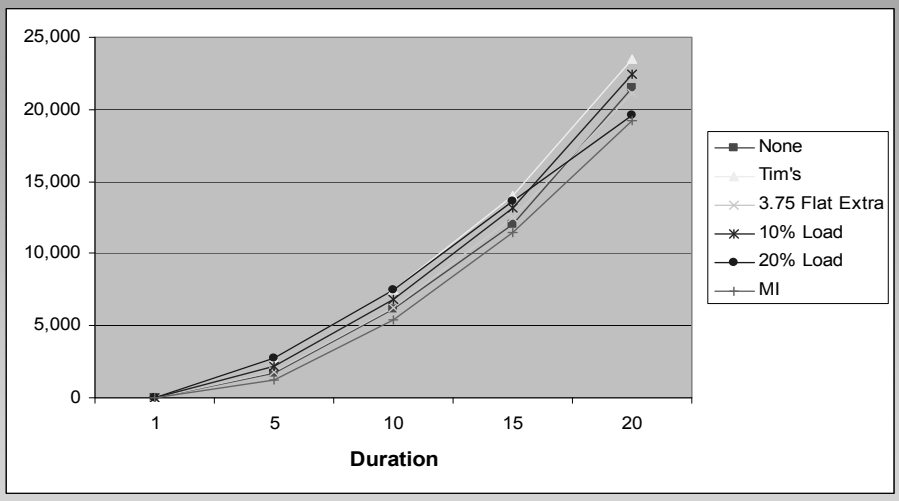
RR90, CTE(70) GPVAD Term Block, Male Age 45



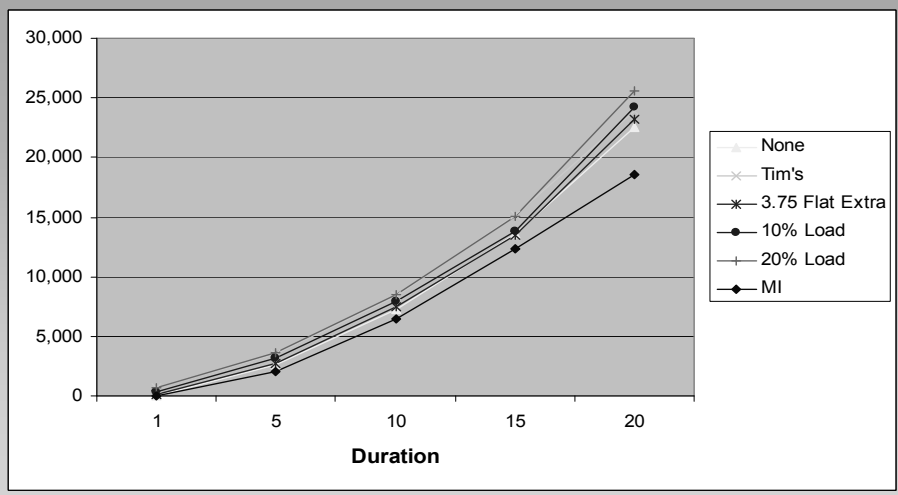
RR130, CTE(70) GPVAD
Term Block, Male Age 45



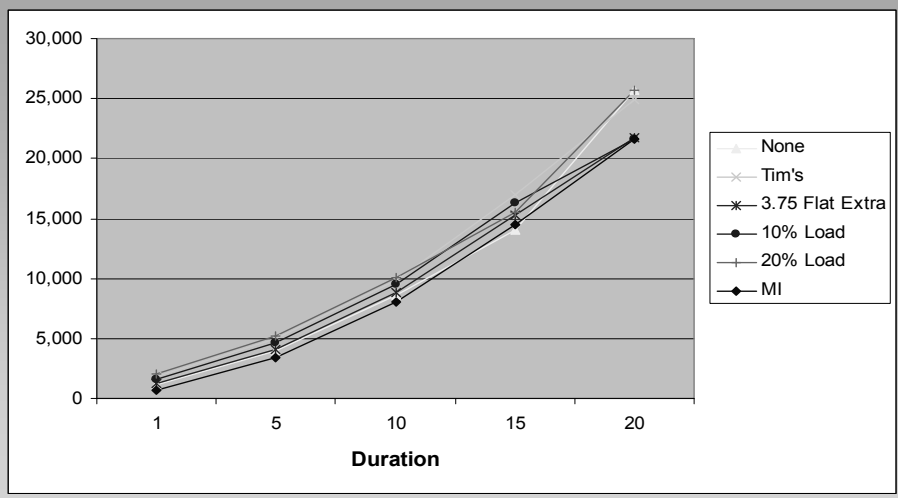
RR70, CTE(70) GPVAD
ULSG Block, Male Age 45



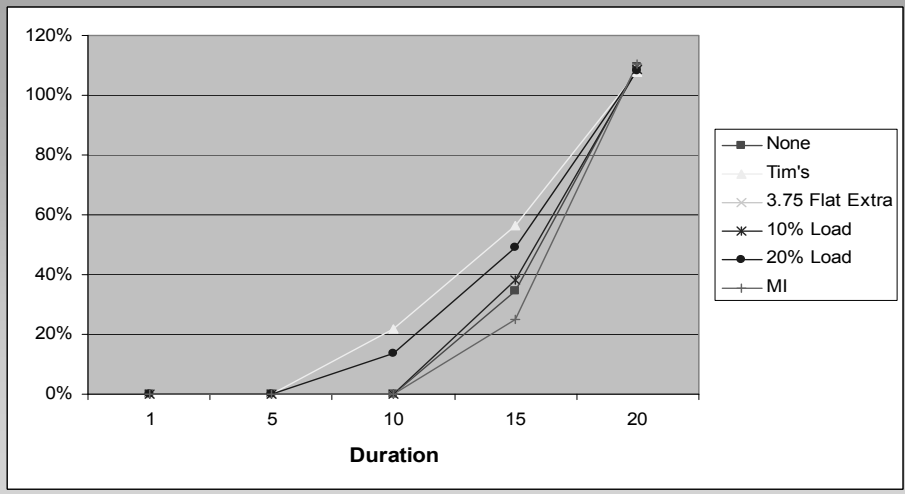
RR90, CTE(70) GPVAD
ULSG Block, Male Age 45



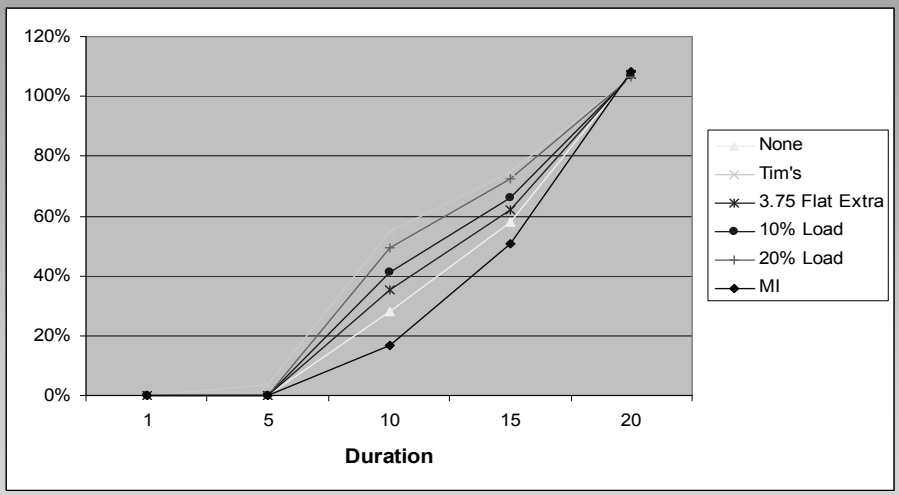
RR130, CTE(70) GPVAD
ULSG Block, Male Age 45



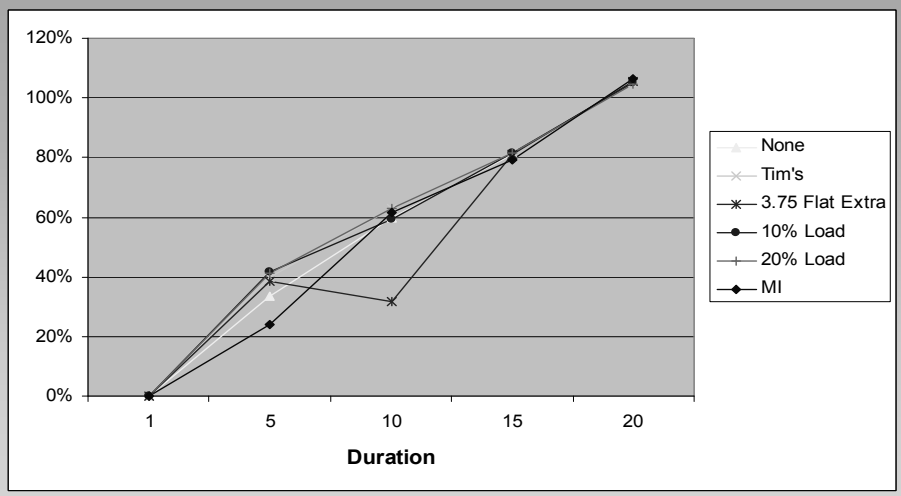
RR70, GPVAD/Formulaic Term Block, Male Age 45



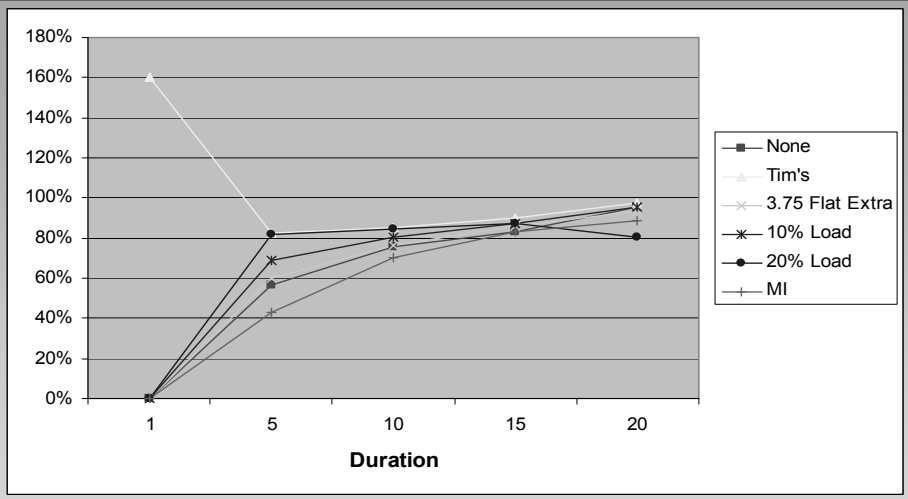
RR90, GPVAD/Formulaic Term Block, Male Age 45



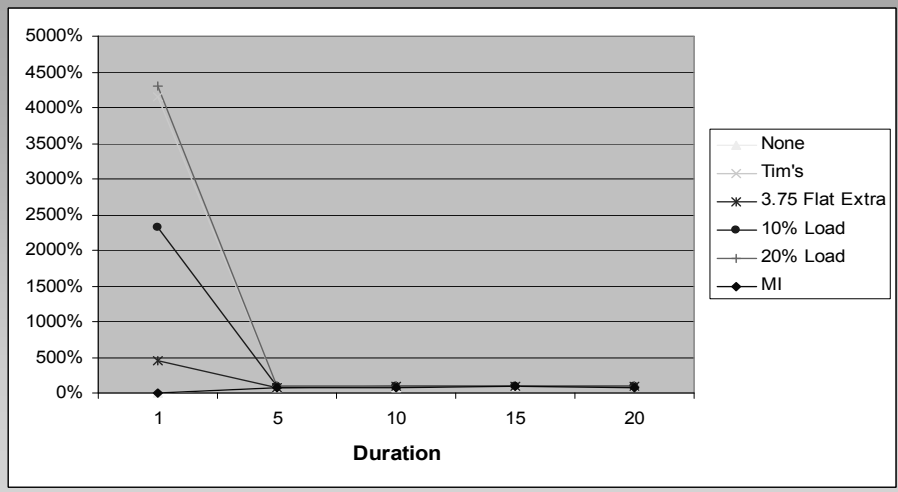
RR130, GPVAD/Formulaic Term Block, Male Age 45



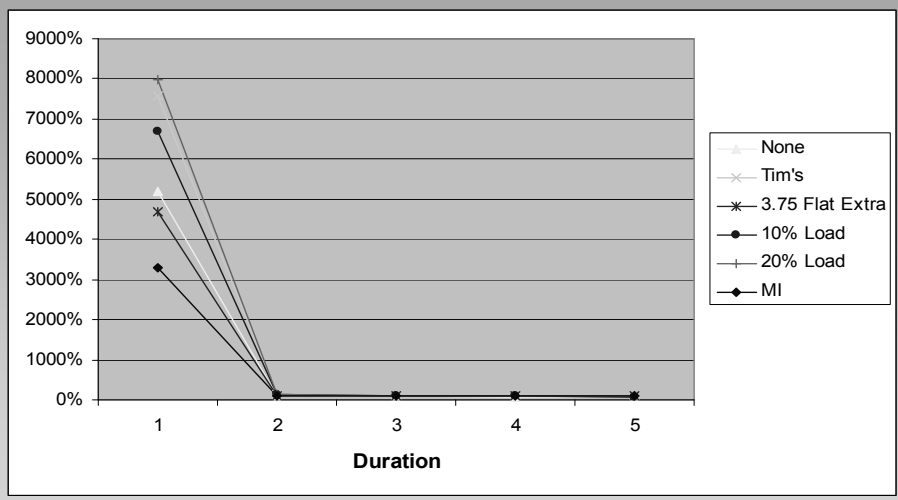
RR70, GPVAD/Formulaic ULSG Block, Male Age 45



RR90, GPVAD/Formulaic ULSG Block, Male Age 45



RR130, GPVAD/Formulaic ULSG Block, Male Age 45



Remaining Tasks

- Prepare written guidance on mortality margins to be added when calculating principle-based reserves
- Respond to other requests and inquiries from LHATF

Contact: Timothy Harris, F.S.A., M.A.A.A.
Timothy.Harris@Milliman.com

Appendix A

The following slides have been previously presented and discussed.

Comparison of Statutory Reserves using 2001 CSO to those using 2008 CSO

- Products Compared:
  - 20-Year Term – Issue ages 35, 45, 55
  - Whole Life – Issue age 35
  - UL with Secondary Guarantee – Issue ages 45 and 75
- Reserves using current Statutory Requirements including AXXX for UL
- Calculated using 4% interest and 2008 CSO
- Compared using 2001 CSO vs. the 2008 CSO Basic (RR100) Table for both the S&U and Ultimate Tables
- Also compared using Preferred vs. RR90 and Super Preferred vs. RR70 Tables

Comparison of Reserves per 1,000 2001 CSO Ultimate vs. 2008 CSO Ultimate Whole Life Male NS Issue Age 35

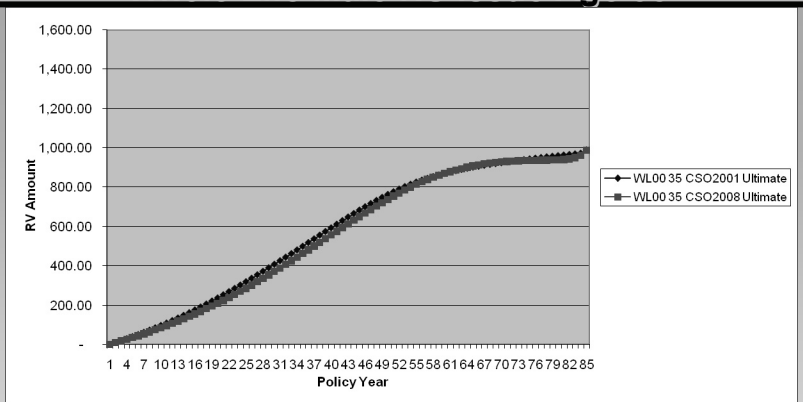


Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	.53	39.98	96.83	236.95	408.08
2008 CSO	.64	35.20	84.84	209.45	370.68

Comparison of Reserves per 1,000
2001 CSO S&U vs. 2008 CSO S&U
20 Year Term Male NS Issue Age 35

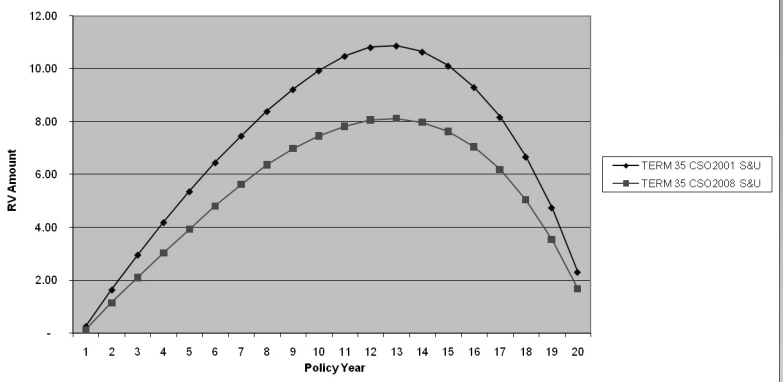


Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.26	5.36	9.93	2.31
2008 CSO	.13	3.93	7.46	1.68

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Comparison of Reserves per 1,000
2001 CSO S&U vs. 2008 CSO S&U
20 Year Term Male NS Issue Age 45

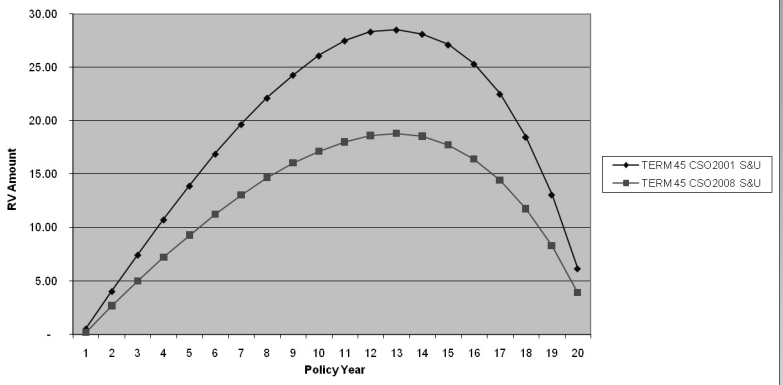

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.50	13.89	26.08	6.14
2008 CSO	.19	9.29	17.15	3.92

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Comparison of Reserves per 1,000
2001 CSO S&U vs. 2008 CSO S&U
20 Year Term Male NS Issue Age 55

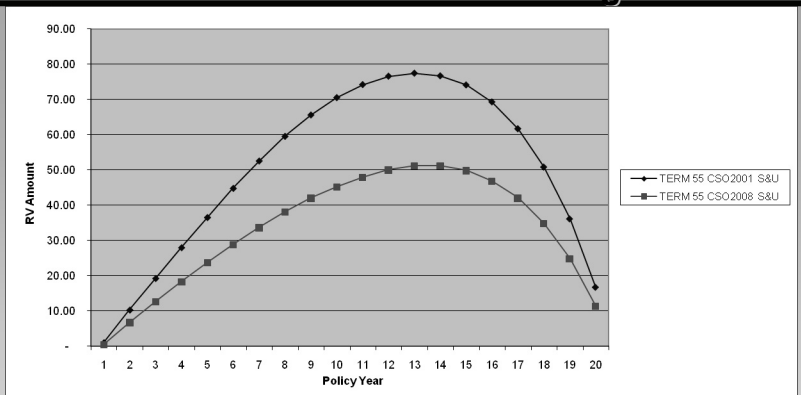

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.97	36.49	70.52	16.70
2008 CSO	.44	23.65	45.18	11.31

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Comparison of Reserves per 1,000
2001 CSO Ultimate vs. 2008 CSO Ultimate
20 Year Term Male NS Issue Age 35

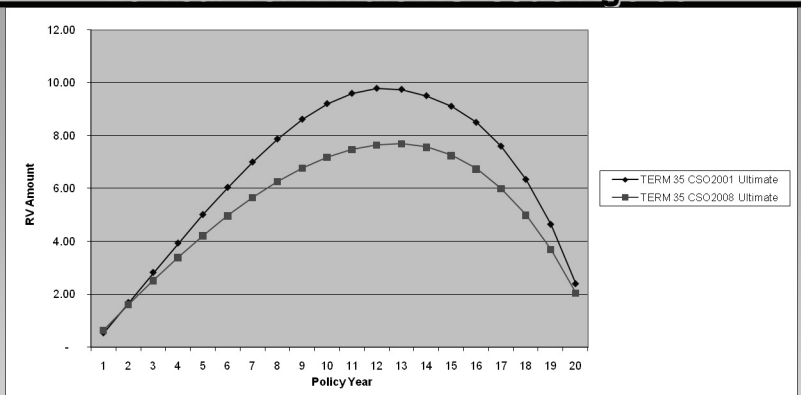

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.53	5.01	9.21	2.39
2008 CSO	.64	4.21	7.18	2.04

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Comparison of Reserves per 1,000
2001 CSO Ultimate vs. 2008 CSO Ultimate
20 Year Term Male NS Issue Age 45

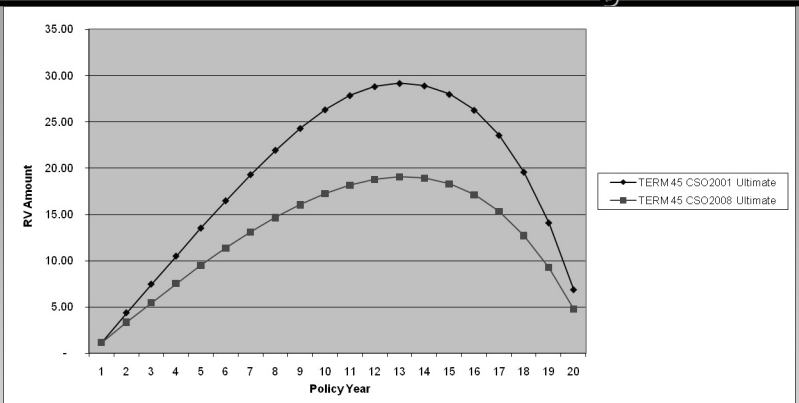

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	1.14	13.52	26.33	6.84
2008 CSO	1.14	9.48	17.24	4.76

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Comparison of Reserves per 1,000
2001 CSO Ultimate vs. 2008 CSO Ultimate
20 Year Term Male NS Issue Age 55

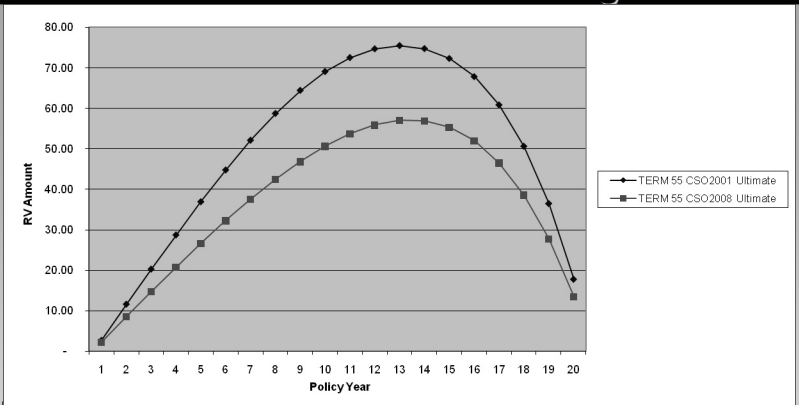

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	2.70	36.93	69.08	17.78
2008 CSO	2.20	26.63	50.64	13.45

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Comparison of Reserves per 1,000
2001 CSO Preferred S&U vs. 2008 CSO RR90 S&U
20 Year Term Male NS Issue Age 35

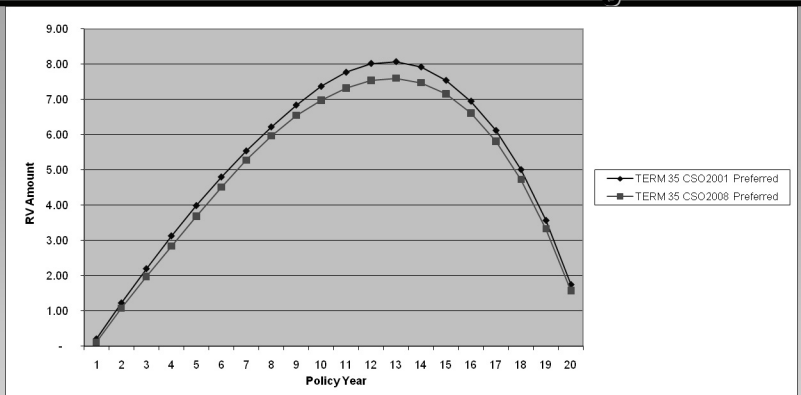

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.21	3.99	7.37	1.75
2008 CSO	.12	3.69	6.98	1.58

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Comparison of Reserves per 1,000
2001 CSO Preferred S&U vs. 2008 CSO RR90 S&U
20 Year Term Male NS Issue Age 45

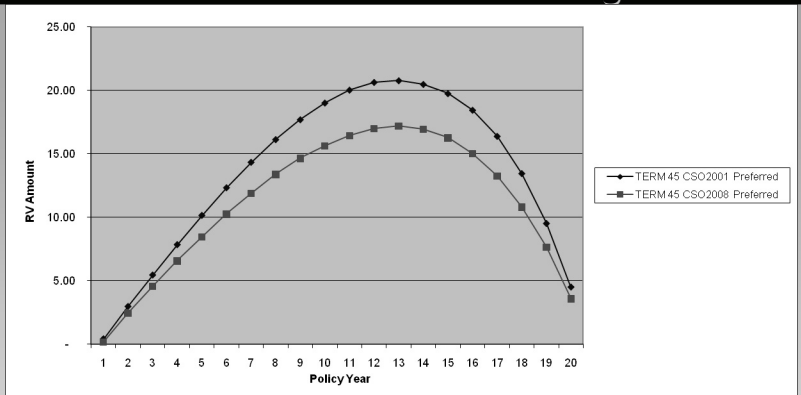

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.40	10.15	19.02	4.49
2008 CSO	.17	8.45	15.63	3.58

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Comparison of Reserves per 1,000
2001 CSO Preferred S&U vs. 2008 CSO RR90 S&U
20 Year Term Male NS Issue Age 55

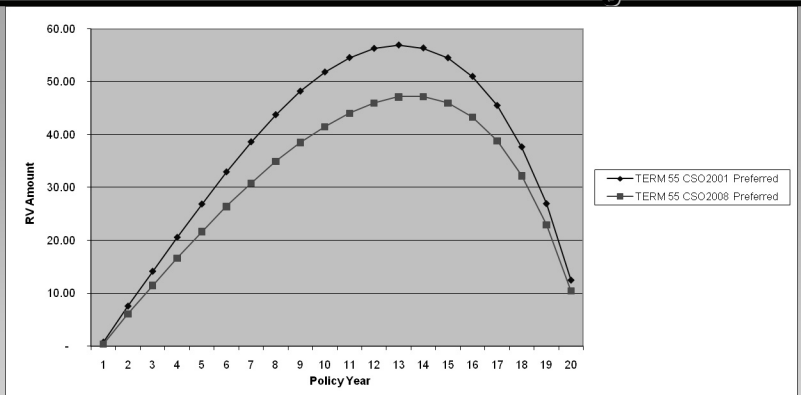

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.76	26.86	51.82	12.47
2008 CSO	.39	21.65	41.52	10.44

Comparison of Reserves per 1,000
2001 CSO Super-Pref S&U vs. 2008 CSO RR70 S&U
20 Year Term Male NS Issue Age 35

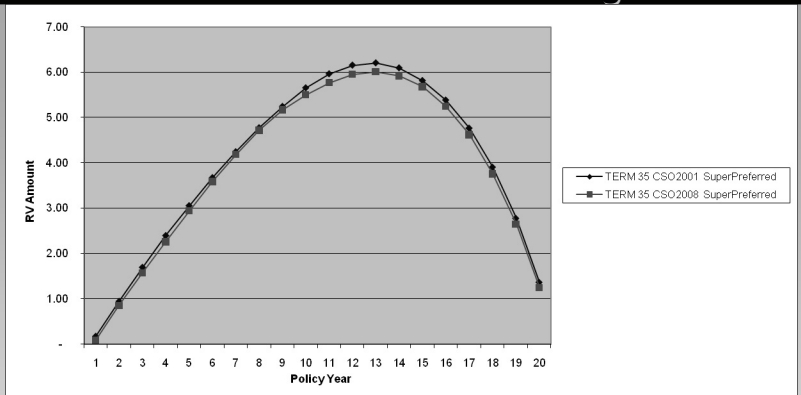

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.18	3.06	5.66	1.37
2008 CSO	.09	2.94	5.50	1.25

Comparison of Reserves per 1,000
2001 CSO Super-Pref S&U vs. 2008 CSO RR70 S&U
20 Year Term Male NS Issue Age 45

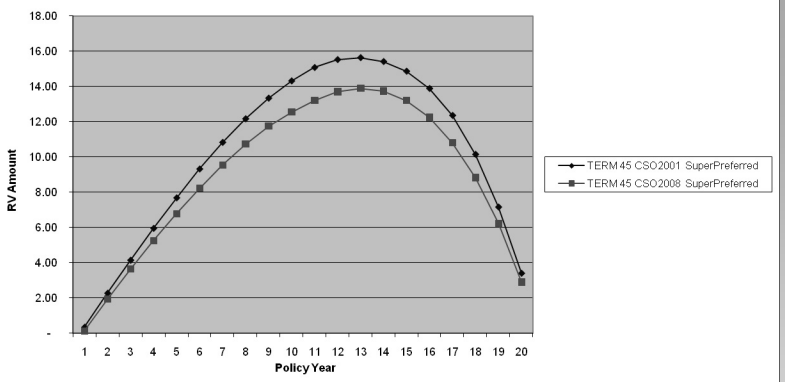

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.33	7.67	14.31	3.39
2008 CSO	.13	6.68	12.55	2.91

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Comparison of Reserves per 1,000
2001 CSO Super-Pref S&U vs. 2008 CSO RR70 S&U
20 Year Term Male NS Issue Age 55

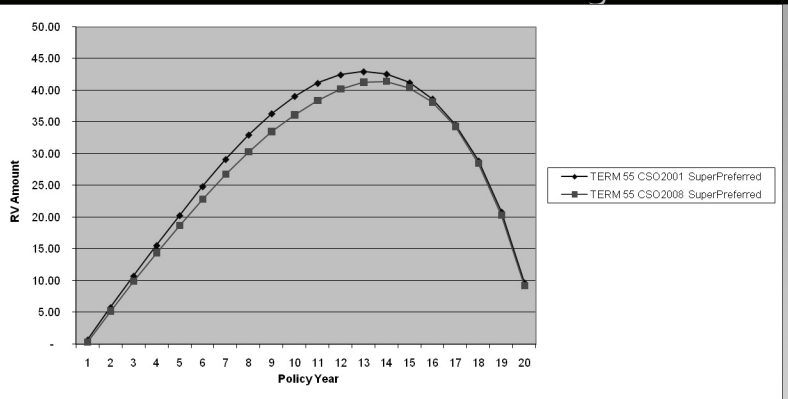

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.64	20.27	39.07	9.65
2008 CSO	.30	18.72	36.15	9.16

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Comparison of Reserves per 1,000
2001 CSO Residual S&U vs. 2008 CSO RR130 S&U
20 Year Term Male NS Issue Age 35

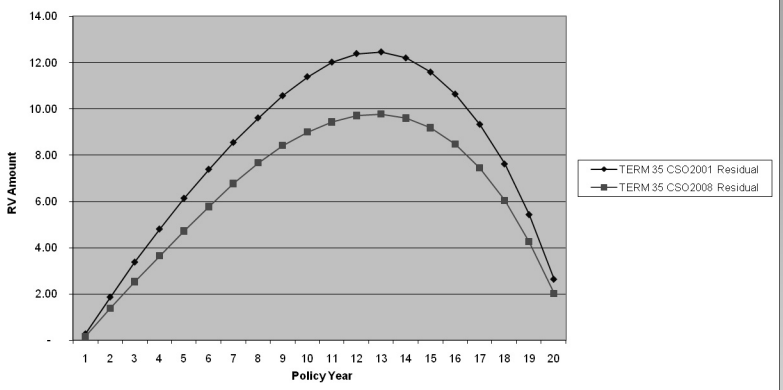

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.28	6.14	11.39	2.64
2008 CSO	.16	4.72	9.00	2.02

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Comparison of Reserves per 1,000
2001 CSO Residual S&U vs. 2008 CSO RR130 S&U
20 Year Term Male NS Issue Age 45

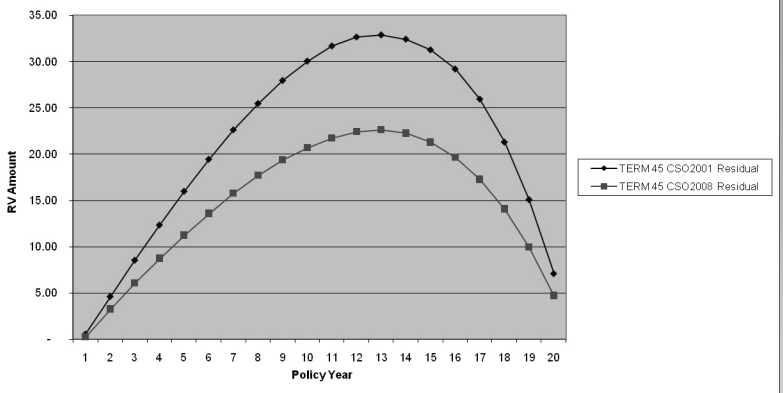

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	.55	15.99	30.06	7.09
2008 CSO	.24	11.22	20.72	4.70

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Comparison of Reserves per 1,000
2001 CSO Residual S&U vs. 2008 CSO RR130 S&U
20 Year Term Male NS Issue Age 55

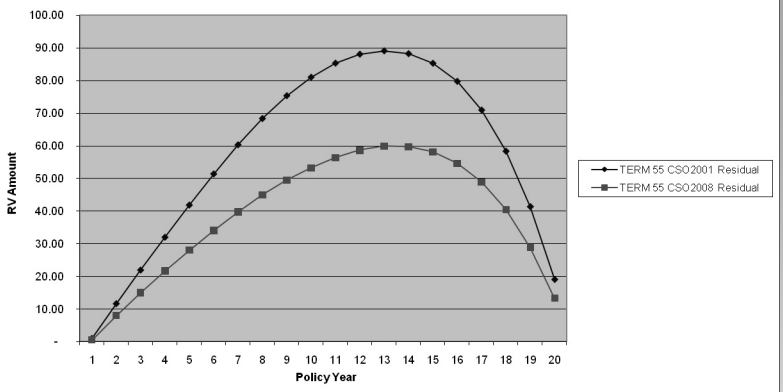

Table	Dur 1	Dur 5	Dur 10	Dur 20
2001 CSO	1.08	41.88	81.00	19.12
2008 CSO	.57	28.06	53.26	13.27

Comparison of Reserves per 1,000
2001 CSO S&U vs. 2008 CSO S&U
UL Male NS Issue Age 45

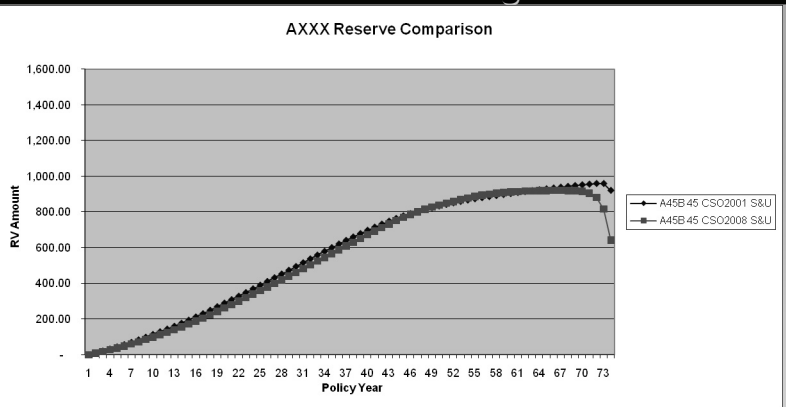

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	43.78	113.67	289.19	494.04
2008 CSO	0	37.56	98.52	261.05	459.75

Comparison of Reserves per 1,000
2001 CSO S&U vs. 2008 CSO S&U
UL Male NS Issue Age 45

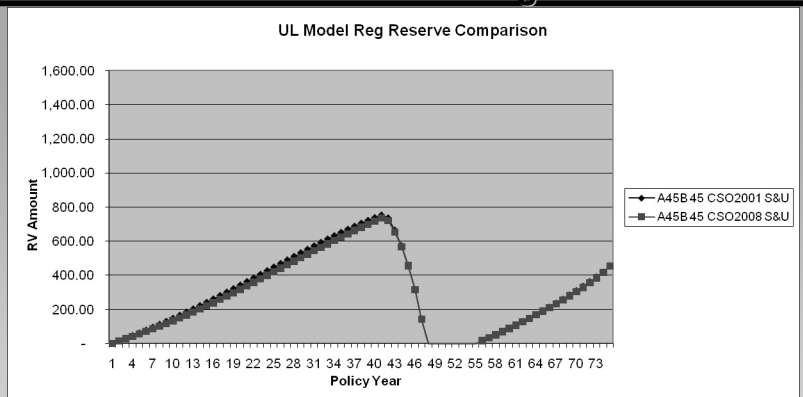

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	61.98	147.67	363.37	552.32
2008 CSO	0	55.33	132.86	338.26	524.05

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Comparison of Reserves per 1,000
2001 CSO S&U vs. 2008 CSO S&U
UL Male NS Issue Age 75

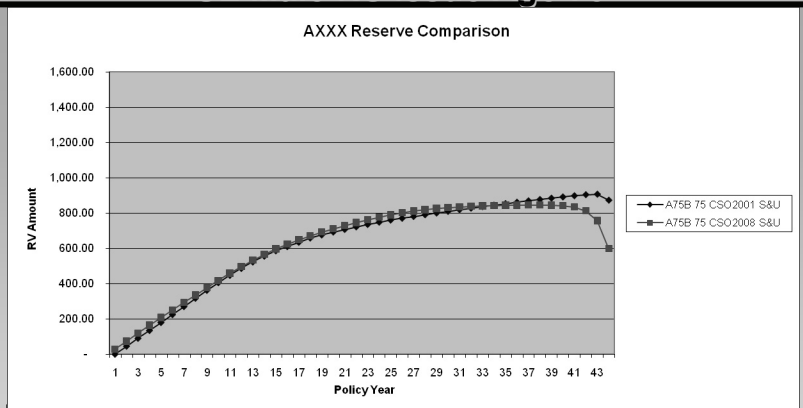

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	179.74	405.40	692.13	809.33
2008 CSO	29.67	208.28	418.11	711.09	830.51

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Comparison of Reserves per 1,000
2001 CSO S&U vs. 2008 CSO S&U
UL Male NS Issue Age 75

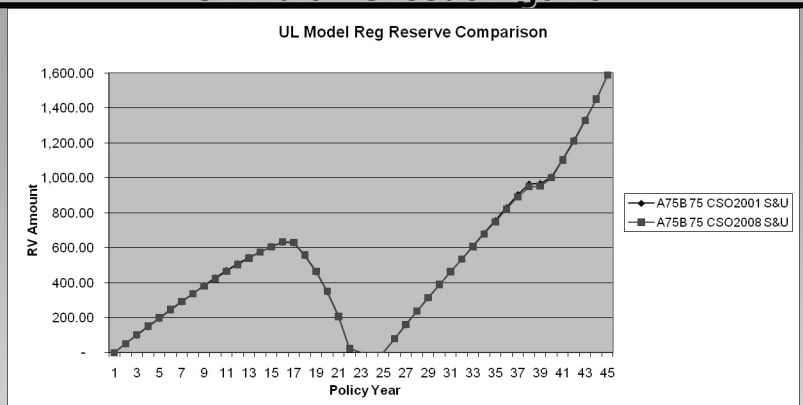

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	195.64	428.97	348.33	388.79
2008 CSO	0	199.50	423.99	351.94	389.59

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Comparison of Reserves per 1,000
2001 CSO Ultimate vs. 2008 CSO Ultimate
UL Male NS Issue Age 45

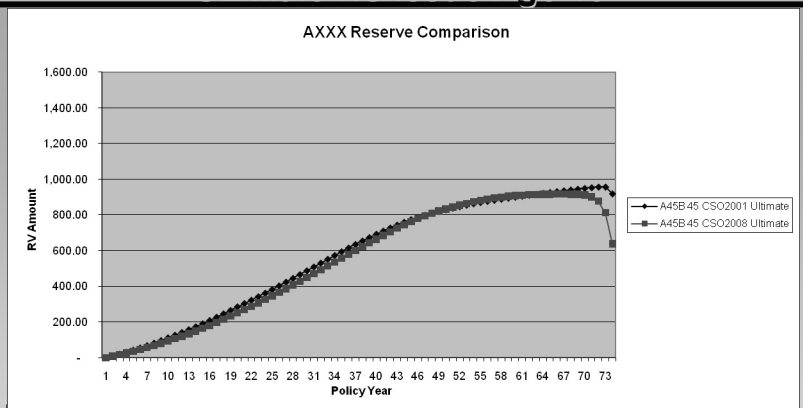

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	42.12	111.55	285.38	487.87
2008 CSO	0	35.40	93.90	251.25	449.44

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Comparison of Reserves per 1,000
2001 CSO Ultimate vs. 2008 CSO Ultimate
UL Male NS Issue Age 45

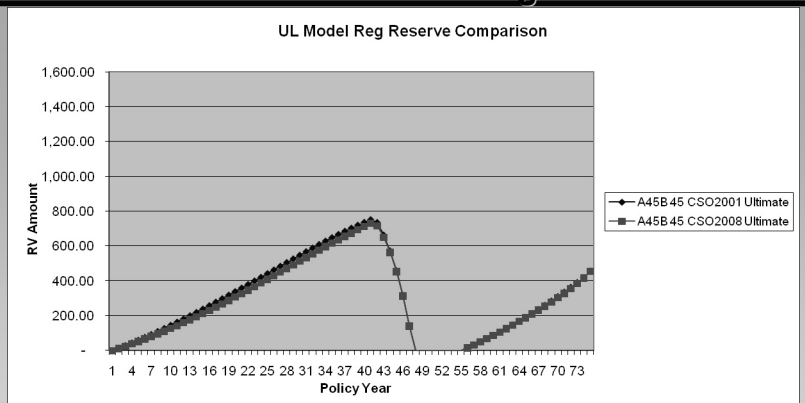

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	60.08	145.19	338.30	546.35
2008 CSO	0	52.61	127.47	307.53	514.22

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Comparison of Reserves per 1,000
2001 CSO Ultimate vs. 2008 CSO Ultimate
UL Male NS Issue Age 75

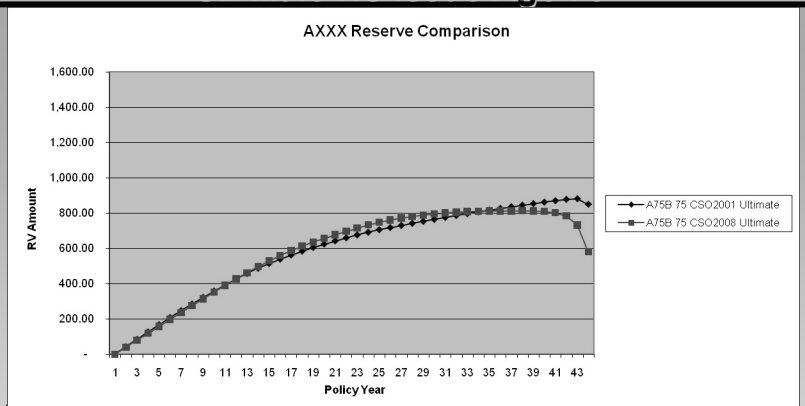

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	168.06	358.32	624.71	764.51
2008 CSO	0	157.77	351.46	656.59	794.92

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Comparison of Reserves per 1,000
2001 CSO Ultimate vs. 2008 CSO Ultimate
UL Male NS Issue Age 75

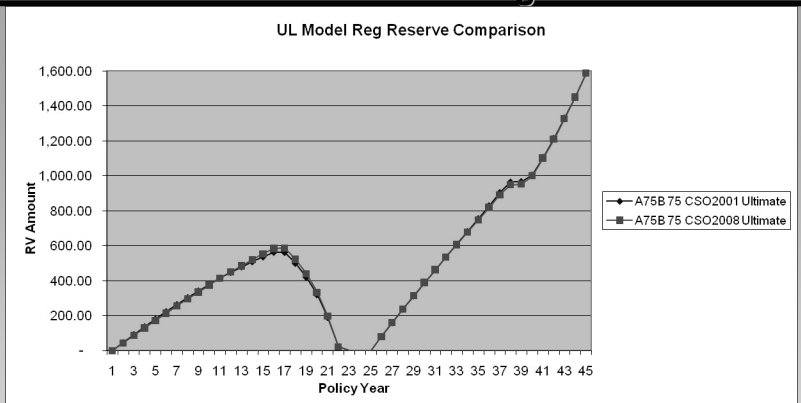

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	180.63	378.66	319.90	388.79
2008 CSO	0	172.05	375.07	333.47	389.59

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Comparison of Reserves per 1,000
2001 CSO Preferred vs. 2008 CSO RR90
UL Male NS Issue Age 45

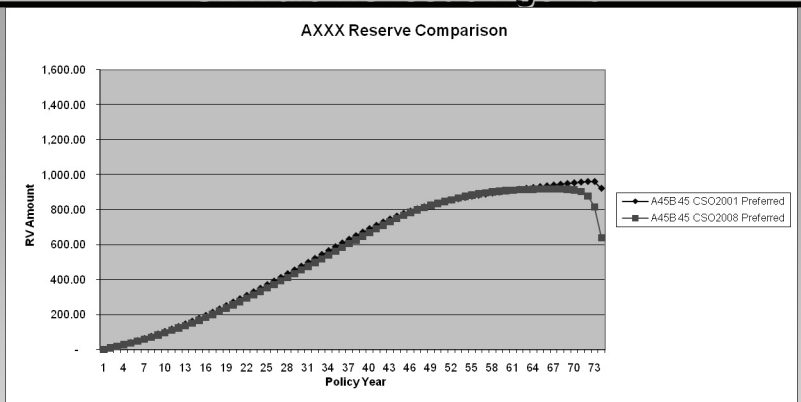

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	39.06	102.74	270.58	476.17
2008 CSO	0	36.37	95.72	255.70	454.76

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Comparison of Reserves per 1,000
2001 CSO Preferred vs. 2008 CSO RR90
UL Male NS Issue Age 45

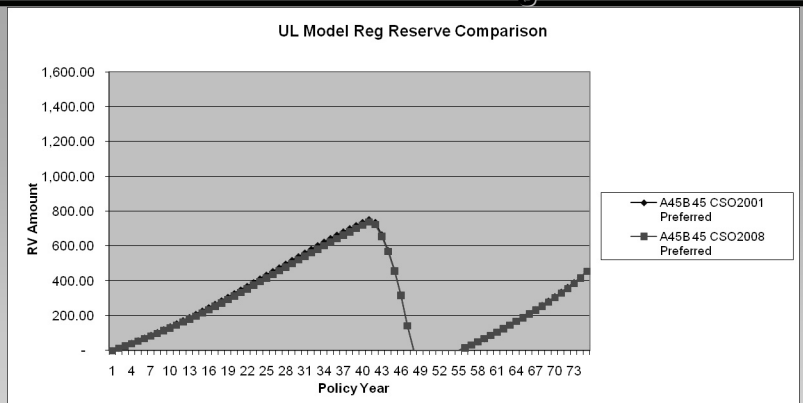

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	57.09	137.32	326.86	538.77
2008 CSO	0	54.08	130.20	313.17	520.38

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September 21, 2009

Comparison of Reserves per 1,000
2001 CSO Preferred vs. 2008 CSO RR90
UL Male NS Issue Age 75

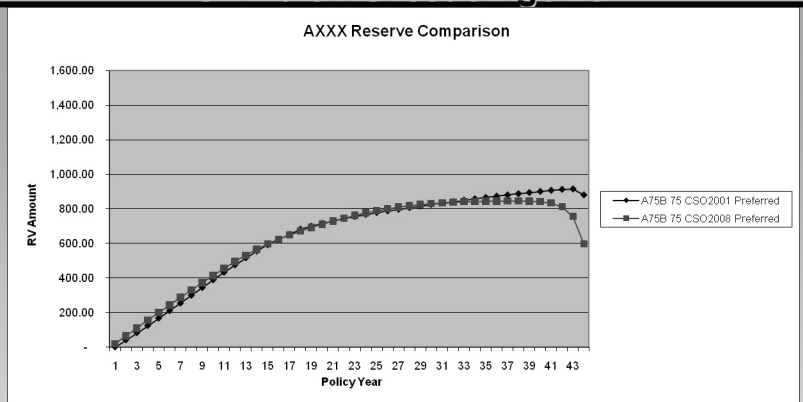

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	166.85	389.09	715.68	824.96
2008 CSO	20.16	200.34	414.50	711.09	830.51

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Comparison of Reserves per 1,000
2001 CSO Preferred vs. 2008 CSO RR90
UL Male NS Issue Age 75

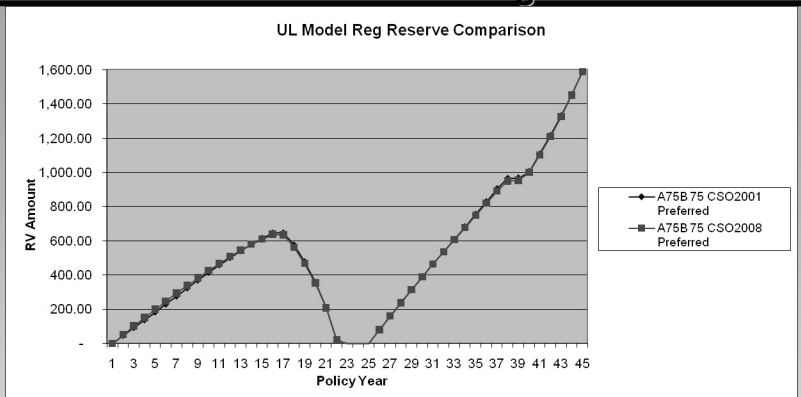

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	184.26	415.94	358.54	388.79
2008 CSO	0	199.77	426.63	353.31	389.59

Comparison of Reserves per 1,000
2001 CSO Super-Pref vs. 2008 CSO RR70
UL Male NS Issue Age 45

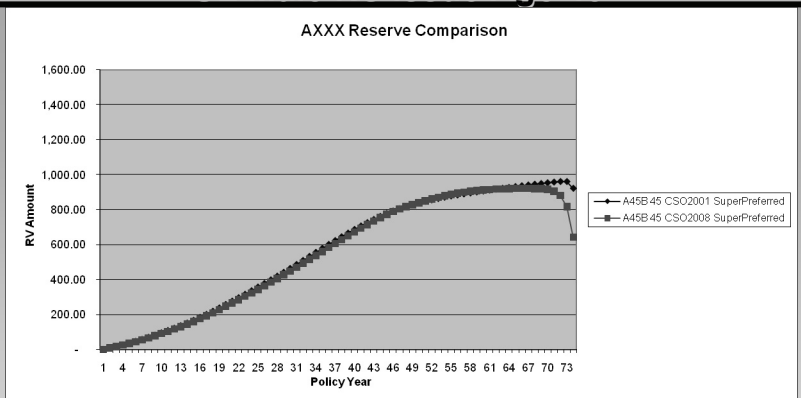

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	35.82	95.14	257.50	463.69
2008 CSO	0	34.12	90.52	246.53	448.30

Comparison of Reserves per 1,000
2001 CSO Super-Pref vs. 2008 CSO RR70
UL Male NS Issue Age 45

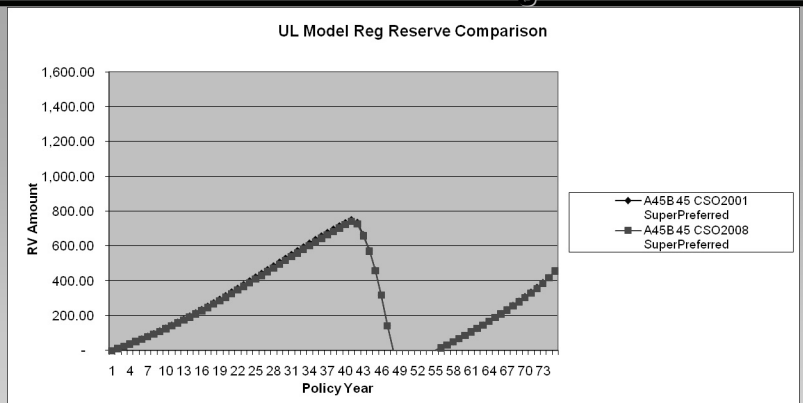

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	53.73	130.14	315.89	529.44
2008 CSO	0	51.80	125.39	305.71	516.19

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Comparison of Reserves per 1,000
2001 CSO Super-Pref vs. 2008 CSO RR70
UL Male NS Issue Age 75

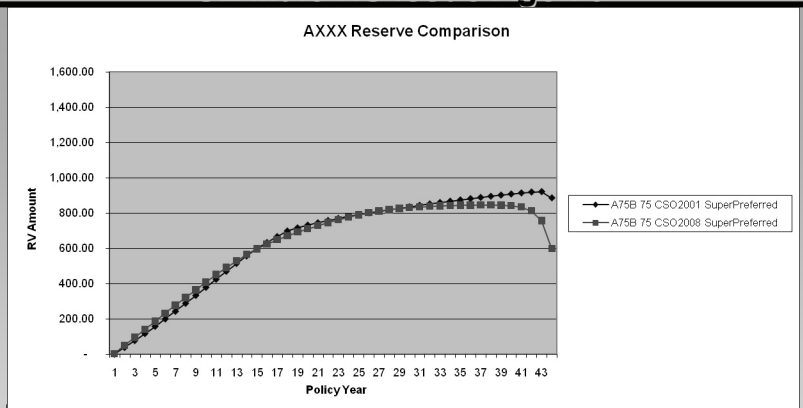

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	158.15	378.91	731.59	835.52
2008 CSO	4.33	187.14	408.55	711.09	830.51

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Comparison of Reserves per 1,000
2001 CSO Super-Pref vs. 2008 CSO RR70
UL Male NS Issue Age 75

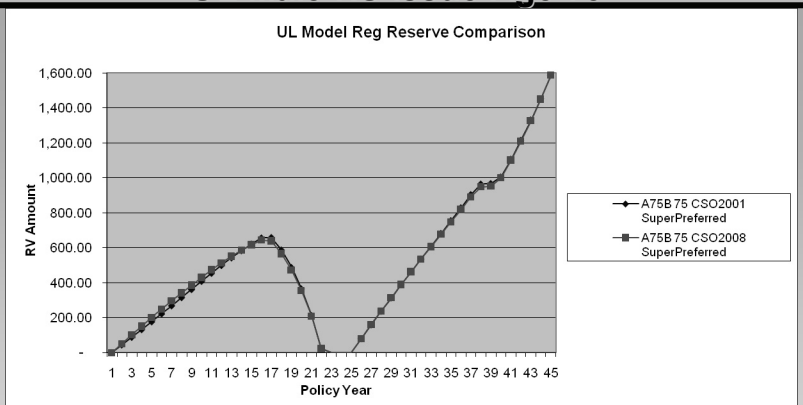

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	176.72	408.19	365.39	388.79
2008 CSO	0	200.26	430.98	355.54	389.59

Comparison of Reserves per 1,000
2001 CSO Residual vs. 2008 CSO RR130
UL Male NS Issue Age 45

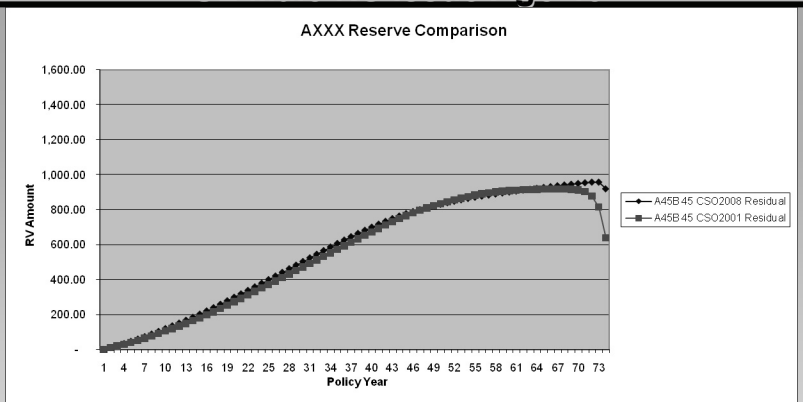

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	46.36	119.61	299.31	503.83
2008 CSO	0	40.26	104.84	272.91	470.83

Comparison of Reserves per 1,000
2001 CSO Residual vs. 2008 CSO RR130
UL Male NS Issue Age 45

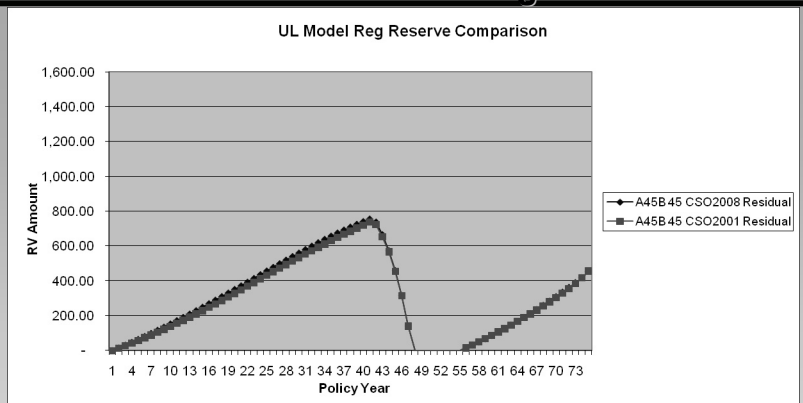

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	64.66	153.33	351.19	559.85
2008 CSO	0	58.14	138.89	327.81	532.34

Comparison of Reserves per 1,000
2001 CSO Residual vs. 2008 CSO RR130
UL Male NS Issue Age 75

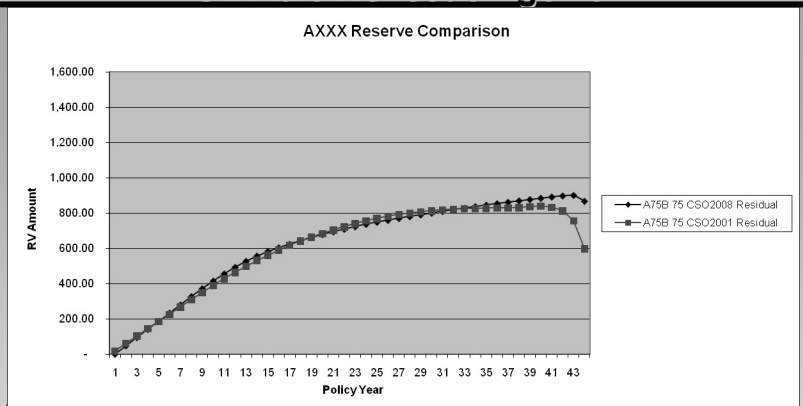

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	186.96	415.10	678.88	800.54
2008 CSO	19.34	185.37	388.88	684.83	813.77

Comparison of Reserves per 1,000
2001 CSO Residual vs. 2008 CSO RR130
UL Male NS Issue Age 75

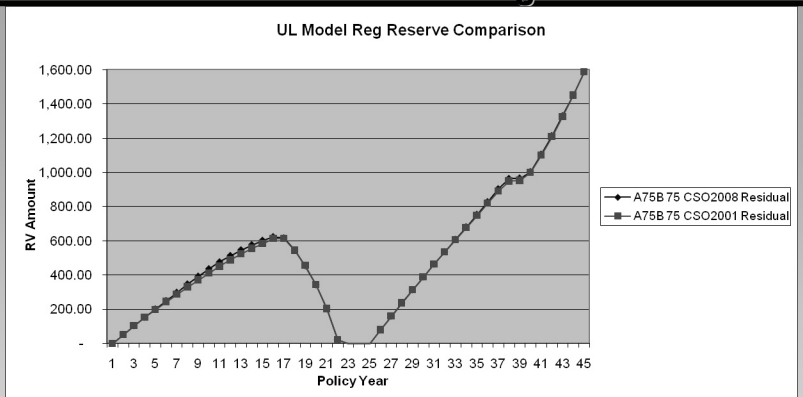

Table	Dur 1	Dur 5	Dur 10	Dur 20	Dur 30
2001 CSO	0	202.12	436.99	342.55	388.79
2008 CSO	0	198.78	412.32	345.07	389.59

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September 21, 2009

Appendix B

The following slides have been previously presented and discussed.

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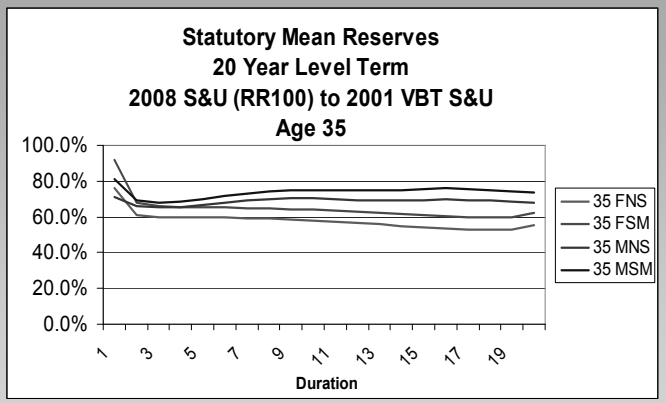
Valuation Table Team Update to LHATF
September 21, 2009

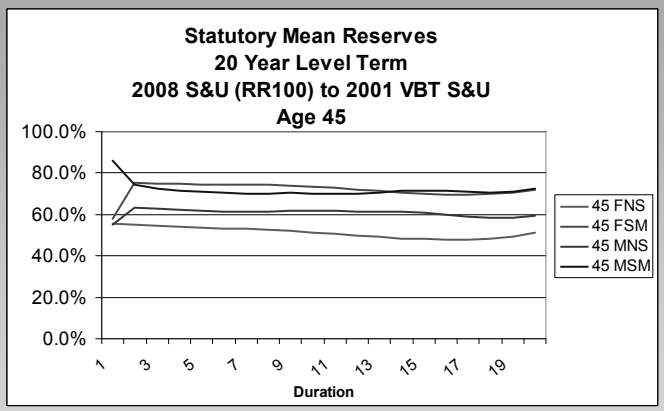
Comparison of Term Reserves

- The following slides show the testing results for CRVM reserves on a 20-year term product.
- Ratios are shown of reserves using the 2008 Basic Table to reserves using the 2001 Basic table.

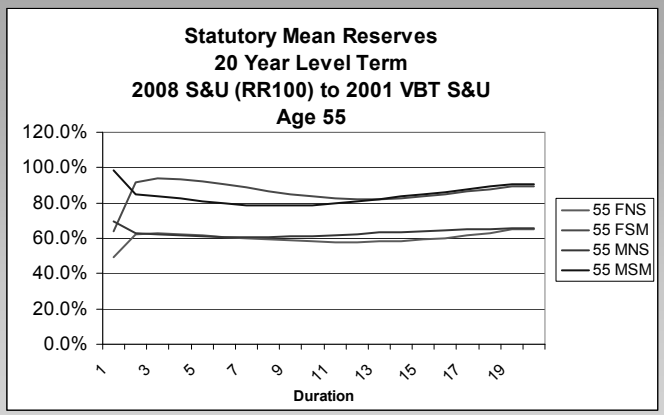
Testing Without Margins



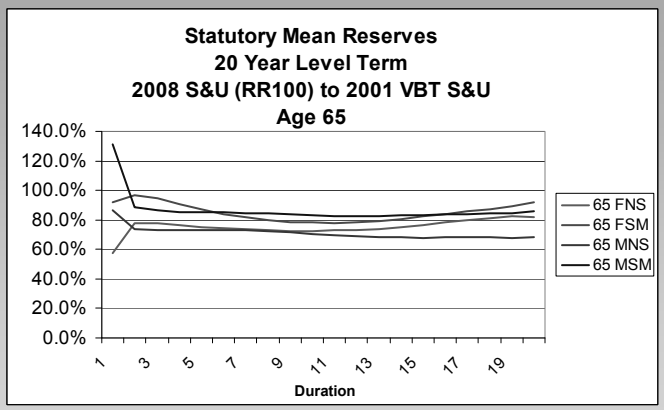
Testing Without Margins (cont'd):



Testing Without Margins (cont'd):



Testing Without Margins (cont'd):



Margins

- Specifications in VM-20
- Margin Considerations for 2001 Commissioners' Standard Ordinary Table (2001 CSO)
- Comparison of 2001 CSO Margin to Canada's guidelines
- Purposes of the margin
- Results of comparison of Test Valuation Table to contributing companies' experience
- Proposed loading formula

Section E.2.7 of VM-20

- Companies not meeting the minimum credibility level set the prudent (i.e., with margin) mortality assumption to the mortality rates in the commissioner's tables
- Companies with experience meeting the minimum credibility level set margin to provide for adverse deviation and estimation error plus uncertainty caused by situations including, but not limited to, the following:
  - Reliability of experience studies
  - Changes in underwriting
  - Non-homogeneous data
  - Unfavorable environmental or health developments
  - Market forces that may cause antiselection

Margin Considerations for 2001 CSO

- Reserves on loaded table should not be materially less than reserves using basic, select and ultimate mortality
- Terminal reserves on loaded table should not be significantly distorted compared with terminal reserves on basic table
- Consistency between males vs. females, smokers vs. nonsmokers, select vs. ultimate
- Should not result in unreasonable statutory premium deficiencies on term insurance plans
- Reserves and net premiums on the loaded table should not be excessive
- Margin should provide reasonable provision for possible future adverse mortality experience

Margin Considerations for 2001 CSO (cont'd)

- June 2001 presentation to LHATF
  - An average 20% margin was shown to cover mortality from at least 80% of contributing companies
  - Sample calculations on 20-year term indicated that an overall 10% mortality margin on formula reserves was roughly equivalent to 20% margin on economic reserves due to conservatism in other components of formula reserves
- LHATF recommended an overall 15% margin
- Loaded 2001 CSO table compared to mortality of contributing companies
  - Covered 15 of 21 companies (71%) in durations 1-15
  - Covered 14 of 14 companies (100%) in durations 1-25 (only these 14 companies had experience in durations 16-25)
  - Covered 11 of 14 companies (79%) in ultimate durations

Comparison of 2001 CSO Margin to Canada's Guidelines

Margins are in terms of extra deaths per thousand

- 2001 CSO formula is $(0.0056 – 0.00016x + 0.000008x^2)/e_x$
- Canada's guideline range is 3.75 to 15.00, divided by e_x
- Comparison of numerators

Attained Age	2001 CSO	Canada
25	10.2	3.75-15.00
45	21.1	3.75-15.00
65	38.4	3.75-15.00
85	62.0	3.75-15.00
105	92.1	3.75-15.00

Purposes of the Margin

- In its final report, the 2001 CSO Task Force discussed four purposes of mortality loads (margins):
  - Confidence of experience study – mortality should cover the "true" mortality underlying the experience study (the 1990-95 experience study was based on a large volume of data, so no margin was needed for this)
  - Variation among companies – the margin should be large enough to cover a large proportion of companies
  - Random fluctuation – margin should address random fluctuations caused by having a small number of exposures
  - Unknown variation – this covers one-time events (epidemics) and future trends (e.g., changes in general health conditions) – by definition, this cannot be quantified

Valuation Table Team's Analysis of Margins – Confidence of Experience Study

- The SOA's 2002-04 experience study has a large volume of data – no margin is needed to produce sufficient confidence for the aggregate 2008 VBT
- The selection of relative risk tables based on UCS scoring is based on less data than the SOA 2002-04 study
  - However, the relative risk table assignment is, to a large extent, a split of the aggregate basic table
  - Relative risk tables grade to the aggregate table at higher attained ages, so any difference would wear off in later durations
- The Valuation Table Team does not propose an explicit margin for confidence

Valuation Table Team's Analysis of Margins – Variation by Company

- At the request of the VTT a Test Valuation Table using the 2001 CSO loading formula applied to the 2008 VBT was compared to the experience of the companies that contributed to the study.
- Tentative adjustments were made to the VBT to accomplish this including the termination of the table at age 120 assuming a mortality rate of 100% and the creation of a "uni-smoke" table assuming 80% non-smokers and 20% smokers. In addition, the mortality improvements that were included in the 2008 VBT were backed out for this analysis.
- The results of the test run are shown in the following table

Valuation Table Team's Analysis of Margins – Variation by Company

Analysis of Companies Covered by Test Version of 2008 Valuation Table

Durations	1-10	11-25	26+	All
Total number of Contributors to VBT	35	32	23	35
Number of Contributors with at least 50 deaths	30	27	14	33
Number of Contributors Covered by Test Table	28	25	14	29
Percentage Covered	93%	93%	100%	88%
85% of Companies with at least 50 deaths	25.5	23	12	28
A/E for that 85% of Covered Companies	80.5%	89.3%	101.1%	85.1%

Two values averaged if .5 in Rank Value used.
Expected based on 2008 Test Valuation Table created using 2001 CSO Loading Formula.

Valuation Table Team's Analysis of Margins – Variation by Company

- The experience of companies with a small number of death claims was thought to fluctuate too much to be included in this analysis by number of companies.
- For the groups that exclude companies with either fewer than 100 or fewer than 50 death claims for the exposure period the targeted coverage of 85% of the companies in the reduced groups could be accomplished by about:
  - 80% of the test table for durations from issue of 1-10
  - 90% of the test table for durations from issue of 11-25
  - 100% of the test table for durations from issue of 26+
- It was noted that the Test Valuation Table placed a heavier load at the early durations following issue.
- The VTT felt that the mortality experience of a company would be more predictable immediately after underwriting and would be less predictable in later durations following issue.
- One component of the Test Valuation Table loading formula was therefore modified to consider duration since issue.

Valuation Table Team's Analysis of Margins – Variation by Company

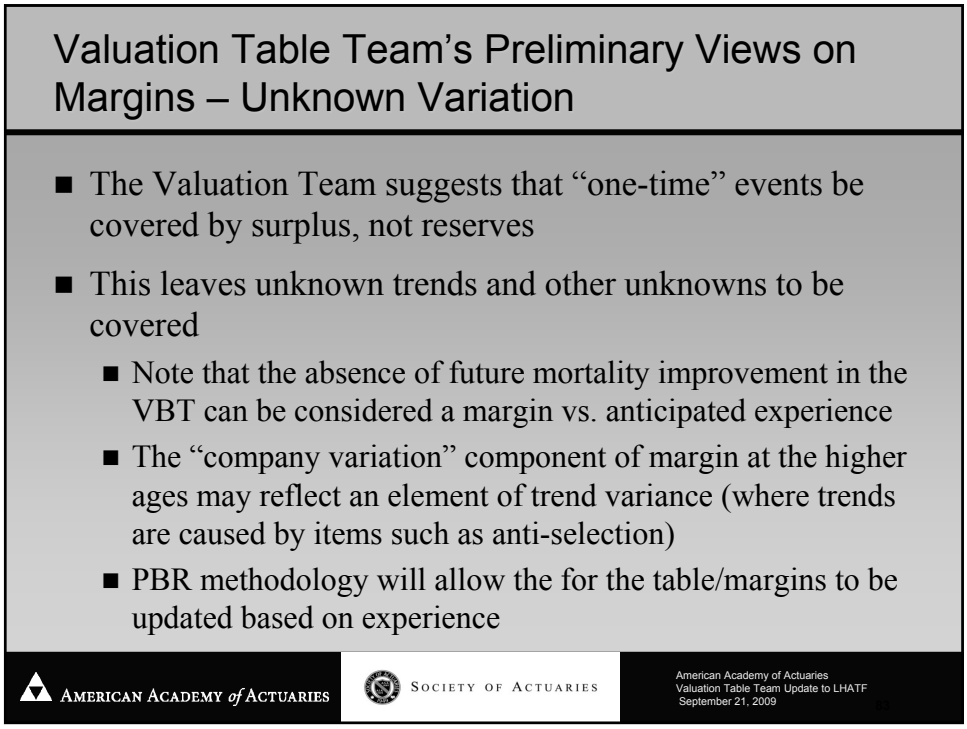
- If companies without credible experience use the proposed valuation table "as is," then the margin requirements would be a little heavier than the 2001 CSO table, i.e., they will cover 85% of the contributing companies versus the 80% coverage of the 2001 valuation table.
- Due to the select and ultimate nature of the 2008 VBT and the variation in the number of contributing companies by duration, the percentage of companies covered by the Test Valuation Table varied by duration from issue.
- The 2001 CSO and 1980 CSO loading formulae did not explicitly consider duration since issue because they were developed for ultimate valuation mortality.
- Formulae using the concept of a quantity divided by the curtate expectation of life were developed considering duration since issue and varying by duration groupings of 1-10, 11-25, and 26+.

Valuation Table Team's Analysis of Margins – Variation by Company

- Alternative loading formulae might look something like the following:
  - Durations 1-10 = $(.0021 - .00003*(x+t) + .0000006*t*(x+t)^2) / e_x$
  - Durations 11-25 = $(.0035 - .00004*(x+t) + .00000035*t*(x+t)^2) / e_x$
  - Durations 26+ = $(.0078 - .00016*(x+t) + .000009*(x+t)^2) / e_x$
- 2001 CSO formula is $(0.0056 – 0.00016(x+t) + 0.000008(x+t)^2)/e_x$
- The average percentage loads for the Male NS Primary Table would then be:
  - Durations 1-10 = 15.4%
  - Durations 11-25 = 17.3%
  - Durations 26+ = 20.0%
- The average 2001 CSO load was 15%.
- The loads were kept somewhat higher in moving from Durations 1-10 to Durations 11-25 in order to ensure continuity in mortality rate increases from year to year. The same issue was addressed in moving from Durations 11-25 to Durations 26+. In addition, the fact that a higher load appears desirable at these higher durations in order to cover those companies with less than credible contributed experience. Note that the final tables will also be graduated in order to ensure reasonable mortality rate patterns from year to year.

Valuation Table Team's Preliminary Views on Margins – Random Fluctuations

- The random fluctuation discussed in the 2001 CSO report considered a single year's experience
  - For PBR, we should consider the effects of random fluctuation on the present value of future mortality
  - "Present value" takes account of many years experience, so random fluctuation is reduced compared with a single year's experience
- It is not practical to have a valuation mortality table with loading that varies by the size of the block of business
- RBC factors for mortality are larger for smaller volumes
- Companies with credible mortality experience would need to perform an analysis of random fluctuations



Attachment: W:\sep09\tf\lha\AAA-SOA-VTT-Rpt-att.xls

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Conditional Tail Expectation
at Year 1

Term Block Age 45, Male $100,000 Face	Stochastic GPVAD		Ratio to Unloaded Table		Formulaic Reserve	Ratio to Unloaded Table	GPVAD / Formulaic
	CTE(70) GPVAD	CTE(99) GPVAD	CTE(70) GPVAD	CTE(99) GPVAD			
No Loading RR70	$ -	$ -			$ 10.30	100%	0%
No Loading RR90	$ -	$ -			$ 14.22	100%	0%
No Loading RR130	$ -	$ -			$ 205.12	100%	0%
Tim's Loading RR70	$ -	$ -			$ 12.72	123%	0%
Tim's Loading RR90	$ -	$ -			$ 16.70	117%	0%
Tim's Loading RR130	$ -	$ -			$ 900.55	439%	0%
3.75 Flat Extra RR70	$ -	$ -			$ 14.92	145%	0%
3.75 Flat Extra RR90	$ -	$ -			$ 18.95	133%	0%
3.75 Flat Extra RR130	$ -	$ -			$ 380.50	186%	0%
10% Load RR70	$ -	$ -			$ 11.33	110%	0%
10% Load RR90	$ -	$ -			$ 15.64	110%	0%
10% Load RR130	$ -	$ -			$ 601.63	293%	0%
20% Load RR70	$ -	$ -			$ 12.36	120%	0%
20% Load RR90	$ -	$ -			$ 17.06	120%	0%
20% Load RR130	$ -	$ 25.23			$ 995.92	486%	0%
MI RR70	$ -	$ -			$ 10.25	100%	0%
MI RR90	$ -	$ -			$ 14.15	100%	0%
MI RR130	$ -	$ -			$ 20.98	10%	0%

Conditional Tail Expectation
at Year 1

ULSG Block Age 45, Male $100,000 Face $0 Account Value	**Stochastic GPVAD**		**Ratio to Unloaded Table**		**Formulaic Reserve**	**Ratio to Unloaded Table**	**GPVAD / Formulaic**
	CTE(70) GPVAD	**CTE(99) GPVAD**	**CTE(70) GPVAD**	**CTE(99) GPVAD**			
No Loading RR70	$ -	$ 669.56		100%	$ 10.30	100%	0%
No Loading RR90	$ -	$ 1,437.65		100%	$ 14.22	100%	0%
No Loading RR130	$ 1,097.54	$ 2,472.04	100%	100%	$ 21.08	100%	5207%
Tim's Loading RR70	$ 20.41	$ 1,576.51		235%	$ 12.72	123%	160%
Tim's Loading RR90	$ 694.46	$ 2,219.09		154%	$ 16.70	117%	4158%
Tim's Loading RR130	$ 1,793.48	$ 3,249.15	163%	131%	$ 23.67	112%	7577%
3.75 Flat Extra RR70	$ -	$ 768.27		115%	$ 14.92	145%	0%
3.75 Flat Extra RR90	$ 86.12	$ 1,621.58		113%	$ 18.95	133%	454%
3.75 Flat Extra RR130	$ 1,222.24	$ 2,728.41	111%	110%	$ 26.03	123%	4696%
10% Load RR70	$ -	$ 1,078.84		161%	$ 11.33	110%	0%
10% Load RR90	$ 362.98	$ 1,834.08		128%	$ 15.64	110%	2321%
10% Load RR130	$ 1,554.38	$ 3,017.36	142%	122%	$ 23.19	110%	6703%
20% Load RR70	$ -	$ 1,516.55		226%	$ 12.36	120%	0%
20% Load RR90	$ 734.75	$ 2,121.90		148%	$ 17.06	120%	4307%
20% Load RR130	$ 2,020.00	$ 3,616.49	184%	146%	$ 25.30	120%	7984%
MI RR70	$ -	$ 323.55		48%	$ 10.25	100%	0%
MI RR90	$ -	$ 940.72		65%	$ 14.15	100%	0%
MI RR130	$ 690.91	$ 2,189.47	63%	89%	$ 20.98	100%	3293%

Conditional Tail Expectation
at Year 5

Term Block Age 45, Male $100,000 Face	Stochastic GPVAD		Ratio to Unloaded Table		Formulaic Reserve	Ratio to Unloaded Table	GPVAD / Formulaic
	CTE(70) GPVAD	CTE(99) GPVAD	CTE(70) GPVAD	CTE(99) GPVAD			
No Loading RR70	$ -	$ -			$ 516.93	100%	0%
No Loading RR90	$ -	$ -			$ 679.89	100%	0%
No Loading RR130	$ 370.59	$ 411.12	100%	100%	$ 1,103.68	100%	34%
Tim's Loading RR70	$ -	$ -			$ 678.13	131%	0%
Tim's Loading RR90	$ 28.74	$ 80.42			$ 845.49	124%	3%
Tim's Loading RR130	$ 745.74	$ 822.50	201%	200%	$ 1,862.71	169%	40%
3.75 Flat Extra RR70	$ -	$ -			$ 531.62	103%	0%
3.75 Flat Extra RR90	$ -	$ -			$ 695.05	102%	0%
3.75 Flat Extra RR130	$ 487.85	$ 547.52	132%	133%	$ 1,263.78	115%	39%
10% Load RR70	$ -	$ -			$ 568.19	110%	0%
10% Load RR90	$ -	$ -			$ 747.13	110%	0%
10% Load RR130	$ 635.50	$ 711.23	171%	173%	$ 1,530.09	139%	42%
20% Load RR70	$ -	$ -			$ 619.37	120%	0%
20% Load RR90	$ -	$ 2.26			$ 814.24	120%	0%
20% Load RR130	$ 802.27	$ 900.26	216%	219%	$ 1,954.22	177%	41%
MI RR70	$ -	$ -			$ 474.48	92%	0%
MI RR90	$ -	$ -			$ 624.07	92%	0%
MI RR130	$ 207.04	$ 267.78	56%	65%	$ 870.50	79%	24%

ULSG Block
Age 45, Male

$100,000 Face
$0 Account Value

	Stochastic GPVAD		Ratio to Unloaded Table		Formulaic Reserve	Ratio to Unloaded Table	GPVAD / Formulaic
	CTE(70) GPVAD	CTE(99) GPVAD	CTE(70) GPVAD	CTE(99) GPVAD			
No Loading RR70	$ 1,714.69	$ 3,539.09	100%	100%	$ 3,035.26	100%	56%
No Loading RR90	$ 2,616.37	$ 4,369.16	100%	100%	$ 3,263.31	100%	80%
No Loading RR130	$ 3,952.45	$ 5,709.96	100%	100%	$ 3,657.61	100%	108%
Tim's Loading RR70	$ 2,739.05	$ 4,542.66	160%	128%	$ 3,319.87	109%	83%
Tim's Loading RR90	$ 3,555.97	$ 5,422.75	136%	124%	$ 3,547.80	109%	100%
Tim's Loading RR130	$ 4,949.46	$ 6,991.07	125%	122%	$ 3,942.50	108%	126%
3.75 Flat Extra RR70	$ 1,825.57	$ 3,525.25	106%	100%	$ 3,050.94	101%	60%
3.75 Flat Extra RR90	$ 2,759.22	$ 4,590.58	105%	105%	$ 3,279.03	100%	84%
3.75 Flat Extra RR130	$ 4,072.01	$ 6,035.62	103%	106%	$ 3,673.47	100%	111%
10% Load RR70	$ 2,189.85	$ 3,989.29	128%	113%	$ 3,175.94	105%	69%
10% Load RR90	$ 3,176.51	$ 5,042.09	121%	115%	$ 3,421.29	105%	93%
10% Load RR130	$ 4,591.11	$ 6,583.14	116%	115%	$ 3,843.04	105%	119%
20% Load RR70	$ 2,707.89	$ 4,599.38	158%	130%	$ 3,309.48	109%	82%
20% Load RR90	$ 3,620.39	$ 5,497.04	138%	126%	$ 3,571.59	109%	101%
20% Load RR130	$ 5,195.94	$ 7,217.11	131%	126%	$ 4,019.65	110%	129%
MI RR70	$ 1,247.26	$ 2,959.80	73%	84%	$ 2,885.92	95%	43%
MI RR90	$ 2,046.60	$ 3,832.34	78%	88%	$ 3,094.83	95%	66%
MI RR130	$ 3,439.71	$ 5,233.52	87%	92%	$ 3,457.97	95%	99%

Conditional Tail Expectation
at Year 10

Term Block Age 45, Male $100,000 Face	Stochastic GPVAD		Ratio to Unloaded Table		Formulaic Reserve	Ratio to Unloaded Table	GPVAD / Formulaic
	CTE(70) GPVAD	CTE(99) GPVAD	CTE(70) GPVAD	CTE(99) GPVAD			
No Loading RR70	$ -	$ -			$ 993.58	100%	0%
No Loading RR90	$ 361.51	$ 380.63	100%	100%	$ 1,293.90	100%	28%
No Loading RR130	$ 1,136.60	$ 1,201.16	100%	100%	$ 1,900.88	100%	60%
Tim's Loading RR70	$ 273.48	$ 305.20			$ 1,255.19	126%	22%
Tim's Loading RR90	$ 854.89	$ 912.23	236%	240%	$ 1,563.17	121%	55%
Tim's Loading RR130	$ 1,638.20	$ 1,709.85	144%	142%	$ 2,611.88	137%	63%
3.75 Flat Extra RR70	$ -	$ -			$ 1,016.48	102%	0%
3.75 Flat Extra RR90	$ 463.65	$ 497.39	128%	131%	$ 1,317.61	102%	35%
3.75 Flat Extra RR130	$ 644.67	$ 823.96	57%	69%	$ 2,031.29	107%	32%
10% Load RR70	$ -	$ 6.88			$ 1,092.21	110%	0%
10% Load RR90	$ 585.03	$ 623.58	162%	164%	$ 1,422.06	110%	41%
10% Load RR130	$ 1,381.21	$ 1,439.26	122%	120%	$ 2,320.15	122%	60%
20% Load RR70	$ 163.41	$ 184.64			$ 1,190.70	120%	14%
20% Load RR90	$ 764.55	$ 827.30	211%	217%	$ 1,550.00	120%	49%
20% Load RR130	$ 1,726.84	$ 1,800.85	152%	150%	$ 2,737.49	144%	63%
MI RR70	$ -	$ -			$ 903.45	91%	0%
MI RR90	$ 194.71	$ 222.69	54%	59%	$ 1,176.10	91%	17%
MI RR130	$ 996.77	$ 1,066.56	88%	89%	$ 1,624.32	85%	61%

Conditional Tail Expectation
at Year 10

ULSG Block Age 45, Male $100,000 Face $0 Account Value	**Stochastic GPVAD**		**Ratio to Unloaded Table**		**Formulaic Reserve**	**Ratio to Unloaded Table**	**GPVAD / Formulaic**
	CTE(70) GPVAD	**CTE(99) GPVAD**	**CTE(70) GPVAD**	**CTE(99) GPVAD**			
No Loading RR70	$ 6,172.90	$ 8,801.20	100%	100%	$ 8,143.81	100%	76%
No Loading RR90	$ 7,301.70	$ 9,780.70	100%	100%	$ 8,669.17	100%	84%
No Loading RR130	$ 8,594.40	$ 11,054.50	100%	100%	$ 9,587.43	100%	90%
Tim's Loading RR70	$ 7,497.90	$ 10,035.30	121%	114%	$ 8,791.07	108%	85%
Tim's Loading RR90	$ 8,365.90	$ 10,853.10	115%	111%	$ 9,313.39	107%	90%
Tim's Loading RR130	$ 9,875.30	$ 11,865.80	115%	107%	$ 10,227.48	107%	97%
3.75 Flat Extra RR70	$ 6,225.70	$ 8,630.70	101%	98%	$ 8,174.04	100%	76%
3.75 Flat Extra RR90	$ 7,494.90	$ 10,054.80	103%	103%	$ 8,699.23	100%	86%
3.75 Flat Extra RR130	$ 8,861.30	$ 11,011.30	103%	100%	$ 9,617.34	100%	92%
10% Load RR70	$ 6,824.30	$ 9,403.40	111%	107%	$ 8,506.07	104%	80%
10% Load RR90	$ 7,914.30	$ 10,390.20	108%	106%	$ 9,069.36	105%	87%
10% Load RR130	$ 9,496.10	$ 11,554.40	110%	105%	$ 10,047.47	105%	95%
20% Load RR70	$ 7,507.20	$ 10,217.40	122%	116%	$ 8,848.66	109%	85%
20% Load RR90	$ 8,522.40	$ 10,999.60	117%	112%	$ 9,448.40	109%	90%
20% Load RR130	$ 10,068.30	$ 12,684.80	117%	115%	$ 10,483.37	109%	96%
MI RR70	$ 5,424.00	$ 7,702.80	88%	88%	$ 7,743.38	95%	70%
MI RR90	$ 6,487.00	$ 8,914.20	89%	91%	$ 8,220.81	95%	79%
MI RR130	$ 8,066.60	$ 10,410.50	94%	94%	$ 9,060.92	95%	89%

Conditional Tail Expectation
at Year 15

Term Block Age 45, Male $100,000 Face	Stochastic GPVAD		Ratio to Unloaded Table		Formulaic Reserve	Ratio to Unloaded Table	GPVAD / Formulaic
	CTE(70) GPVAD	CTE(99) GPVAD	CTE(70) GPVAD	CTE(99) GPVAD			
No Loading RR70	$ 358.00	$ 368.99	100%	100%	$ 1,032.39	100%	35%
No Loading RR90	$ 771.83	$ 787.89	100%	100%	$ 1,327.77	100%	58%
No Loading RR130	$ 1,520.18	$ 1,550.51	100%	100%	$ 1,877.51	100%	81%
Tim's Loading RR70	$ 742.89	$ 758.52	208%	206%	$ 1,320.49	128%	56%
Tim's Loading RR90	$ 1,210.91	$ 1,235.70	157%	157%	$ 1,625.07	122%	75%
Tim's Loading RR130	$ 1,978.42	$ 2,017.55	130%	130%	$ 2,428.63	129%	81%
3.75 Flat Extra RR70	$ 403.26	$ 413.87	113%	112%	$ 1,055.25	102%	38%
3.75 Flat Extra RR90	$ 839.97	$ 857.36	109%	109%	$ 1,351.52	102%	62%
3.75 Flat Extra RR130	$ 1,590.73	$ 1,622.31	105%	105%	$ 1,961.03	104%	81%
10% Load RR70	$ 432.84	$ 444.49	121%	120%	$ 1,135.25	110%	38%
10% Load RR90	$ 964.57	$ 984.52	125%	125%	$ 1,459.94	110%	66%
10% Load RR130	$ 1,783.02	$ 1,818.27	117%	117%	$ 2,191.99	117%	81%
20% Load RR70	$ 606.52	$ 619.37	169%	168%	$ 1,238.03	120%	49%
20% Load RR90	$ 1,155.72	$ 1,179.34	150%	150%	$ 1,592.00	120%	73%
20% Load RR130	$ 2,044.91	$ 2,085.05	135%	134%	$ 2,505.57	133%	82%
MI RR70	$ 233.24	$ 243.32	65%	66%	$ 929.53	90%	25%
MI RR90	$ 606.25	$ 619.01	79%	79%	$ 1,194.57	90%	51%
MI RR130	$ 1,296.31	$ 1,322.22	85%	85%	$ 1,631.73	87%	79%

Conditional Tail Expectation
at Year 15

ULSG Block
Age 45, Male

$100,000 Face
$0 Account Value

	Stochastic GPVAD		Ratio to Unloaded Table		Formulaic Reserve	Ratio to Unloaded Table	GPVAD / Formulaic
	CTE(70) GPVAD	CTE(99) GPVAD	CTE(70) GPVAD	CTE(99) GPVAD			
No Loading RR70	$ 12,027.10	$ 15,172.70	100%	100%	$ 14,487.13	100%	83%
No Loading RR90	$ 13,607.30	$ 16,672.40	100%	100%	$ 15,255.86	100%	89%
No Loading RR130	$ 14,032.20	$ 17,206.90	100%	100%	$ 16,630.76	100%	84%
Tim's Loading RR70	$ 13,996.80	$ 17,019.70	116%	112%	$ 15,539.31	107%	90%
Tim's Loading RR90	$ 15,163.20	$ 18,096.80	111%	109%	$ 16,301.51	107%	93%
Tim's Loading RR130	$ 16,925.20	$ 19,639.10	121%	114%	$ 17,666.28	106%	96%
3.75 Flat Extra RR70	$ 12,503.00	$ 15,352.10	104%	101%	$ 14,530.71	100%	86%
3.75 Flat Extra RR90	$ 13,488.70	$ 15,886.60	99%	95%	$ 15,298.97	100%	88%
3.75 Flat Extra RR130	$ 15,298.30	$ 18,105.80	109%	105%	$ 16,673.26	100%	92%
10% Load RR70	$ 13,161.40	$ 15,995.70	109%	105%	$ 15,100.58	104%	87%
10% Load RR90	$ 13,861.40	$ 16,635.90	102%	100%	$ 15,921.45	104%	87%
10% Load RR130	$ 16,351.70	$ 19,123.20	117%	111%	$ 17,379.06	104%	94%
20% Load RR70	$ 13,656.20	$ 16,334.00	114%	108%	$ 15,678.06	108%	87%
20% Load RR90	$ 15,012.40	$ 17,995.80	110%	108%	$ 16,548.63	108%	91%
20% Load RR130	$ 15,544.80	$ 19,210.50	111%	112%	$ 18,083.94	109%	86%
MI RR70	$ 11,464.70	$ 14,428.80	95%	95%	$ 13,789.46	95%	83%
MI RR90	$ 12,376.70	$ 14,735.40	91%	88%	$ 14,483.69	95%	85%
MI RR130	$ 14,522.10	$ 17,373.50	103%	101%	$ 15,736.05	95%	92%

Conditional Tail Expectation
at Year 20

Term Block Age 45, Male $100,000 Face	Stochastic GPVAD		Ratio to Unloaded Table		Formulaic Reserve	Ratio to Unloaded Table	GPVAD / Formulaic
	CTE(70) GPVAD	CTE(99) GPVAD	CTE(70) GPVAD	CTE(99) GPVAD			
No Loading RR70	$ 245.66	$ 246.05	100%	100%	$ 224.08	100%	110%
No Loading RR90	$ 311.22	$ 311.75	100%	100%	$ 289.29	100%	108%
No Loading RR130	$ 419.11	$ 419.82	100%	100%	$ 396.67	100%	106%
Tim's Loading RR70	$ 312.96	$ 313.51	127%	127%	$ 291.02	130%	108%
Tim's Loading RR90	$ 380.71	$ 381.34	122%	122%	$ 358.44	124%	106%
Tim's Loading RR130	$ 492.90	$ 493.73	118%	118%	$ 470.17	119%	105%
3.75 Flat Extra RR70	$ 254.18	$ 254.62	103%	103%	$ 232.55	104%	109%
3.75 Flat Extra RR90	$ 320.02	$ 320.54	103%	103%	$ 298.05	103%	107%
3.75 Flat Extra RR130	$ 428.45	$ 429.18	102%	102%	$ 405.98	102%	106%
10% Load RR70	$ 268.19	$ 268.65	109%	109%	$ 246.48	110%	109%
10% Load RR90	$ 340.29	$ 340.86	109%	109%	$ 318.22	110%	107%
10% Load RR130	$ 458.93	$ 459.76	110%	110%	$ 436.34	110%	105%
20% Load RR70	$ 290.71	$ 291.22	118%	118%	$ 268.89	120%	108%
20% Load RR90	$ 369.37	$ 369.96	119%	119%	$ 347.15	120%	106%
20% Load RR130	$ 498.76	$ 499.58	119%	119%	$ 476.00	120%	105%
MI RR70	$ 224.16	$ 224.60	91%	91%	$ 202.70	90%	111%
MI RR90	$ 283.48	$ 284.00	91%	91%	$ 261.69	90%	108%
MI RR130	$ 381.10	$ 381.77	91%	91%	$ 358.83	90%	106%

Conditional Tail Expectation
at Year 20

ULSG Block
Age 45, Male

$100,000 Face
$0 Account Value

	Stochastic GPVAD		Ratio to Unloaded Table		Formulaic Reserve	Ratio to Unloaded Table	GPVAD / Formulaic
	CTE(70) GPVAD	CTE(99) GPVAD	CTE(70) GPVAD	CTE(99) GPVAD			
No Loading RR70	$ 21,530.80	$ 25,111.30	100%	100%	$ 22,634.72	100%	95%
No Loading RR90	$ 22,472.70	$ 26,034.20	100%	100%	$ 23,581.83	100%	95%
No Loading RR130	$ 25,667.70	$ 29,569.00	100%	100%	$ 25,342.74	100%	101%
Tim's Loading RR70	$ 23,443.30	$ 26,961.80	109%	107%	$ 24,069.24	106%	97%
Tim's Loading RR90	$ 23,920.80	$ 28,050.40	106%	108%	$ 25,005.33	106%	96%
Tim's Loading RR130	$ 24,858.40	$ 28,162.80	97%	95%	$ 26,747.03	106%	93%
3.75 Flat Extra RR70	$ 21,143.40	$ 24,845.90	98%	99%	$ 22,690.28	100%	93%
3.75 Flat Extra RR90	$ 23,249.20	$ 26,751.20	103%	103%	$ 23,636.60	100%	98%
3.75 Flat Extra RR130	$ 21,773.60	$ 25,313.30	85%	86%	$ 25,396.31	100%	86%
10% Load RR70	$ 22,484.40	$ 26,173.40	104%	104%	$ 23,540.33	104%	96%
10% Load RR90	$ 24,255.60	$ 28,021.10	108%	108%	$ 24,547.29	104%	99%
10% Load RR130	$ 21,634.80	$ 24,373.70	84%	82%	$ 26,405.13	104%	82%
20% Load RR70	$ 19,600.10	$ 26,156.30	91%	104%	$ 24,388.50	108%	80%
20% Load RR90	$ 25,578.70	$ 29,776.50	114%	114%	$ 25,451.99	108%	100%
20% Load RR130	$ 25,716.60	$ 29,082.30	100%	98%	$ 27,399.71	108%	94%
MI RR70	$ 19,185.70	$ 22,679.60	89%	90%	$ 21,594.20	95%	89%
MI RR90	$ 18,513.20	$ 23,859.90	82%	92%	$ 22,447.19	95%	82%
MI RR130	$ 21,567.80	$ 26,094.40	84%	88%	$ 24,049.67	95%	90%

AMERICAN ACADEMY *of* ACTUARIES

SOCIETY OF ACTUARIES

July 28, 2009

Mr. Larry Bruning, Chair
Life and Health Actuarial Task Force
National Association of Insurance Commissioners

Re: May 20, 2009, ACLI Comment Letter on the 2008 VBT Table

Dear Larry,

Recently, comments were provided to LHATF by the American Council of Life Insurers (ACLI) expressing its concerns related to the construction and proposed use of the 2008 VBT tables under the principle-based approach now in development by the NAIC (referred throughout this correspondence as "PBA"). The 2008 VBT tables were designed to serve multiple purposes. First, they represent industry individual life mortality experience and are the first attempt to develop tables that classify or stratify the risks into multiple classes beyond smoker and nonsmoker. They are also designed to become the basis for the valuation tables to be used in PBA.

This letter attempts to address the concerns expressed by the ACLI regarding the development of the 2008 VBT Tables only. No attempt is made to address how the tables are proposed to be used in PBA, as comments regarding their use within PBA regulation is the purview of the NAIC and not the Valuation Basic Table Team (VBT Team) responsible for the table development. The intention is not to go back and "fix" the 2008 VBT Tables, but rather, to use the comments as constructive feedback and consideration for development of future industry experience tables that will be part of PBA.

1.) Structure of tables to accommodate juvenile ages.

The originally published 2008 VBT Tables treat juvenile-aged insureds as the same smoking class until attainment of age 18, at which point, the rates are blended into the smoker and nonsmoker distinct tables. The ACLI expressed concern that the migration of juvenile rates to a smoker/nonsmoker distinct rate class was inconsistent with the way in which many of its member companies treat juvenile rates and that an aggregate, uni-smoke table would be more appropriate.

Subsequent to publication of the original 2008 VBT Tables and report, the VBT Team developed aggregate, uni-smoke tables. The interim tables are available on the SOA website. Companies will be able to select the rate class structure that best aligns with their business practices for juvenile risks.

2.) Additional RR Table development at lower relative risk levels than RR70.

The 2008 VBT Relative Risk Tables (RR Tables) were developed to reflect the range of preferred mortality in the underlying 2002 to 2004 individual life experience study performed by the SOA. The VBT Team looked at individual companies' underwriting criteria scores (UCS) and then used an algorithm to convert these underwriting criteria scores to relative risk scores. We then looked for groupings or natural clusters of relative risk scores. The first relative risk score with sufficient credibility was RR70, the lowest level in the current tables. As these are to represent industry experience tables, the VBT Team felt it was important to have enough mortality experience within each cluster to maintain credibility. The VBT Team agrees that there is a need for RR tables that reflect better mortality experience than the RR70, but believes the tables should be expanded as the experience warrants, and this will be taken into consideration in future table development.

3.) Alternative structure utilizing a single table with an algorithm to adjust rates to reflect various risk classes rather than individual RR Tables.

The VBT Team's objective was to develop tables that were best reflective of industry experience and that were as simple as conceptually possible without sacrificing accuracy. There are challenges with any approach. One challenge with a single

algorithm is that it makes maintaining appropriate relationships between tables very cumbersome. It is unlikely a single algorithm can be developed to effectively take into consideration the wear-off of preferred underwriting and convergence of risk classes into population or some other aggregate mortality level at later attained ages, while still maintaining appropriate age and duration relationships and smoothness of rates. Even with the separate tables, considerable time was spent to ensure appropriate relationships were maintained.

4.) Grading to an ultimate table at the same attained age.

The ACLI suggests it may be inappropriate to grade all preferred risk classes to the same ultimate table at the same attained age. Within the 2008 VBT Tables, the preferred distinctions wear-off by attained age 90 and eventually grade to the population mortality by attained age 105 for males and 107 for females. The ACLI also suggests that this structure may result in illogical reserve patterns at advanced ages.

The VBT Team deliberated the appropriate age in which to converge the various preferred risk classes and there was not total agreement among the group as to the most appropriate age. Unfortunately, there is very little credible preferred mortality experience at the more advanced ages, making any argument as to the most appropriate age difficult to support. The VBT Team does feel strongly that, until experience says otherwise, it makes sense that mortality converge at some age and that at the most advanced ages, insured life mortality converge with population mortality.

The VBT Team did a lot of research with respect to the ultimate mortality level that was most appropriate and with respect to the age at which there was no longer a difference between insured mortality and population mortality. While there is no credible experience (population or insured) at the most advanced ages, the VBT Team believed the population mortality reflected in the Social Security Administration data was the most appropriate for purposes of the VBT.

We recommend this continue to be an area researched and refined in future industry mortality table development as more experience emerges.

5.) A.) Business included in older age experience and use of CPI rather than average face amount.

The ACLI notes that not all business subject to "full underwriting" was considered in the table development. It suggests that thresholds based on average face amounts rather than CPI factors may have been more appropriate in determining "full underwriting" equivalency to $100,000 for older blocks of underwritten business. The VBT Team reviewed the levels determined using average face amount and did not believe the results would have been materially different from those determined using the CPI. One complicating factor was the split of tables and mortality experience into the Limited Underwriting and Primary Tables. In trying to keep the underlying mortality experience unique for each table, some of the lower face amount experience was included in the Limited Underwriting Table rather than the Primary Table.

B.) ILEC data demonstrated insured mortality significantly below population mortality regardless of the level of underwriting.

The VBT Team agrees that the underlying experience data did show a lower mortality level than the population mortality. However, there was also limited mortality experience at the most advanced ages, regardless of face amount and risk class. The mortality in the 2008 VBT does not reach 100% of the population mortality until attained age 105 for male risks and 107 for female risks. Currently, there is no credible level of mortality experience at the most advanced ages. Even the Social Security Administration mortality experience is only credible to age 95, with projections used thereafter. In our judgment, grading to population mortality in the early 100s may be conservative; however, we do not have sufficient experience to know for certain.

The VBT Team has requested that the experience analysis team more closely look at the attained age data above age 100 and that this assumption continue to be refined in future mortality table development as more experience emerges.

6.) Lack of a terminal age.

The ACLI recommends the valuation basic tables be developed with a terminal age at which the mortality rate is defined as 100%.

The valuation basic tables are used for many purposes, including as an underlying basis for company experience studies, individual pricing, reinsurance pricing, etc. Recent mortality research suggests that using a forced terminal age may not be appropriate and that at some age, the mortality rate continues as a constant rate, rather than continuing to increase. One of the intentions of the valuation basic tables was to best reflect insurance mortality experience. It was always recognized and communicated with the regulators that, while a terminal age may not make sense for an experience table, it is necessary when considering a valuation table for developing reserves and cash values. As such, we do not recommend that a terminal age be used in future industry experience mortality tables (i.e., valuation basic tables) but do concur in their necessity in any valuation tables to be developed.

7.) Other factor consideration in the UCS scoring tool.

As the ACLI notes, there are many considerations in addition to specific underwriting requirements that affect a company's overall mortality experience, including how closely they hold to their underwriting requirements, quality of the agent, and customer demographics. Two companies with the same underwriting requirements can experience different mortality due to some of these other factors. The difficult part in any scoring tool is making it as objective as possible. Most, if not all, of these other factors and their impact on the resulting mortality level are subjective in nature and specific to an individual company. As such, they are not the type of items that can easily be quantified, collected, studied and incorporated into a UCS tool.

One possible suggestion in the use of the tables is to allow some judgment to use a higher or lower table depending upon the individual company circumstances, rather than rounding up to the next highest RR table. This would need to be incorporated into the PBA regulation and is not within the scope of the VBT Team.

The VBT Team does recommend performing more comparisons of the underlying mortality data based on relative preferred classes and that it continue to revisit and refine the UCS tool to the extent it is able. It will take a significant effort to do this on the 2002-2004 ILEC data. With limited resources, the VBT Team believes it would be prohibitively expensive to revisit this issue. However, new data is in the process of being collected and the VBT Team recommends this type of analysis be performed and incorporated into future experience analysis and table development.

8.) UCS scoring tool for debit/credit underwriting approaches.

The ACLI accurately notes that the current UCS scoring tool does not appropriately handle underwriting programs that utilize a debit/credit scoring approach to determine the rate class for an insured. A debit/credit scoring tool is in its final development and will be published in the near future. Other comments regarding the limitations of any UCS scoring tool aside (see comments under item 7), the release of this new tool should address these concerns.

On behalf of the VBT Team, we appreciate the ACLI's careful consideration of the 2008 VBT Tables. As noted throughout our reply, we will take these comments into consideration as future industry experience tables are developed.

Mary J. Bahna-Nolan
Chairperson, Joint Academy/SOA Valuation Basic Table Team

Cc: Jack Luff, SOA
Donna Claire, Chair, Academy/SOA Preferred Mortality POG
John Bruins, ACLI
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August 31, 2009

Mr. Larry Bruning, Chair
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Re: Future CSO Mortality Table Development Comments

Dear Larry

The ACLI is pleased to submit the following comments regarding future CSO mortality table development on behalf of our member companies. The American Council of Life Insurers represents 340 member companies operating in the United States, of which 332 are legal reserve life insurance companies, and 8 are fraternal benefit societies. These 340 member companies account for 93% of total life insurance company assets, 94% of the life insurance premiums, and 94% of annuity considerations in the United States.

At the June 2009 NAIC meeting LHATF decided not to pursue a 2008 CSO mortality table derived from the 2008 VBT mortality table. However, the task force indicated that there will likely be a need for a new CSO mortality table in the foreseeable future. The purpose of this letter is to describe the minimum requirements of such a new CSO mortality table and to provide some background for those requirements.

There are significant interrelationships between the laws, regulations and guidelines that apply to statutory valuation, state nonforfeiture requirements and the taxation of life insurance (both for life companies and policyowners); a new CSO mortality table should be designed to properly fit all of these purposes. Our intention in providing this letter to you now is to allow work on the next VBT mortality table to proceed as efficiently as possible.

It is important to understand what we mean by a CSO mortality table and its purposes. First, let us state what a CSO mortality table is not. It is not the mortality table used to calculate the deterministic and/or stochastic gross premium reserves associated with Life PBR; mortality tables similar to the 2008 VBT are appropriate for this purpose with or without a separate and distinct loading formula. (Note: see ACLI letter to Jack Luff, May 20, 2009.) However, it is contemplated that the Net Premium Reserve component of Life PBR will use a prescribed Commissioner's Standard Ordinary mortality table. Thus, even under Life PBR, it is intended that a CSO mortality table will be used for the same purposes as today, namely: Net Premium Statutory Reserves, Net Premium Reserves for Federal Taxes under IRC 807(d), minimum nonforfeiture benefit calculations and as a safe harbor for policyowner tax calculations under IRC 7702 & 7702A. It is important to recognize that the same mortality table (including the same set of mortality sub-tables) needs to satisfy all of these needs.

Table development considerations

Federal Income Tax Considerations It is vital to the industry that there be a prevailing (approved by at least 26 states) Ultimate Aggregate CSO mortality table. In calculating tax-deductable life insurance reserves, companies are required to use such a table under IRC 807. The IRS will ultimately determine if a new CSO table may be used for purposes of the product tax rules under IRC 7702 and 7702A. In that regard, the industry will need to develop a table that is consistent structurally with CSO tables the IRS has approved in the past. Otherwise, there would be a significant risk that the IRS would not approve the use of the ultimate aggregate table for these purposes.

In order for the Ultimate Aggregate CSO Mortality table to be deemed the federally prescribed mortality table for determining tax reserves, **the Ultimate Aggregate CSO mortality table must produce the lowest aggregate net premium reserves for the industry** (ignoring deficiency reserves) as compared to the select and ultimate versions of the CSO mortality table(s). This will require substantial testing and a significant amount of work to determine the pattern of margins and the slope and curvature of select mortality rates.

In addition, **all of the mortality sub-tables (for example smoker/non-smoker splits or preferred/residual splits) must aggregate back to the aggregate mortality table** and not be constructed independently. **While innovative in its approach, the 2008 VBT mortality table was not constructed in a manner that is usable for the construction of a new CSO mortality table that satisfies the requirements set forth above.** The 2008 VBT consists of two sets of different, independently constructed mortality tables:

1. A "fully underwritten" set of mortality tables that was constructed by using only larger size policy mortality split by smoker and nonsmoker and the mortality sub-tables do not aggregate back to a single aggregate mortality table; and
2. A "limited underwritten" set of mortality tables that used most of the rest of the standard ordinary mortality data in its construction.

Accordingly, the next VBT mortality table must be constructed by first developing an aggregate ultimate mortality table and then deriving sub-tables by using subsets of the data.

In addition, in order to minimize the risk of adverse tax consequences, a CSO mortality table must have **a very limited number of mortality sub-tables**, similar to the 2001 CSO table. No such constraint needs to be applied to the tables used for the gross premium deterministic reserve or stochastic models.

Finally, if there were an intent to adopt different valuation tables for different classes of business, e.g. guaranteed issue contracts, new tax issues would be raised. We would recommend that expert advice be sought prior to commencing work along these lines.

Loading Any new CSO mortality table should strive for a reasonable and similar level of overall conservatism of net premium reserves by product as a result of loading. The 2001 CSO mortality table may not have optimally balanced the reserve needs of term insurance with that of permanent insurance in determining the pattern of loading criteria. **All policy types must be considered when deciding on the level and slope of the loading for the new CSO mortality table.**

Table structure Any new CSO mortality table **must also have the same terminal age of 120** where the mortality rate is 1 (i.e. an omega of 121). Any change in structure has the potential of costing the industry many hundreds of millions of dollars with no benefit.

Nonforfeiture issues

While it is not been explicitly required, we believe that nonforfeiture values should continue to be based on aggregate tables. Many plans of insurance are issued at a wide range of policy sizes with varying amounts of underwriting based on issue age and amount of insurance. However, currently only one mortality table is used as the basis of nonforfeiture values for all ages and policy sizes. Any requirement that were to introduce different minimum nonforfeiture values for a single plan based on underwriting criteria for various issue ages and amounts of insurance would add undue complication and expense for the industry.

In addition, it is important that adoption dates for nonforfeiture purposes be synchronized with the adoption dates for valuation. If a new CSO mortality table were prescribed for net premium valuation via the Valuation Manual then it would become mandatory for tax reserves (IRC 807 (d)) three years from the date set forth in the Valuation Manual. While the timetable for any transition to a new CSO mortality table for statutory valuation purposes is not dictated by statute, it will likely be accelerated to be concurrent with the date of mandatory use for tax reserves. If the mandatory use of the new CSO table for nonforfeiture were not also accelerated, there would be a risk that the industry would not be able to sell whole life insurance that satisfies the nonforfeiture law and also be considered life insurance for policyowner tax purposes. Thus, we strongly recommend that the Valuation Manual dictate the use of a new CSO table for both net premium valuation and for nonforfeiture values, or for neither.

Adoption considerations

In deciding whether to adopt a new CSO table, regulators and the industry must consider the need for a new mortality table, as well as the risks associated with adopting a new mortality table and the costs of adoption. The following are points that explain these considerations as we see them:

1. As stated above, we see a new CSO mortality table being used for Net Premium Reserves (statutory and tax), not Gross Premium Reserves, and for minimum nonforfeiture purposes. Thus, the degree of mortality improvement needed before another CSO mortality table is justified is larger than for mortality tables used to calculated Gross Premium reserves such as the deterministic and stochastic reserves under Life PBR.

2. The transition for tax reserves (IRC 807(d)), once a new CSO mortality table is adopted by 26 states, is only three calendar years. There is no similar statutory transition for definition of life insurance and MEC testing (IRC 7702 & 7702A). As stated above, the IRS will ultimately decide if a new CSO table may be used for purposes of the product tax rules under IRC 7702 and 7702A. In that regard, it will be important for the industry to develop a table that is consistent with CSO tables the IRS has approved in the past.

3. Implementing a new CSO table creates substantial costs for the industry and for taxpayer-supported state insurance departments. A new CSO mortality table requires the entire industry to reset the basis of nonforfeiture values, to re-price and re-file all life insurance contracts, and to obtain approval to sell in all jurisdictions. The industry must also manage many product tax-related transition issues associated with policies that are based on old CSO tables. These transition issues may limit policyholder flexibility with respect to contracts issued on old CSO tables. There are also significant policy administration and policy illustration system expenses associated with implementing a new CSO table. If the terminal age is changed the costs are even higher.

In summary, a new CSO table should only be pursued when the benefits are clearly measurable and substantial, because the costs of a new CSO table, both in dollars and disruption, are significant.

Summary:

Of primary concern to the industry is that the Ultimate Aggregate CSO mortality table be deemed the federally prescribed mortality table for tax reserves under IRC 807(d).

It is also important that the new CSO table be developed in the same manner as earlier CSO tables that the IRS has approved for product tax purposes. This will help to ensure the IRS will approve the table for these purposes. These concerns, along with the other interrelated criteria and considerations described above, indicate that decisions on how and when to implement new CSO mortality tables should be made only after receiving substantial input from industry.

We look forward to working with you on these matters.

Sincerely,

cc John Engelhardt, NAIC

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AMERICAN ACADEMY of ACTUARIES

SOCIETY OF ACTUARIES

Memorandum

TO: **Larry Bruning, chair, Life and Health Actuarial Task Force**
FROM: **Scott Claflin, chair, Academy/SOA Payout Annuity Project Oversight Group**
Donna Claire, member, Academy/SOA Payout Annuity Project Oversight Group
DATE: **September 21, 2009**
SUBJECT: **Report on Issues Regarding a New Mortality Table**

At the LHATF meeting held in conjunction with the Summer 2009 NAIC National Meeting, the joint American Academy of Actuaries[1]/Society of Actuaries Payout Annuity Project Oversight Group (POG) was asked to explore certain questions regarding a new mortality table. Specifically, the POG was asked to study the following three issues: 1) whether a new payout annuity valuation mortality table is needed; 2) whether projections should be included in a valuation mortality table; and 3) whether the size of the payout should be included in a valuation mortality table.

General Approach

The POG reviewed SOA 2000-04 Individual Payout Annuity Experience Report and associated Excel files/pivot tables. This information is available on the Society of Actuaries website, www.society.org. The chart below summarizes the data analyzed.

Data	Non Refund	Refund Period Certain	Refund Other	Unknown	Grand Total
Contracts_Exposed	309,909.3	1,152,104.7	58,049.9	41,466.6	1,561,530.4
Amount_Exposed	$1,324,263,527	$5,006,359,834	$204,210,336	$99,585,689	$6,634,419,385
Deaths	15,863.5	46,664.0	3,348.5	3,080.5	68,956.5
Amount of Death Claim	$47,717,200	$181,922,509	$11,527,512	$3,839,547	$245,006,767
A/E Ratio by Contract Annuity 2000 Basic Table	112.2%	106.8%	113.0%	116.2%	108.7%
A/E Ratio by Amount Annuity 2000 Basic Table	79.0%	96.6%	105.0%	74.9%	92.5%

In addition to reviewing this data, members of the POG discussed mortality and mortality trends with other mortality experts, such as those who compile Social Security information, and those who work on mortality assumptions in England and Canada.

[1] The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

1. Issue: Is a new payout annuity valuation mortality table needed?

The first issue that needs to be addressed is whether a new valuation mortality table is needed.

PROS:

- The data in the SOA report cited above indicates that there may not be sufficient margins in the current valuation table for current or recently issued business. Although not true at all amounts and all ages, there were a number of cells where the actual mortality was below the expected mortality. The overall actual/expected ratio was 92.5%, which indicates that the mortality component of reserves overall reserves may be insufficient.
- Mortality, particularly at retirement ages has improved according to a wide variety of sources such as the SOA group annuitant mortality study, the Social Security study, and similar information from the Canadian and UK pension plan studies. If mortality continues to improve, a table without projection factors becomes increasingly obsolete over time.
- The payout annuity market is growing, and can be expected to become more significant in the near future due to demographics, decline in defined benefit pension payouts, and possible tax benefits to annuitants. Therefore, the payout annuities are expected to become a larger percentage of business for certain companies, so it is more important that the reserves levels are reasonable.

CONS:

- Moving to a new mortality table will cost the company in terms of updating the valuation system.
- Companies will likely need to re-price their settlement option rates in their life and annuity contracts, and may need to re-file these contracts.

Conclusion: The POG recommends that a new mortality table be developed.

2. Should projections be included in valuation mortality?

The second issue **i**s whether there should be built-in mortality improvement factors included in the valuation mortality.

PROs:

- If a projection factor was not included, the margins needed in the valuation mortality table at inception would likely be higher. Including projections would avoid creating an overly conservative standard at inception.
- Since the trend has been for mortality improvements, using projection factors would keep the table up-to-date.
- If the projections are an integral (mandatory) part of the valuation mortality, this may facilitate the tax deductibility for the total reserves.
- The group annuity table has had projection factors for a number of years, therefore implementation of projection factors on the individual annuity side may not be onerous for companies.

CONS:

- Projection factors add complexity to the valuation mortality calculations, and may require additional programming of certain valuation systems.
- If the projection factors are included in settlement options, this adds complexity to the policies and contracts given to consumers.

Conclusion: The POG recommends that a new valuation table should provide an automatic "update" to account for the continuing secular improvement in mortality.

3. Should payout size be included in valuation mortality?

The SOA study showed that there were noticeable differences in mortality between smaller payouts and larger amounts. The question is whether there should be tiering of the valuation mortality rates by size.

PROs:

- There are substantial differences in mortality by size. The SOA tables show that the overall mortality for the under $2,500 annual income group to have a 111.3% actual/expected ratio based on the 2000a mortality table, while the over $50,000 income group had an overall A/E ratio of 70.8%. Tiering would best reflect expected mortality.
- If a company specialized in a specific market, e.g., smaller payouts, a tiered valuation mortality would likely be more reflective of the mortality it would experience.

CONs:

- A tiered valuation mortality table would be difficult to implement and administer.
- A tiered valuation system could be circumvented by judicious splitting of payouts by purchasers as the pricing reflects the additional reserves.
- Currently, the majority of payout annuities offer a refund of various types (e.g., Life with 10 years of certain payouts. The reduced mortality/payout size correlation is considerably less pronounced for these contracts.

Conclusion: The POG recommends tiering of the valuation mortality not be pursued, due to the practical obstacles identified above.

The POG looks forward to discussing these matters with LHATF. If requested, the POG will proceed in developing a valuation table for payout annuities.

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Net Premium Proposal Update

Presentation to LHATF
September 21, 2009

By John Bruins – Senior Actuary, ACLI

Net Premium Reserves

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Timeline discussed in June:

- Scheduled Premium Product Proposal around the September NAIC meeting
- Flexible Premium Product Proposal around November.

Net Premium Reserves

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Scheduled Premium:

- Initial testing by companies largely completed
- Results being compiled and analyzed
- Modifications to formulas and factors being considered
- Should be ready to discuss results in October / November

3

Net Premium Reserves

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Flexible Premium Products

- Initial formula developed
- Documentation about to be sent to companies for initial testing
- Results requested by Nov. 15 but could take longer

4

New Proposed Framework for Reserves on New Business

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Mixture of a prescribed formula reserve and a true principle-based reserve

- Calculate Formula Reserves as a floor (Net Premium Reserve)
  - Do not vary by company
  - Based on prescribed assumptions
- Calculate "Deterministic" Reserve to determine if additional reserve is necessary
  - A gross premium reserve using company-based assumptions for many elements
- Calculate "Stochastic" Reserve to determine if additional reserve is necessary
  - A reserve based on company's models, using statistical testing of random investment returns

5

Comparison of Proposed vs. Existing Reserve Frameworks

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Existing	Proposed
1. Base Reserve – Formulaic & prescribed	1. Net Premium Reserve – Formulaic & prescribed
2. Alternative (or Deficiency) Reserve - Additional reserves based on gross premiums and company-specific mortality assumptions	2. Deterministic Reserve – Additional reserves based on gross premiums and company-specific assumptions (more than just mortality)
3. Asset Adequacy Reserves – Additional reserves based on company models and company-specific assumptions	3. Stochastic Reserves – Additional reserves based on company models and company specific assumptions and randomly generated economic scenarios

6

Additional Features of New System

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- Sensitivity testing to identify the degree to which changes in assumptions cause changes in outcomes.
- Increased rules and guidance on modeling and determination of assumptions
- Increased disclosure (to regulators) requirements
- Increased involvement of Board and Senior Management
- Mandatory submission of company experience
- NAIC Valuation Manual can be changed to accommodate new products on a uniform basis

101 Constitution Ave., NW, Washington, DC 20001-2133

Potential changes to current exposure

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In light of the safety features of:

- Net premium floor
- Sensitivity testing
- Documentation

ACLI will propose modifications to current exposure, including

- Elimination of mortality mapping
- Reduction of prescription in methods for determining assumptions and margins

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Draft: 9/30/09

Capital Adequacy (E) Task Force /Life and Health Actuarial Task Force Joint Subgroup
Conference Call
August 12, 2009

The Capital Adequacy (E) Task Force/Life and Health Actuarial Task Force Joint Subgroup met via conference call Aug. 12, 2009. The following Subgroup members participated: Sheldon Summers, Chair (CA); Philip Barlow (DC); Blaine Shepherd (MN); John Rink (NE); Fred Andersen (NY); and Mike Boerner (TX).

1. Discuss the American Academy of Actuaries Comparison Report

Mr. Summers said the Subgroup would be reviewing the first working agenda item regarding reserve vs. capital requirements, with a charge of defining which high-level risks are accounted for in reserves and capital. Capital would at least have a higher conditional tail expectation (CTE) level. Mr. Barlow said he thought the Subgroup would be looking at more than just the risks; i.e., how the calculations might be mechanically different. Mr. Andersen said one alternative idea for C-3 Phase 2 and reserves would be to apply a "shock" to the reserve calculation in order to calculate the capital amount. Mr. Summers asked whether the calculation might be used for all risks and not just C-3 interest and market risk. Mr. Andersen said mortality might be one of the issues to consider.

Bill Wilton (Actuarial Resources Corporation, representing the American Academy of Actuaries—AAA) summarized the March AAA Comparison Report. The report compared C-3 Phase 2, C-3 Phase 3, Valuation Manual (VM-20) and Actuarial Guideline XLIII. He indicated that some of the VM-20 and VM-01 requirements had changed subsequent to the release of the report. Section I of the report included a comparison chart and Section II included language differences. Most of the differences were where VM-20 was more prescriptive. There were 16 items listed in the report where there were material differences — including prudent estimate margins, projection period, stochastic scenarios, interest maintenance reserve, clearly defined hedging strategy, prior valuation date, dividends, revenue sharing, and reinsurance. Mr. Andersen pointed out that work continued with reinsurance, revenue sharing and non-guaranteed elements. Mr. Summers pointed out that, as opposed to C-3 Phase 3, VM-20 still had reinsurance risk-transfer requirements per the accounting guidance.

Mr. Summers asked if there were any comments regarding scenario selection. Mr. Andersen said generators for all of the standards for the Valuation Manual and for risk based capital were for future discussions. He said that the Economic Scenarios Subgroup of the Life and Health Actuarial Task Force was looking at how scenarios would be generated. Currently VM-20 prescribed the assumptions, but there were discussions regarding the degree of mean reversion and the volatility of scenarios. The intent was to have the Subgroup provide options to the Life and Health Actuarial and Capital Adequacy Task Forces, and the Task Forces would make the decisions.

Mr. Barlow asked why prescribed scenarios were being used. Mr. Andersen said VM-20 was actually using a prescribed generator, rather than prescribed scenarios. There were concerns regarding having a "level playing field," with different companies potentially getting different results for the same business. Mr. Barlow asked whether there was no need for calibration criteria with a prescribed scenario generator. Nancy Bennett (AAA) said there might need to be calibration criteria in order to reduce the number of scenarios run. Donna Claire (Claire Thinking) said the original idea was to not make this just a regulatory exercise, but to have companies also use the scenario testing for business planning and regulatory purposes.

Mr. Barlow said it would be helpful to know which differences of language listed in the AAA comparison report were material and which were unintentional. Mr. Wilton said the anticipated experience difference had been fixed in the latest VM-20 draft. Mr. Wilton said the clearly defined hedging strategy included disclosure of risks not being hedged in VM-20 that was not in C-3 Phase 3. Mr. Barlow clarified that the differences were in documentation, and not in the risks being hedged. Mr. Summers said the VM-20 language for non-guaranteed elements was more prescriptive than C-3 Phase 3. Mr. Summers said it had been mentioned earlier that the reinsurance treatment was different for VM-20 than for C-3 Phase 3.

Having no further business, the Capital Adequacy (E) Task Force/Life and Health Actuarial Task Force Joint Subgroup adjourned.

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Requirements for Principle-Based Reserves for Variable Annuities – VM-21

VM PBR Process and Coordination Subgroup
7/29/09

VM-21: REQUIREMENTS FOR PRINCIPLE-BASED RESERVES FOR VARIABLE ANNUITIES

Table of Contents

Section 1. Purpose

A. These requirements establish the minimum reserve valuation standard for variable annuity and other contracts involving certain guaranteed benefits similar to those offered with variable annuities issued on or after 1981.

1. The following categories of annuities, directly written or assumed through reinsurance, are covered by this section of the valuation manual:

a. Variable deferred annuity contracts subject to the Commissioner's Annuity Reserve Valuation Method (CARVM), whether or not such contracts contain Guaranteed Minimum Death Benefits (GMDBs), or Variable Annuity Guaranteed Living Benefits (VAGLBs);

b. Variable immediate annuity contracts, whether or not such contracts contain GMDBs or VAGLBs;

c. Group annuity contracts that are not subject to CARVM, but contain guarantees similar in nature to GMDBs, VAGLBs, or any combination thereof; and

Guidance Note: The term "similar in nature," as used in this section is intended to capture both current products and benefits as well as product and benefit designs that may emerge in the future. Examples of the currently known designs are listed in Section 1.A.d below. Any product or benefit design that does not clearly fit the Scope should be evaluated on a case-by-case basis taking into consideration factors that include, but are not limited to, the nature of the guarantees, the definitions of GMDB and VAGLB in A.1 and A.2 of the definitions and whether the contractual amounts paid in the absence of the guarantee are based on the investment performance of a market-value fund or market-value index (whether or not part of the company's separate account).

d. All other products that contain guarantees similar in nature to GMDBs or VAGLBs, even if the insurer does not offer the mutual funds or variable funds to which these guarantees relate, where there is no other explicit reserve requirement. If such a benefit is offered as part of a contract that has an explicit reserve requirement and that benefit does not currently have an explicit reserve requirement:

i. These requirements shall be applied to the benefit on a standalone basis (i.e., for purposes of the reserve calculation, the benefit shall be treated as a separate contract);

ii. The reserve for the underlying contract is determined according to the explicit reserve requirement; and

iii. The reserve held for the contract shall be the sum of a) and b).

Guidance Note: For example, a group life contract that wraps a GMDB around a mutual fund would generally fall under the scope of these requirements since there is not an explicit reserve requirement for this type of group life contract. However, for an individual variable life contract with a GMDB and a benefit similar in nature to a VAGLB, the requirements would generally apply only to the VAGLB-type benefit, since there is an explicit reserve requirement that applies to the variable life contract and the GMDB.

2. These requirements do not apply to contracts falling under the scope of the NAIC Model Modified Guaranteed Annuity Regulation (MGAs); however, it does apply to contracts listed above that include one or more subaccounts containing features similar in nature to those contained in MGAs (e.g., market value adjustments).

3. Separate account products that guarantee an index and do not offer GMDBs or VAGLBs are excluded from the scope of these requirements.

B. These requirements constitute the Commissioner's Annuity Reserve Valuation Method (CARVM) for variable annuity contracts.

Definitions

A. Definitions of Benefit Guarantees

1. Guaranteed Minimum Death Benefit (GMDB). A GMDB is a guaranteed benefit providing, or resulting in the provision that, an amount payable on the death of a contractholder, annuitant, participant, or insured will be increased and/or will be at least a minimum amount. Only such guarantees having the potential to produce a contractual total amount payable on death that exceeds the account value, or in the case of an annuity providing income payments, an amount payable on death other than continuation of any guaranteed income payments, are included in this definition. GMDBs that are based on a portion of the excess of the account value over the net of premiums paid less partial withdrawals made (e.g., an Earnings Enhanced Death Benefit) are also included in this definition.

2. Variable Annuity Guaranteed Living Benefit (VAGLB). A VAGLB is a guaranteed benefit providing, or resulting in the provision that, one or more guaranteed benefit amounts payable or accruing to a living contractholder or living annuitant, under contractually specified conditions (e.g., at the end of a specified waiting period, upon annuitization, or upon withdrawal of premium over a period of time), will increase contractual benefits should the contract value referenced by the guarantee (e.g., account value) fall below a given level or fail to achieve certain performance levels. Only such guarantees having the potential to provide benefits with a present value as of the benefit commencement date that exceeds the contract value referenced by the guarantee are included in this definition. Payout annuities without minimum payout or performance guarantees are neither considered to contain nor to be VAGLBs.

3. Guaranteed Minimum Income Benefit (GMIB). A GMIB is a VAGLB design for which the benefit is contingent on annuitization of a variable deferred annuity or similar contract. The benefit is typically expressed as a contractholder option, on one or more option dates, to have a minimum amount applied to provide periodic income using a specified purchase basis.

4. Guaranteed Payout Annuity Floor (GPAF). A GPAF is a VAGLB design guaranteeing that one or more of the periodic payments under a variable immediate annuity will not be less than a minimum amount.

B. Definitions of Reserve Methodology Terminology

1. Scenario. A scenario consists of a set of asset growth rates and investment returns from which assets and liabilities supporting a set of contracts may be determined for each year of a projection.

2. Cash Surrender Value. For purposes of these requirements, the Cash Surrender Value for a contract is the amount available to the contractholder upon surrender of the contract. Generally, it is equal to the account value less any applicable surrender charges, where the surrender charge reflects the availability of any free partial surrender options. For contracts where all or a portion of the amount available to the contractholder upon surrender is subject to a market value adjustment, however, the Cash Surrender Value shall reflect the market value adjustment consistent with the required treatment of the underlying assets. That is, the Cash Surrender Value shall reflect any market value adjustments where the underlying assets are reported at market value, but shall not reflect any market value adjustments where the underlying assets are reported at book value.

3. Scenario Greatest Present Value. For a given scenario, the Scenario Greatest Present Value is the sum of:
   a) The greatest of the present values, as of the projection start date, of the projected Accumulated Deficiencies for the scenario; and
   b) The Starting Asset Amount, as defined below.

4. Conditional Tail Expectation Amount. The Conditional Tail Expectation Amount is equal to the numerical average of the 30 percent largest values of the Scenario Greatest Present Values.

5. Working Reserve. The Working Reserve is the assumed reserve used in the projections of Accumulated Deficiencies supporting the calculation of the Scenario Greatest Present Values. At any point in the projections, including at the start of the projection, the Working Reserve shall equal the projected Cash Surrender Value.

   For a variable payout annuity without a Cash Surrender Value, the Working Reserve shall equal the present value, at the valuation interest rate and the valuation mortality table specified for such a product by the Standard Valuation Law of future income payments projected using a return based on the valuation interest rate less appropriate asset based charges. For annuitizations that occur during the projection, the valuation interest rate as of the current valuation date may be used in determining the Working Reserve. Alternatively, if an integrated model of equity returns and interest rates is used, a future estimate of valuation interest rates may be incorporated into the Working Reserve.

   For contracts not covered above, the actuary shall determine the Working Reserve in a manner that is consistent with the above requirements.

6. Accumulated Deficiency. Accumulated Deficiency is an amount measured as of the end of a projection year and equals the projected Working Reserve less the amount of projected assets, both as of the end of the projection year. Accumulated Deficiencies may be positive or negative.

   Guidance Note: A positive Accumulated Deficiency means there is a cumulative loss and a negative Accumulated Deficiency means there is a cumulative gain.

7. Starting Asset Amount. The Starting Asset Amount equals the value of the assets at the start of the projection, as defined in Section 3.D.1.

8. Prudent Estimate. The deterministic assumptions to be used for projections are to be the actuary's Prudent Estimate. This means that they are to be set at the conservative end of the actuary's confidence interval as to the true underlying probabilities for the parameter(s) in question, based on the availability of relevant experience and its degree of credibility.

   A Prudent Estimate assumption is developed by applying a margin for uncertainty to the "Anticipated Experience" assumption. The margin for uncertainty shall provide for estimation error and margins for adverse deviation. The resulting Prudent Estimate assumption shall be reasonably conservative over the span of economic cycles and over a plausible range of expected experience, in recognition of the Principles described in Section 1. "Anticipated Experience" would typically be the actuary's reasonable estimate of future experience for a risk factor given all available, relevant information pertaining to the contingencies

being valued. Recognizing that assumptions are simply assertions of future unknown experience, the margin should be directly related to uncertainty in the underlying risk factor. The greater the uncertainty, the larger the margin. Each margin should serve to increase the Aggregate Reserve that would otherwise be held in its absence (i.e., using only the Anticipated Experience assumption).

For example, assumptions for circumstances that have never been observed require more margins for error than those for which abundant and relevant experience data are available.

This means that valuation assumptions not stochastically modeled are to be consistent with the stated Principles in Section 1, be based on any relevant and credible experience that is available, and should be set to produce, in concert with other Prudent Estimate assumptions, a Conditional Tail Expectation Amount that is consistent with the stated CTE level.

The actuary shall follow the principles discussed in Section 11 and 12 in determining Prudent Estimate assumptions.

9. Gross Wealth Ratio. The Gross Wealth Ratio is the cumulative return for the indicated time period and percentile (e.g., 1.0 indicates that the index is at its original level).

10. Clearly Defined Hedging Strategy. The designation of Clearly Defined Hedging Strategy applies to strategies undertaken by a company to manage risks through the future purchase or sale of hedging instruments and the opening and closing of hedging positions. In order to qualify as a Clearly Defined Hedging Strategy, the strategy must meet the principles outlined in the Section 1 (particularly Principle 5) and shall, at a minimum, identify:

    a) The specific risks being hedged (e.g., delta, rho, vega, etc.),

    b) The hedge objectives,

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

    d) The financial instruments that will be used to hedge the risks,

    e) The hedge trading rules including the permitted tolerances from hedging objectives,

    f) The metric(s) for measuring hedging effectiveness,

    g) The criteria that will be used to measure effectiveness,

    h) The frequency of measuring hedging effectiveness,

    i) The conditions under which hedging will not take place, and

    j) The person or persons responsible for implementing the hedging strategy.

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

    It is important to note that strategies involving the offsetting of the risks associated with variable annuity guarantees with other products outside of the scope of the these requirements (e.g., equity-indexed annuities) do not currently qualify as a Clearly Defined Hedging Strategy under these requirements.

11. Revenue Sharing. Revenue Sharing, for purposes of these requirements, 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 recordkeeping. Only payments that are attributable to charges or fees taken from the underlying variable funds or mutual funds supporting the contracts that fall under the scope of these requirements shall be included in the definition of Revenue Sharing.

12. Domiciliary Commissioner. For purposes of these requirements, this term refers to the chief insurance regulatory official of the state of domicile of the company.

13. Aggregate Reserve. The minimum reserve requirement as of the valuation date for the contracts falling within the scope of these requirements.

14. 1994 Variable Annuity MGDB Mortality Table. This mortality table is shown in Appendix 1.

Section 2. Definition of General Reserve Methodology

A. General Description. The Aggregate Reserve for contracts falling within the scope of these requirements shall equal the Conditional Tail Expectation Amount but not less than the Standard Scenario Amount, where the Aggregate Reserve is calculated as the Standard Scenario Amount plus the excess, if any, of the Conditional Tail Expectation Amount over the Standard Scenario Amount.

B. Impact of Reinsurance Ceded. Where reinsurance is ceded for all or a portion of the contracts, both components in the above general description (and thus the Aggregate Reserve) shall be determined net of any reinsurance treaties that meet the statutory requirements that would allow the treaty to be accounted for as reinsurance.

An Aggregate Reserve before reinsurance shall also be calculated if needed for regulatory reporting or other purposes, using methods described in Section 4.

C. The Standard Scenario Amount. The Standard Scenario Amount is the aggregate of the reserves determined by applying the Standard Scenario method to each of the contracts falling within the scope of these requirements. The Standard Scenario method is outlined in Section 5.

D. The Conditional Tail Expectation Amount. The Conditional Tail Expectation Amount shall be determined based on a projection of the contracts falling within the scope of these requirements, and the assets supporting these contracts, over a broad range of stochastically generated projection scenarios and using Prudent Estimate assumptions.

The stochastically generated projection scenarios shall meet the Scenario Calibration Criteria described in Section 7.

The Conditional Tail Expectation Amount may be determined in aggregate for all contracts falling within the scope of these requirements (i.e., a single grouping). At the option of the company, it may be determined by applying the methodology outlined below to sub-groupings of contracts, in which case, the Conditional Tail Expectation Amount shall equal the sum of the amounts computed for each such sub-grouping.

The Conditional Tail Expectation Amount shall be determined using the following steps:

1. For each scenario, projected aggregate Accumulated Deficiencies are determined at the start of the projection (i.e., "time 0") and at the end of each projection year as the sum of the Accumulated Deficiencies for each contract grouping.

2. The Scenario Greatest Present Value is determined for each scenario based on the sum of the aggregate Accumulated Deficiencies and aggregate Starting Asset Amounts for the contracts for which the Aggregate Reserve is being computed.

Guidance Note: The Scenario Greatest Present Value is therefore based on the greatest projected Accumulated Deficiency, in aggregate, for all contracts for which the Aggregate Reserve is computed

hereunder, rather than based on the sum of the greatest projected Accumulated Deficiency for each grouping of contracts.

3. The Scenario Greatest Present Values for all scenarios are then ranked from smallest to largest and the Conditional Tail Expectation Amount is the average of the largest 30 percent of these ranked values.

The projections shall be performed in accordance with Section 3. The actuary shall document the assumptions and procedures used for the projections and summarize the results obtained as described in Section 4 and Section 10.

E. Alternative Methodology. For variable deferred annuity contracts that contain either no guaranteed benefits or only GMDBs (i.e., no VAGLBs), the Conditional Tail Expectation Amount may be determined using the Alternative Methodology described in Section 6 rather than using the approach described in subsection D above. However, in the event the approach described in subsection D has been used in prior valuations the Alternative Methodology may not be used without approval from the domiciliary commissioner.

The Conditional Tail Expectation Amount for the group of contracts to which the Alternative Methodology is applied shall not be less than the aggregate Cash Surrender Value of those contracts.

The actuary shall document the assumptions and procedures used for the Alternative Methodology and summarize the results obtained as described in Section 4 and Section 10.

F. Allocation of Results to Contracts. The Aggregate Reserve shall be allocated to the contracts falling within the scope of these requirements using the method outlined in Section 8.

Section 3 Determination of Conditional Tail Expectation Amount Based on Projections

A. Projection of Accumulated Deficiencies

1. General Description of Projection. The projection of Accumulated Deficiencies shall be made ignoring Federal Income Tax and reflect the dynamics of the expected cash flows for the entire group of contracts, reflecting all product features, including the guarantees provided under the contracts. Insurance company expenses (including overhead and investment expense), fund expenses, contractual fees and charges, revenue sharing income received by the company (net of applicable expenses) and cash flows associated with any reinsurance or hedging instruments are to be reflected on a basis consistent with the requirements herein. Cash flows from any fixed account options shall also be included. Any market value adjustment assessed on projected withdrawals or surrenders shall also be included (whether or not the Cash Surrender Value reflects market value adjustments). Throughout the projection, where estimates are used, such estimates shall be on a Prudent Estimate basis.

   Federal Income Tax shall not be included in the projection of Accumulated Deficiencies.

2. Grouping of Variable Funds and Subaccounts. 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, the fundamental characteristics of the fund shall be reflected and the parameters shall have the appropriate relationship to the required calibration points of the S&P 500. The grouping shall reflect characteristics of the efficient frontier (i.e., returns generally cannot be increased without assuming additional risk).

   An appropriate proxy for each variable subaccount shall be designed in order to develop the investment return paths. The development of the scenarios for the proxy funds is a fundamental step in the modeling and can have a significant impact on results. As such, the actuary must map each variable account to an appropriately crafted proxy fund normally expressed as a linear combination of recognized market indices (or sub-indices).

3. Grouping of Contracts. Projections may be performed for each contract inforce on the date of valuation or by grouping contracts into representative cells of model plans using all characteristics and criteria having a material impact on the size of the reserve. Grouping shall be the responsibility of the actuary but may not be done in a manner that intentionally understates the resulting reserve.

4. Modeling of Hedges. The appropriate costs and benefits of hedging instruments that are currently held by the company in support of the contracts falling under the scope of these requirements shall be included in the projections. If the company is following a Clearly Defined Hedging Strategy and the hedging strategy meets the requirements of Section 9, the projections shall take into account the appropriate costs and benefits of hedge positions expected to be held in the future through the execution of that strategy.

   To the degree either the currently held hedge positions or the hedge positions expected to be held in the future introduce basis, gap, price, or assumption risk, a suitable reduction for effectiveness of hedges shall be made. The actuary is responsible for verifying compliance with a Clearly Defined Hedging Strategy and the requirements in Section 9 for all hedge instruments included in the projections.

   While hedging strategies may change over time, any change in hedging strategy shall be documented and include an effective date of the change in strategy.

   The use of products not falling under the scope of these requirements (e.g., equity-indexed annuities) as a hedge shall not be recognized in the determination of Accumulated Deficiencies.

   These requirements do not supersede any statutes, laws, or regulations of any state or jurisdiction related to the use of 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.

   Upon request of the company's domiciliary commissioner and for information purposes to show the effect of including future hedge positions in the projections, the company shall show the results of performing an additional set of projections reflecting only the hedges currently held by the company in support of the contracts falling under the scope of these requirements. Because this additional set of projections excludes some or all of the derivative instruments, the investment strategy used may not be the same as that used in the determination of the Conditional Tail Expectation Amount.

5. Revenue Sharing.

   a. Projections of Accumulated Deficiencies may include income from projected future Revenue Sharing, net of applicable projected expenses ("Net Revenue Sharing Income") if the following requirements are met:

      i. The Net Revenue Sharing Income is received by the company,

         Guidance Note: For purposes of this section, Net Revenue Sharing Income is considered to be received by the company if it is paid directly to the company through a contractual agreement with either the entity providing the Net Revenue Sharing Income or an affiliated company that receives the Net Revenue Sharing Income. Net Revenue Sharing Income would also be considered to be received, if it is paid to a subsidiary that is owned by the company and if 100% of the statutory income from that subsidiary is reported as statutory income of the company. In this case the actuary needs to assess the likelihood that future Net Revenue Sharing Income is reduced due to the reported statutory income of the subsidiary being less than future Net Revenue Sharing Income received.

      ii. 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

      iii. The Net Revenue Sharing Income is not already accounted for directly or indirectly as a company asset.

b. The amount of Net Revenue Sharing Income to be used shall reflect the actuary's assessment of factors that include but are not limited to the following (not all of these factors will necessarily be present in all situations):

i. 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);

ii. 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;

iii. The benefits and risks to both the company and the entity paying the Net Revenue Sharing Income of continuing the arrangement.

iv. 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;

v. 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

vi. 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.

c. The amount of projected Net Revenue Sharing Income shall also reflect a margin (which decreases the assumed Net Revenue Sharing Income) directly related to the uncertainty of the revenue. The greater the uncertainty, the larger the margin. Such uncertainty is driven by many factors including the potential for changes in the securities laws and regulations, mutual fund board responsibilities and actions, and industry trends. Since it is prudent to assume that uncertainty increases over time, a larger margin shall be applied as time that has elapsed in the projection increases.

d. 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 5.b.v above) shall be included in the projections as a company expense under the requirements of Section 3.A.1. In addition, expenses incurred by either the entity providing the Net Revenue Sharing Income or an affiliate of the company shall be included in the applicable expenses discussed in Sections 3.A.1 and 3.A.5 that reduce the Net Revenue Sharing Income.

e. 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.

f. The amount of Net Revenue Sharing Income assumed in a given scenario shall not exceed the sum of a. and b., where:

i. Is the contractually guaranteed Net Revenue Sharing Income projected under the scenario, and

ii. Is the actuary's estimate of non-contractually guaranteed Net Revenue Sharing Income before reflecting any margins for uncertainty multiplied by the following factors:

a). 1.0 in the first projection year;

b). 0.9 in the second projection year;

c). 0.8 in the third projection year;

d). 0.7 in the fourth projection year;

e). 0.6 in the fifth projection year;

f. 0.5 in the sixth and all subsequent projection years. The resulting amount of non-contractually guaranteed Net Revenue Sharing Income after application of this factor shall not exceed 0.25% per year on separate account assets in the sixth and all subsequent projection years.

6. Length of Projections. Projections of Accumulated Deficiencies shall be run for as many future years as needed so that no materially greater reserve value would result from longer projection periods.

7. AVR/IMR. The AVR and the IMR shall be handled consistently with the treatment in the company's cash flow testing.

B. Determination of Scenario Greatest Present Values

1. Scenario Greatest Present Values. For a given scenario, the Scenario Greatest Present Value is the sum of:

a. The greatest present value, as of the projection start date, of the projected Accumulated Deficiencies defined in Section 2.B.6; and

b. The Starting Asset Amount.

2. Discount Rates. In determining the Scenario Greatest Present Values, Accumulated Deficiencies shall be discounted using the same interest rates at which positive cash flows are invested, as determined in Section 3.D.4. Such interest rates shall be reduced to reflect expected credit losses. Note that the interest rates used do not include a reduction for Federal Income Taxes.

C. Projection Scenarios

1. Minimum Required Scenarios. The number of scenarios for which projected greatest present values of Accumulated Deficiencies shall be computed shall be the responsibility of the actuary and shall be considered to be sufficient if any resulting understatement in total reserves, as compared with that resulting from running additional scenarios, is not material.

2. Scenario Calibration Criteria. Returns for the 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 Scenario Calibration Criteria specified in Section 7.

D. Projection Assets

1. Starting Asset Amount. For the projections of Accumulated Deficiencies, the value of assets at the start of the projection shall be set equal to the approximate value of statutory reserves at the start of the projection. Assets shall be valued consistently with their annual statement values. The amount of such asset values shall equal the sum of the following items, all as of the start of the projection:

a. All of the Separate Account assets supporting the contracts;

b An amount of assets held in the General Account equal to the approximate value of statutory reserves as of the start of the projections less the amount in a., above.

In many instances 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 hereunder to the next.

Any hedge assets meeting the requirements described in Section 3.A.4 shall be reflected in the projections and included with other General Account assets under item b. above. To the extent the sum of the value of such hedge assets and the value of assets in item a. above is greater than the approximate value of statutory reserves as of the start of the projections, then item b. above may include enough negative General Account assets or cash such that the sum of items a. and b. above equals the approximate value of statutory reserves as of the start of the projections.

Guidance Note: Further elaboration on potential practices with regard to this issue may be included in a practice note.

The actuary shall document which assets were used as of the start of the projection, the approach used to determine which assets were chosen and shall verify that the value of the assets equals the approximate value of statutory reserves at the start of the projection.

2. Valuation of Projected Assets. For purposes of determining the projected Accumulated Deficiencies, the value of projected assets shall be determined in a manner consistent with their value at the start of the projection. For assets assumed to be purchased during a projection, the value shall be determined in a manner consistent with the value of assets at the start of the projection that have similar investment characteristics.

3. Separate Account Assets. For purposes of determining the Starting Asset Amounts in subsection 3.D.1 and the valuation of projected assets in subsection 3.D.2, assets held in a Separate Account shall be summarized into asset categories determined by the actuary as discussed in Section 3.A.2.

4. General Account Assets. General Account assets shall be projected, net of projected defaults, using assumed investment returns consistent with their book value and expected to be realized in future periods as of the date of valuation. Initial assets that mature during the projection and positive cash flows projected for future periods shall be invested at interest rates, which, at the option of the actuary, are one of the following:

a. The forward interest rates implied by the swap curve in effect as of the valuation date,

Guidance Note: The swap curve is based on the Federal Reserve H.15 interest swap rates. The rates are for a Fixed Rate Payer in return for receiving three month LIBOR. One place where these rates can be found is http://www.federalreserve.gov/releases/h15/default.htm

b. The 200 interest rate scenarios available as prescribed for Phase I, C-3 Risk Based Capital calculation, coupled with the Separate Account return scenarios by mating them up with the first 200 such scenarios and repeating this process until all Separate Account return scenarios have been mated with a Phase I scenario, or

c. Interest rates developed for this purpose from a stochastic model that integrates the development of interest rates and the Separate Account returns.

When the option described in a. above (the forward interest rates implied by the swap curve) is used, an amount shall be subtracted from the interest rates to reflect the current market expectations about future interest rates using the process described in Section 3.E.1.

The actuary may switch from a. to b., from a. to c. or from b. to c. from one valuation date to the next, but may not switch in the other direction without approval from the Domiciliary Commissioner.

E. Projection of Annuitization Benefits (including GMIBs)

1. Assumed Annuitization Purchase Rates at Election. For purposes of projecting annuitization benefits (including annuitizations stemming from the election of a GMIB), the projected annuitization purchase rates shall be determined assuming that market interest rates available at the time of election are the interest rates used to project General Account Assets, as determined in Section 3.D.4. However, where the interest rates used to project General Account Assets are based upon the forward interest rates implied by the swap curve in effect as of the valuation date (i.e., the option described in Section 3.D.4.a is used, herein referred to as a point estimate), the margin between the cost to purchase an annuity using the guaranteed purchase basis and the cost using the interest rates prevailing at the time of annuitization shall be adjusted as discussed below.

If a point estimate is being used, it is important that the margin assumed reflects the current market expectations about future interest rates at the time of annuitization, as described more fully below, and a downward adjustment to the interest rate assumed in the purchase rate basis. The latter adjustment is necessary since a greater proportion of contractholders will select an annuitization benefit when it is worth more than the cash surrender value then when it is not. As a practical matter, this effect can be approximated by using an interest rate assumption in the purchase rate basis that is 0.30 percent below that implied by the forward swap curve, as described below.

To calculate market expectations of future interest rates, the par or current coupon swap curve is used (documented daily in Federal Reserve H.15 with some interpolation needed). Deriving the expected rate curve from this swap curve at a future date involves the following steps:

a. Calculate the implied zero-coupon rates. This is a well documented "bootstrap" process. For this process we use the equation $100=C^n * (v + v^2 + \ldots + v^n) + 100v^n$ where the "v^t" terms are used to stand for the discount factors applicable to cash flows 1,2,…n years hence and C^n is the n-year swap rate. Each of these discount factors are based on the forward curve and therefore are based on different rates, however (i.e. "v^2" does not equal v times v). Given the one year swap rate, one can solve for v. Given v and the two year swap rate one can then back into v^2, and so on.

b. Convert the zero coupon rates to one year forward rates by calculating the discount factor needed to get from v^{t-1} to v^t.

c. Develop the expected rate curve.

This recognizes that, for example, the five-year forward one-year rate is not the rate the market expects on one year instruments five years from now. The reason is that as the bond gets shorter the "risk premium" in the rate diminishes. This is sometimes characterized as "rolling down" the yield curve. Table A shows the historic average risk premium at various durations. From this table, one can see that to get the rate the market expects a 1 year swap to have five years from now; one must subtract the risk premium associated with six year rates (.95%) and add back that associated with 1 year rates (.50%). This results in a net reduction of .45%.

Table A: Risk Premium by Duration

Duration	Risk Premium	Duration	Risk Premium
1	0.500%	6	0.950%
2	0.750%	7	1.000%
3	0.750%	8	1.100%
4	0.850%	9+	1.150%
5	0.900%		

The Exhibit below combines the three steps. Columns A through D convert the swap curve to the implied forward rate for each future payment date. Columns E through H remove the current risk premium, add the risk premium t years in the future (the Exhibit shows the rate curve five years in the future), and uses that to get the discount factors to apply to the 1 year, 2 year,…5 year cash flows 5 years from now.

Exhibit: Derivation of discount rates expected in the future

	A	B	C	D	E	F	G	H
1								
2	Projection Years	Swap Curve Rate	PV of Zero Coupon	Forward 1 Year Rate	Risk Premium	Risk Premium 5 Years Out	Expected Forward Rate In Five Years	PV of Zero Coupon In 5 Years
3								
4	1	2.57%	0.97494	2.5700%	0.50000%			
5	2	3.07%	0.94118	3.5879%	0.75000%			
6	3	3.44%	0.90302	4.2251%	0.75000%			
7	4	3.74%	0.86231	4.7208%	0.85000%			
8	5	3.97%	0.82124	5.0010%	0.90000%			
9	6	4.17%	0.77972	5.3249%	0.95000%	0.50000%	4.8749%	0.95352
10	7	4.34%	0.73868	5.5557%	1.00000%	0.75000%	5.3057%	0.90547
11	8	4.48%	0.69894	5.6860%	1.10000%	0.75000%	5.3360%	0.85961
12	9	4.60%	0.66050	5.8209%	1.15000%	0.85000%	5.5209%	0.81463
13	10	4.71%	0.62303	6.0131%	1.15000%	0.90000%	5.7631%	0.77024
14	Cell formulas for Projection Year 10:		=(1-B13*SUM(C4:C12))/(1+B13)	=C12/C13-1		=E8	=D13-E13+F13	=H12/(1+G13)

Where interest rates are projected stochastically using an integrated model, although one would "expect" the interest rate n years hence to be that implied for an appropriate duration asset by the forward swap

curve as described above, there is a steadily widening confidence interval about that point estimate with increasing time until the annuitization date. The "expected margin" in the purchase rate is less than that produced by the point estimate based on the expected rate, since a greater proportion of contractholders will have an annuitization benefit whose worth is in excess of cash surrender value when margins are low than when margins are high. As a practical matter, this effect can be approximated by using a purchase rate margin based on an earnings rate .30 percent below that implied by the forward swap curve. If a stochastic model of interest rates is used instead of a point estimate then no such adjustment is needed.

2. Projected Election of Guaranteed Minimum Income Benefit and other Annuitization Options. For contracts projected to elect annuitization options (including annuitizations stemming from the election of a GMIB), the projections may assume one of the following at the actuary's option:

   a. The contract is treated as if surrendered at an amount equal to the statutory reserve that would be required at such time for the payout annuity benefits, or

   b The contract is assumed to stay inforce, the projected periodic payments are paid, and the Working Reserve is equal to one of the following:

      i. The statutory reserve required for the payout annuity, if it is a fixed payout annuity, or

      ii If it is a variable payout annuity, the Working Reserve for a variable payout annuity.

   If the projected payout annuity is a variable payout annuity containing a floor guarantee (such as a GPAF) under a specified contractual option, only option ii. above shall be used.

   Where mortality improvement is used to project future annuitization purchase rates, as discussed in 1 above, mortality improvement shall also be reflected on a consistent basis in either the determination of the reserve in i. above or the projection of the periodic payments in ii. above.

F. Relationship to Risk Based Capital Requirements

1. These requirements anticipate that the projections described herein may be used for the determination of Risk Based Capital (the "RBC requirements") for some or all of the contracts falling within the scope of these requirements. There are several differences between these requirements and the RBC requirements, and among them are two major differences. First, the Conditional Tail Expectation level is different (CTE (70) for these requirements and CTE (90) for the RBC requirements). Second, the projections described in these requirements are performed on a basis that ignores Federal Income Tax. That is, under these requirements, the Accumulated Deficiencies do not include projected Federal Income Tax and the interest rates used to discount the Scenario Greatest Present Value (i.e., the interest rates determined in Section 3.D.4 contain no reduction for Federal Income Tax. Under the RBC requirements, the projections do include projected Federal Income Tax and the discount interest rates used in the RBC requirement do contain a reduction for Federal Income Tax.

2. To further aid the understanding of these requirements and any instructions relating to the RBC requirement, it is important to note the equivalence in meaning between the following terms, subject to the differences noted above:

   a. The amount that is added to the Starting Asset Amount in Section 2.B.6 is similar to the Additional Asset Requirement referenced in the RBC requirement.

   b The Conditional Tail Expectation Amount referenced in these requirements is similar to the Total Asset Requirement referenced in the RBC requirement.

G. Compliance with Actuarial Standards of Practice (ASOPs)

When determining the Conditional Tail Expectation Amount using projections, the analysis shall conform to the Actuarial Standards of Practice as promulgated from time to time by the Actuarial Standards Board.

H Compliance with Principles

When determining the Conditional Tail Expectation Amount using projections, any interpretation and application of the requirements of these requirements shall follow the principles discussed in the Section 1.

Section 4. Reinsurance and Statutory Reporting Issues

A. Treatment of Reinsurance Ceded in the Aggregate Reserve

1. Aggregate Reserve Net of and Prior to Reinsurance Ceded. As noted in Section 2.B, the Aggregate Reserve is determined net of reinsurance ceded. Therefore, it is necessary to determine the components needed to determine the Aggregate Reserve (i.e., the Standard Scenario Amount, and either the Conditional Tail Expectation Amount determined using projections or the Conditional Tail Expectation Amount determined using the Alternative Methodology) on a net of reinsurance basis. In addition, as noted in Section 2.B, it may be necessary to determine the Aggregate Reserve determined on a "direct" basis, or prior to reflection of reinsurance ceded. Where this is needed, each of these components shall be determined prior to reinsurance. Subsections 2 through 4 below discuss methods necessary to determine these components on both a "net of reinsurance" and a "prior to reinsurance" basis. Note that due allowance for reasonable approximations may be used where appropriate.

2. Conditional Tail Expectation Amount Determined using Projections. In order to determine the Aggregate Reserve net of reinsurance ceded, Accumulated Deficiencies, Scenario Greatest Present Values, and the resulting Conditional Tail Expectation Amount shall be determined reflecting the effects of reinsurance treaties that meet the statutory requirements that would allow the treaty to be accounted for as reinsurance within the projections. This involves including, where appropriate, all anticipated reinsurance premiums or other costs and all reinsurance recoveries, where both premiums and recoveries are determined by recognizing any limitations in the reinsurance treaties, such as caps on recoveries or floors on premiums.

   In order to determine the Conditional Tail Expectation Amount prior to reinsurance ceded, Accumulated Deficiencies, Scenario Greatest Present Values, and the resulting Conditional Tail Expectation Amount shall be determined ignoring the effects of reinsurance within the projections. One acceptable approach involves a projection based on the same Starting Asset Amount as for the Aggregate Reserve net of reinsurance and by ignoring, where appropriate, all anticipated reinsurance premiums or other costs and all reinsurance recoveries in the projections.

3. Conditional Tail Expectation Amount Determined using the Alternative Methodology. If a company chooses to use the Alternative Methodology, as allowed in Section 2.E, it is important to note that the methodology produces reserves on a prior to reinsurance ceded basis. Therefore, where reinsurance is ceded, the Alternative Methodology must be modified to reflect the reinsurance costs and reinsurance recoveries under the reinsurance treaties in the determination of the Aggregate Reserve net of reinsurance. In addition, the Alternative Methodology, unadjusted for reinsurance, shall be applied to the contracts falling under the scope of these requirements to determine the Aggregate Reserve prior to reinsurance.

4. Standard Scenario Amount. Where reinsurance is ceded, the Standard Scenario Amount shall be calculated as described in Section 5 to reflect the reinsurance costs and reinsurance recoveries under the reinsurance treaties. If it is necessary, the Standard Scenario Amount shall be calculated prior to reinsurance ceded using the methods described in Section 5, but ignoring the effects of the reinsurance ceded.

B. Aggregate Reserve to be held in the General Account

The amount of the reserve held in the General Account shall not be less than the excess of the Aggregate Reserve over the sum of the Basic Reserve, as defined in Section 5.B, attributable to the variable portion of all such contracts.

C. Actuarial Certification and Memorandum

1. Actuarial Certification. Actuarial Certification of the work done to determine the Aggregate Reserve shall be required. The actuary shall certify that the work performed has been done in a way that substantially complies with all applicable Actuarial Standards of Practice. The scope of this certification does not include an opinion on the adequacy of the Aggregate Reserve, the company's surplus or the company's future financial condition. The actuary shall also note any material change in the model or assumptions from that used previously and the estimated impact of such changes.

   Section 10 contains more information on the contents of the required Actuarial Certification.

   Guidance Note: The adequacy of total company reserves, which includes the Aggregate Reserve, is addressed in the company's Actuarial Opinion as required by the NAIC Model Actuarial Opinion and Memorandum Regulation.

2. Required Memorandum. An actuarial memorandum shall be constructed documenting the methodology and assumptions upon which the Aggregate Reserve is determined. The memorandum shall also include sensitivity tests that the actuary feels appropriate, given the composition of the company's block of business (i.e., identifying the key assumptions that, if changed, produce the largest changes in the Aggregate Reserve). This memorandum shall have the same confidential status as the actuarial memorandum supporting the actuarial opinion and shall be available to regulators upon request.

   Section 10 contains more information on the contents of the required memorandum.

   Guidance Note: This is consistent with Section 3D(8) of the Standard Valuation Law, which states: "Except as provided in Paragraphs (12), (13) and (14), documents, materials or other information in the possession or control of the Department of Insurance that are a memorandum in support of the opinion, and any other material provided by the company to the commissioner in connection with the memorandum, shall be confidential by law and privileged, shall not be subject to [insert open records, freedom of information, sunshine or other appropriate phrase], shall not be subject to subpoena, and shall not be subject to discovery or admissible in evidence in any private civil action. However, the commissioner is authorized to use the documents, materials or other information in the furtherance of any regulatory or legal action brought as a part of the commissioner's official duties."

3. Conditional Tail Expectation Amount Determined using the Alternative Methodology. Where the Alternative Methodology is used, there is no need to discuss the underlying assumptions and model in the required memorandum. Certification that expense, revenue, fund mapping, and product parameters have been properly reflected, however, shall be required.

   Section 10 contains more information on the contents of the required Actuarial Certification and memorandum.

4. Material Changes. If there is a material change in results due to a change in assumptions from the previous year, the memorandum shall include a discussion of such change in assumptions and an estimate of the impact it has on the results.

Section 5. Standard Scenario Requirements

A Overview

1. Application to Determine Reserves. A Standard Scenario Reserve shall be determined for each of the contracts falling under the scope of these requirements by applying Section 5.C. This includes those contracts to which the Alternative Methodology is applied.

The Standard Scenario Reserve for a contract with guaranteed living benefits or guaranteed death benefits is based on a projection of the account value based on specified returns for supporting assets equal to the account value. An initial drop is applied to the supporting assets and account value on the valuation date. Subsequently, account values are projected at specified rates earned by the supporting assets less contract and fund charges. The assumptions for the projection of account values and margins are prescribed in Section 5.C.3. For any contract with guarantees the Standard Scenario Reserve includes the greatest present value of the benefit payments in excess of account values applied over the present value of revenue produced by the margins.

2. The Standard Scenario Amount

   a. The Standard Scenario Amount is defined in Section 2.C of these requirements as the aggregate of the reserves determined by applying the Standard Scenario Method to each of the contracts falling under the scope of these requirements. Except as provided in subsection 5.C.2.a, the Standard Scenario Amount equals the sum over all contracts of the Standard Scenario Reserve determined for each contract as of the statement date as described in 5.A.2.b.

   b The Standard Scenario Method requires the Standard Scenario Amount to not be less than the sum over all contracts of the Standard Scenario Reserve determined for the contract as of the statement date as described in Section 5.C, where the Discount Rate is equal to *DR*, which is defined as the valuation interest rate specified by the Standard Valuation Law for annuities valued on an issue year basis, using Plan Type A and a Guarantee Duration greater than 10 years but not more than 20 years. The presence of guarantees of interest on future premiums and/or cash settlement options is to be determined using the terms of the contracts.

3. Illustrative Application of the Standard Scenario to a Projection or Model Office. If the Conditional Tail Expectation Amount is determined based on a projection of an inforce prior to the statement date and/or by the use of a model office, which is a grouping of contracts into representative cells, then additional determinations of Section 5.A.2.b shall be performed on the prior inforce and/or model office. The calculations are for illustrative purposes to assist in validating the reasonableness of the projection and/or the model office.

   The following table identifies the illustrative additional determinations required by this section using the Discount Rate, *DR*, as defined in Section 5.A.2.b. The additional determinations required are based on how the Conditional Tail Expectation projection or Alternative Methodology is applied. For completeness, the table also includes the determinations required by Section 5.A.2.b.

   a. Run A in the table is required for all companies by Section 5.A.2.b. No additional determinations are required if a company's stochastic or alternative methodology result is calculated on individual contracts as of the statement date.

   b A company that uses a model office as of the statement date to determine its stochastic or alternative methodology result must provide an additional determination for the model office based on the Discount Rate *DR*, run B.

   c. A company that uses a contract by contract listing of a prior inforce to determine its stochastic or alternative methodology with result PS and then projects requirements to the statement date with result S must provide an additional determination for the prior inforce based on the Discount Rate *DR*, run C.

   d A company that uses a model office of a prior inforce to determine its stochastic or alternative methodology requirements with result PM and then projects requirements to the statement date with result S must provide an additional determination for the prior model office based on the Discount Rate *DR*, run D.

Standard Scenario Run	VM-21 Variations	Validation Measures	
		Model Office Projection	Projection of Prior Inforce
A. Valuation on the statement date on inforce contracts with discount rate *DR*	None	None	None
B. Valuation on the statement date on the model office with discount rate *DR*	If not material to model office validation	A/B compare to 1.00	None
C. Valuation on a prior inforce date on prior inforce contracts with discount rate *DR*	If not material to projection validation	None	A/C - S/PS compare to 0
D. Valuation on a prior inforce date on a model office with discount rate *DR*	If not material to model office or projection validation.	(A/D – S/PM) compare to 0	

Modification of the requirements in Section 5.C when applied to a prior inforce or a model office is permitted if such modification facilitates validating the projection of inforce or the model office. All such modifications should be documented.

B Basic and Basic Adjusted Reserve - Application of Actuarial Guideline XXXIII

1. The Basic Reserve for a given contract shall be determined by applying statutory statement valuation requirements applicable immediately prior to adoption of these requirements to the contract ignoring any guaranteed death benefits in excess of account values or guaranteed living benefits applying proceeds in excess of account values.

2. The calculation of the Basic Reserve shall assume a return on separate account assets based on the year of issue statutory valuation rate less appropriate asset based charges, including charges for any guaranteed death benefits or guaranteed living benefits. It shall also assume a return for any fixed separate account and general account options equal to the rates guaranteed under the contract.

3. The Basic Reserve shall be no less than the Cash Surrender Value on the valuation date.

4. The Basic Adjusted Reserve shall be that determined based on Sections 5.B.1 and 5.B.1 except in 5.B.1 free partial withdrawal provisions shall be disregarded when determining surrender charges in applying the statutory statement valuation requirement prior to adoption of these requirements. Section 5.B.3 shall not apply to the Basic Adjusted Reserve.

C. Standard Scenario Reserve - Application of the Standard Scenario Method

1. General. Where not inconsistent with the guidance given here, the process and methods used to determine the Standard Scenario Reserve under the Standard Scenario Method shall be the same as required in the calculation of the Conditional Tail Expectation Amount as described in Section 2 of these requirements. Any additional assumptions needed to determine the Standard Scenario Reserve shall be explicitly documented.

2. Results for the Standard Scenario Method. For each contract, the Standard Scenario Reserve is the reserve based on a. or b. where:

   a. For contracts without any guaranteed benefits, where not subsequently disapproved by the Domiciliary Commissioner, the Standard Scenario Reserve is the Basic Reserve described in Sections 5.B.1, 5.B.2 and 5.B.3.

b. For all other contracts the Standard Scenario Reserve is equal to the greater of Cash Surrender Value on the valuation date and the quantity i + ii - iii, where:

i. Is the Basic Adjusted Reserve calculated for the contract, as described in Section 5.B.4;

ii Is the greater of zero and the greatest present value at the Discount Rate measured as of the end of each projection year of the negative of the Accumulated Net Revenue described below using the assumptions described in Section 5.C.3. The Accumulated Net Revenue at the end of a projection year is equal to (a) + (b) - (c), where:

(a) Is the Accumulated Net Revenue at the end of the prior projection year accumulated at the Discount Rate to the end of the current projection year; the Accumulated Net Revenue at the beginning of the projection (i.e., time 0) is zero;

(b) Are the margins generated during the projection year on account values accumulated at the Discount Rate to the end of the projection year (the factors and assumptions to be used in calculating the margins and account values are in Section 5.C.3; and

(c) Are the contract benefits in excess of account values applied, Individual reinsurance premiums and Individual reinsurance benefits payable or receivable during the projection year accumulated at the Discount Rate to the end of the projection year. Individual reinsurance is defined in Section 5.C.3.b.

iii) Is the contract's allocation of the value of hedges and Aggregate reinsurance as described in Section 5.C.4. Aggregate reinsurance is defined in Section 5.C.3.b.

No reinsurance shall be considered in the Standard Scenario Amount if such reinsurance does not meet the statutory requirements that would allow the treaty to be accounted for as reinsurance. The actuary shall determine the projected reinsurance premiums and benefits reflecting all treaty limitations and assuming any options in the treaty to the other party are exercised to decrease the value of reinsurance to the reporting company (e.g., options to increase premiums or terminate coverage). The positive value of any reinsurance treaty that is not guaranteed to the insurer or its successor shall be excluded from the value of reinsurance. The commissioner may require the exclusion of a reinsurance treaty or any portion of a reinsurance treaty if the terms of the reinsurance) treaty or the portion required to be excluded serves solely to reduce the calculated Standard Scenario Reserve without also reducing risk on scenarios similar to those used to determine the Conditional Tail Expectation Reserve. Any reinsurance reflected in the Standard Scenario Reserve shall be appropriate to the business and not merely constructed to exploit 'foreknowledge' of the components of the Standard Scenario Method.

3. Assumptions for use in paragraph 5.C.2.b.ii for Accumulated Net Revenue and Account Values.

a. Account Value Return Assumptions. The bases for return assumptions on assets supporting the Account Value are shown in Table I. The "Initial" returns shall be applied to the account value supported by each asset class on the valuation date as immediate drops, resulting in the Account Value at time 0. The "Year 1," "Years 2 – 5," and "Year 6+" returns for the equity, bond and balanced classes are gross annual effective rates of return and are used (along with other decrements and/or increases) to produce the Account Value as of the end of each projection interval. For purposes of this section, money market funds supporting Account Value shall be considered part of the Bond class.

The Fixed Fund rate is the greater of the minimum rate guaranteed in the contract or 4% but not greater than the current rates being credited to Fixed Funds on the valuation date.

Requirements for Principle-Based Reserves for Variable Annuities – VM-21

Account Values shall be projected using the appropriate gross rates from Table I for equity, bond and balanced classes applied to the supporting assets less all fund and contract charges according to the provisions of the funds and contract and applying the Fixed funds rate from Table I as if it were the resulting net rate after deduction for fund or contract charges.

The annual margins on Account Value are defined as follows:

i. During the Surrender Charge Amortization Period, as determined following the step outlined in section 5.C.5 below:

(a) 0.20% of Account Value; plus

(b) Any Net Revenue Sharing Income, as defined in section 3.A.5, that is contractually guaranteed to the insurer and its liquidator, receiver, and statutory successor; plus

(c) For all of the guaranteed living benefits of a given contract combined, the greater of:

- 0.20% of Account Value; or

- Explicit and optional contract charges for guaranteed living benefits; plus

Guidance Note: This excludes any guaranteed living benefit that is added to the contract simply for the purpose of increasing the revenue allowed under this section.

(d) For all guaranteed death benefits of a given contract combined, the greater of:

- 0.20% of Account Value; or

- Explicit and optional contract charges for guaranteed death benefits.

Guidance Note: This excludes any guaranteed living benefit that is added to the contract simply for the purpose of increasing the revenue allowed under this section.

ii. After the Surrender Charge Amortization Period:

The amount determined in i. above; plus 50% of the excess, if any, of all contract charges (excluding Net Revenue Sharing Income) over the sum of i.(a) , i.(c) and i.(d) above.

However, on fixed funds after the surrender charge period, a margin of up to the amount in i. above plus .4% may be used.

Table I

	Initial	Year 1	Years 2 – 5	Year 6+
Equity Class	-13.5%	0%	4.0%	5.50%
Bond Class	0%	0%	4.85%	4.85%
Balanced Class	-8.1%	0%	4.34%	5.24%

Fixed Separate Accounts and General Account (net)	0%	Fixed Fund Rate	Fixed Fund Rate	Fixed Fund Rate

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

Individual reinsurance premiums projected to be payable on ceded risk and receivable on assumed risk shall be included in the Projected Net Revenue. Similarly, Individual reinsurance benefits projected to be receivable on ceded risk and payable on assumed risk shall be included in the Projected Net Revenue. No Aggregate reinsurance shall be included in Projected Net Revenue.

c. Lapses, Partial Withdrawals, and In-The-Moneyness. Partial withdrawals elected as guaranteed living benefits, see Section 5.C.3.g, or required contractually (e.g., a contract operating under an automatic withdrawal provision on the valuation date) are to be deducted from the Account Value in each projection interval consistent with the projection frequency used, as described in Section 5.C.3.f, and according to the terms of the contract. No other partial withdrawals, including free partial withdrawals, are to be deducted from Account Value. All lapse rates should be applied as full contract surrenders.

For purposes of determining the dynamic lapse assumptions shown in Table II below, a guaranteed living benefit is in the money (ITM) for any projection interval if the Account Value at the beginning of the projection interval is less than the Current Value of the guaranteed living benefit (as defined below) also at the beginning of that projection interval.

The Current Value of the guaranteed living benefit at the beginning of any projection interval is either the amount of the current lump sum payment (if exercisable) or the present value of future lump sum or income payments. More specific guidance is provided below. For the purpose of determining the present value, the discount rate shall be equal *DR* as defined in A3.1)B)2). If future living benefit payments are life contingent (i.e., either the right of future exercise or the right to future income benefits expires with the death of the annuitant or the owner), then the company shall determine the present value of such payments using the mortality table specified in Section 5.C.3.e.

If a guaranteed living benefit is exercisable (withdrawal can start or, in the case of a GMWB, has begun) at the beginning of the projection interval, then the Current Value of the guaranteed living benefit shall be determined assuming immediate or continued exercise of that benefit.

If a guaranteed living benefit is not exercisable (e.g., due to minimum age or duration requirements) at the beginning of that projection interval, then the Current Value of the guaranteed living benefit shall be determined assuming exercise of the guaranteed living benefit at the earliest possible future projection interval. If the right to exercise the guaranteed living benefit is contingent on the survival of the annuitant or the owner, then the Current Value of the guaranteed living benefit shall assume survival to the date of exercise using the mortality table specified in Section 5.C.3.e.

Determination of the Current Value of a guaranteed living benefit that is exercisable or payable at a future projection interval shall take account of any guaranteed growth in the basis for the guarantee (e.g., where the basis grows according to an index or an interest rate).

For a GMWB, the Current Value shall be determined assuming the earliest penalty-free withdrawal of guaranteed benefits after withdrawals begin and by applying the constraints of any applicable maximum or minimum withdrawal provisions. If the GMWB is currently exercisable and the right to future GMWB payments is contingent upon the survival of the annuitant or owner,

then the Current Value shall assume survival using the mortality table specified in Section 5.C.3.e. After a GMWB that has payments that are contingent upon the survival of the annuitant or owner has commenced, then the Current Value shall assume survival using the Annuity 2000 Mortality Table.

For an unexercised GMIB, the Current Value shall be determined assuming the option with a reserve closest to the reserve for a 10 year certain and life option. The reserve values and the value of the GMIB on the assumed date of exercise shall be determined using the discount rate *DR* specified in Section 5.A.2.b and for life contingent payments, the Annuity 2000 Mortality Table. The Current Value of an unexercised GMIB, however, shall be set equal to the Account Value if the contractholder can receive higher income payments on the assumed date of exercise by electing the same option under the normal settlement option provisions of the contract.

For the purpose of applying the lapse assumptions specified in Table II below or contractholder elections rates specified in Section 5.C.3.g, the contract shall be considered "out of the money" (OTM) for a projection interval if the Current Value of the guaranteed living benefit at the beginning of the projection interval is less than or equal to the Account Value at the beginning of the same projection interval. If the Current Value of the guaranteed living benefit at the beginning of the projection interval is greater than the Account Value also at the beginning of the projection interval, the contract shall be considered 'in the money' (ITM) and the percent ITM shall equal:

100 * ((Current Value of the guaranteed living benefit /Account Value) - 1)

If a contract has multiple living benefit guarantees then the guarantee having the largest Current Value shall be used to determine the percent in the money.

Table II - Lapse Assumptions

	During Surrender Charge Period	After Surrender Charge Period		
Death Benefit Only Contracts	5%	10%		
All Guaranteed Living Benefits OTM	5%	10%		
		ITM < 10%	10%<=ITM< 20%	20%<=ITM
Any Guaranteed Minimum Accumulation Benefit ITM	2%	2%	0%	0%
Any Other Guaranteed Living Benefits ITM	3%	7%	5%	2%

d. Account Transfers and Future Deposits. No transfers between funds shall be assumed in the projection used to the determine the greatest present value amount required under Section 5.C.2.b.ii unless required by the contract (e.g., transfers from a dollar cost averaging fund or contractual rights given to the insurer to implement a contractually specified portfolio insurance management strategy or a contract operating under an automatic re-balancing option). When transfers must be modeled, to the extent not inconsistent with contract language, the allocation of transfers to funds must be in proportion to the contract's current allocation to funds.

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

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

e) Mortality. Mortality at 70% of the 1994 Variable Annuity MGDB Mortality Tables (1994 MGDB tables) through age 85 increasing by 1% each year to 100% of the 1994 MGDB tables at age 115 shall be assumed in the projection used to the determine the greatest present value amount required under Section 5.C.2.b.ii.

f. Projection Frequency. The projection used to determine the greatest present value amount required under Section 5.C.2.b.ii shall be calculated using an annual or more frequent time step, such as quarterly. For time steps more frequent than annual, assets supporting Account Values at the start of a year may be retained in such funds until year-end (i.e., margin earned during the year will earn the fund rates instead of the Discount Rate until year end) or removed after each time step. However, the same approach shall be applied for all years. Similarly, projected benefits, lapses, elections and other contractholder activity can be assumed to occur annually or at the end of each time step, but the approach shall be consistent for all years.

g. Contractholder Election Rates. Contractholder election rates for exercisable ITM guaranteed living benefits other than GMWBs shall be 5% per annum in every projection interval where the living benefit is less than 10% ITM, 15% per annum in every projection interval where the living benefit is 10% or more ITM and less than 20% ITM, and 25% per annum in every projection interval where the living benefit is more than 20% ITM. In addition, the election rate for an exercisable ITM guaranteed living benefit shall be 100% at the last model duration to elect such benefit. This 100% election rate shall be used when a Guaranteed Minimum Accumulation Benefit is at the earliest date that the benefit is exercisable and in-the-money. However, the contractholder election rate for any exercisable ITM guaranteed living benefit shall be zero if exercise would cause the extinction of a guaranteed living benefit having a larger Current Value. For this purpose, GMDBs are not benefits subject to election.

For guaranteed minimum withdrawal benefits, a partial withdrawal, if allowed by contract provisions, equal to the applicable percentage in Table III applied to the contract's maximum allowable partial withdrawal shall be assumed. However, if the contract's minimum allowable partial withdrawal exceeds the partial withdrawal from applying the rate in Table III to the contract's maximum allowable partial withdrawal, then the contract's minimum allowable partial withdrawal shall be assumed.

Table III - Guaranteed Withdrawal Assumptions

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

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

4. Assumptions for use in Section 5.C.2.b.iii.

a. The Value of Aggregate Reinsurance. The value of Aggregate reinsurance shall be calculated separately from the Accumulated Net Revenue. The value of Aggregate reinsurance is the discounted value, using the statutory valuation rate described in the following paragraph, of the excess of (a) the projected benefit payments from the reinsurance; over (b) the projected gross reinsurance premiums, where (a) and (b) are determined under the assumptions described in Section 5.C.3 for all applicable contracts in aggregate.

In order for the value of the Aggregate reinsurance to be consistent with the underlying Standard Scenario reserve, the discount rate shall be a weighted average of the valuation rates (*DR*) of the contracts that are supported by the Aggregate reinsurance treaty. The weights used to determine this discount rate shall be reasonably related to the risks that are being covered by the Aggregate reinsurance (e.g., account value or values of guaranteed benefits) and shall be applied consistently from year to year. If an appropriate method to determine this discount rate does not exist, the value of the Aggregate reinsurance shall be determined using the statutory valuation rate in effect on the valuation date for annuities valued on an issue year basis using Plan Type A and a Guarantee Duration greater than 10 years but not more than 20 years, determined assuming there are cash settlement options but no interest guarantees on future premiums.

b. The Value of Approved Hedges. The value of approved hedges shall be calculated separately from the Accumulated Net Revenue. The value of approved hedges is the difference between: a) the discounted value at the 1-year CMT as of the valuation date of the pre-tax cash flows from the approved hedges; less b) their statement values on the valuation date.

Guidance Note: For purposes of this section, the term CMT refers to the nominal yields on actively traded non-inflation-indexed issues adjusted to constant maturities, as released daily by the Federal Reserve Board. As of this writing, the current and historical one-year rates may be found at http://www.federalreserve.gov/releases/h15/data/Business_day/H15_TCMNOM_Y1.txt and the current and historical five-year rates may be found at http://www.federalreserve.gov/releases/h15/data/Business_day/H15_TCMNOM_Y5.txt

To be an approved hedge for purposes of the Standard Scenario Reserve, a derivative or other investment has to be an actual asset held by the company on the valuation date, be used as a hedge supporting the contracts falling under the scope of these requirements, and comply with any statutes, laws, or regulations (including applicable documentation requirements) of the domiciliary state or jurisdiction related to the use of derivative instruments.

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

The cash flow projection for approved hedges that expire in less than one year from the valuation date should be based on holding the hedges to their expiration. For hedges with an expiration of more than 1 year, the value of hedges should be based on liquidation of the hedges one year from the valuation date. Where applicable, the liquidation value of hedges shall be consistent with the assumed returns in the Standard Scenario from the start of the projection to the date of liquidation, Black-Scholes pricing, a risk free rate equal to the 5-year CMT as of the valuation date and the annual volatility implicit as of the valuation date in the statement value of the hedges when the statement value of hedges are valued with Black-Scholes pricing and a risk-free rate equal to the 5-year CMT as of the valuation date.

Guidance Note: Conceptually, the item being hedged, the contract guarantees, and the approved hedges are accounted for at the average present value of the worst 30% of all scenarios, the tail scenarios for a CTE (70) measure. However, the statement value of approved hedges is at market. Therefore, the standard scenario value of approved hedges is a proxy of the adjustment needed to move approved hedges from a market value to a tail value.

There is no credit in the Standard Scenario for dynamic hedging beyond the credit that results from hedges actually held on the valuation date.

c. Allocation of the Value of Hedges and the Value of Aggregate Reinsurance. The value of approved hedges and Aggregate reinsurance shall be allocated to the contracts which are supported by the applicable Aggregate reinsurance agreements and approved hedges. A contract's allocation shall be the lesser of the amount in Section 5.C.2.b.ii for the contract or the product of a) and b) where:

i. Is the sum of the value of the applicable approved hedges plus the value of the applicable Aggregate reinsurance for all contracts supported by the same hedges and/or the Aggregate reinsurance agreement; and

ii. Is the ratio of the amount in Section 5.C.2.b.ii for the contract to the sum of the amount in Section 5.C.2.b.ii for all contracts supported by the same hedges and/or the Aggregate reinsurance agreement.

d. Retention of components. For the seriatim Standard Scenario Reserve on the statement date under each of Sections 5.A.2.a and 5.A.2.b, the actuary should have available to the Commissioner the following values for each contract:

i. The Standard Scenario Reserve prior to adjustment under paragraph 5.C.4.c.

ii. The Standard Scenario Reserve net of the adjustment in 5.C.4.c.

5. Determination of the Surrender Charge Amortization Period to be used in Sections 5.C.3.a.i and 5.C.3.a.ii.

The purpose of the Surrender Charge Amortization Period is to help determine how much of the surrender charge is amortized in the Basic Adjusted Reserve portion of the Standard Scenario Amount and how much needs to be amortized in the Accumulated Net Revenue portion. Once determined, the Surrender Charge Amortization Period determines the duration over which the lower level of margins, as described in Section 5.C.3.a.i, is used. After that duration, the higher level of margins, as described in Section 5.C.3.a.ii, is used.

A separate Surrender Charge Amortization Period is determined for each contract and is based on amounts determined in the calculation of the Basic Adjusted Reserve for that contract. A key component of the calculation is the amount of the surrender charge that is not amortized in the Basic Adjusted Reserve calculation for that contract. This is represented by the difference between the account value and the cash surrender value projected within the Basic Adjusted Reserve calculation for the contract.

The Surrender Charge Amortization Period for a given contract is determined by following the steps:

a. Measure the duration of the greatest present value used in the Basic Adjusted Reserve. The Basic Adjusted Reserve is determined for a contract by taking the greatest present value of a stream of projected benefits. The benefit stream that determines the greatest present value typically includes an "ultimate" event (e.g., 100% surrender, 100% annuitization, or maturity). The "BAR Duration" is the length of time between the valuation date and the projected "ultimate" event.

b. Determine the amount of the surrender charge not amortized in the Basic Adjusted Reserve. The surrender charge not amortized in the Basic Adjusted Reserve is the difference between the

projected account value and the projected cash surrender value at the BAR Duration (i.e., at the time of that projected "ultimate" event). This value for a given contract shall not be less than zero.

c. Determine the Surrender Charge Amortization Period before rounding. This equals i time ii plus iii, where:

i. Equals the ratio of the amount determined in step 2 to the Account Value on the valuation date;

ii Equals 100; and

iii Equals the BAR Duration determined in step 1.

d. Determine the Surrender Charge Amortization Period for the contract. This is the amount determined in step 3, rounded to the nearest number that represents a projection duration, taking into account the projection frequency described in A3.3)C)6). For example, step 3 produces a value of 2.15 and the projection frequency is quarterly, the Surrender Charge Amortization Period for the contract is 2.25.

Section 5. Alternative Methodology

A. General Methodology

1. General Methodology Description. For variable deferred annuity contracts that either contain no guaranteed benefits or only GMDBs, including "earnings enhanced death benefits," (i.e., no VAGLBs), the Conditional Tail Expectation Amount may be determined by using the method outlined below rather than by using the approach described in Section 2.D (i.e., based on projections), provided the approach described in Section 2.D has not been used in prior valuations or else approval has been obtained from the Domiciliary Commissioner.

The Conditional Tail Expectation Amount determined using the Alternative Methodology for a group of contracts with GMDBs shall be determined as the sum of amounts obtained by applying factors to each contract inforce as of a valuation date and adding this to the contract's Cash Surrender Value. The resulting Conditional Tail Expectation Amount shall not be less than the Cash Surrender Value in aggregate for the group of contracts to which the Alternative Methodology is applied.

Guidance Note: The amount that is added to a contract's Cash Surrender Value may be negative, zero or positive, thus resulting in a reserve for a given contract that could be less than, equal to, or greater than, the Cash Surrender Value.

The Conditional Tail Expectation Amount determined using the Alternative Methodology for a group of contracts that contain no guaranteed benefits shall be determined using an application of Actuarial Guideline XXXIII, as described below.

Guidance Note: The term "contracts that contain no guaranteed benefits" means that there are no guaranteed benefits at any time during the life of the contract (past, present or future).

For purposes of performing the Alternative Methodology, materially similar contracts within the group may be combined together into subgroups to facilitate application of the factors. Specifically, all contracts comprising a "subgroup" must display substantially similar characteristics for those attributes expected to affect reserves (e.g., definition of guaranteed benefits, attained age, contract duration, years-to-maturity, market-to-guaranteed value, asset mix, etc.). Grouping shall be the responsibility of the actuary but may not be done in a manner that intentionally understates the resulting reserve.

2. Definitions of Terms Used in this Section

a. Annualized Account Charge Differential. This term is the charge as percentage account value (revenue for the company) minus the expense as percentage of account value.

b. Asset Exposure. Asset Exposure refers to the greatest possible loss to the insurance company from the value of assets underlying general or separate account contracts falling to zero.

c. Benchmark. Benchmarks have similar risk characteristics to the entity (e.g., asset class, index, or fund) to be modeled.

d. Deterministic Calculations. In a Deterministic Calculation, a given event (e.g., asset returns going up by 7% then down by 5%) is assumed to occur with certainty. In a stochastic calculation, events are assigned probabilities.

e. Foreign Securities. Securities issued by entities outside the United States and Canada.

f. Grouped Fund Holdings. Grouped Fund Holdings relate to guarantees that apply across multiple deposits or for an entire contract instead of on a deposit-by-deposit basis.

g. Guaranteed Value. The Guaranteed Value is the benefit base or a substitute for the account value (if greater than the account value) in the calculation of living benefits or death benefits. The methodology for setting the Guaranteed Value is defined in the variable annuity contract.

h. High-Yield Bonds. High-Yield Bonds are below investment grade, with NAIC ratings (if assigned) of 3, 4, 5, or 6. Compared to investment grade bonds, these bonds have higher risk of loss due to credit events. Funds containing securities predominately containing securities that are not NAIC rated as 1 or 2 (or similar agency ratings) are considered to be High-Yield.

i. Investment Grade Fixed Income Securities. Securities with NAIC ratings of 1 or 2 are Investment Grade. Funds containing securities predominately with NAIC ratings of 1 or 2 or with similar agency ratings are considered to be Investment Grade.

j. Liquid Securities. These securities can be sold and converted into cash at a price close to its true value in a short period of time.

k. Margin Offset. Margin Offset is the portion of charges plus any Revenue Sharing allowed under Section 3.A.5 available to fund claims and amortization of the unamortized surrender charges allowance.

l. Multi-Point Linear Interpolation. This methodology is documented in mathematical literature and calculates factors based on multiple attributes categorized with discrete values where the attributes' actual values may be between the discrete values.

m. Model Office. A Model Office converts many contracts with similar features into one contract with specific features for modeling purposes.

n. Pre-Packaged Scenarios. The Pre-Packaged Scenarios are the year-by-year asset returns that may be used (but are not mandated) in projections related to the alternative methodology. These scenarios are available on an American Academy of Actuaries website.

o. Quota-Share Reinsurance. In this type of reinsurance treaty, the same proportion is ceded on all cessions. The reinsurer assumes a set percentage of risk for the same percentage of the premium, minus an allowance for the ceding company's expenses.

p. Resets. A Reset benefit results in a future minimum guaranteed benefit being set equal to the contract's account value at previous set date(s) after contract inception.

q. Risk Mitigation Strategy. A Risk Mitigation Strategy is a device to reduce the probability and/or impact of a risk below an acceptable threshold.

r. Risk Profile. Risk Profile in these requirements relates to the prescribed asset class categorized by the volatility of returns associated with that class.

s. Risk Transfer Arrangements. A Risk Transfer Arrangement shifts risk exposures (e.g., the responsibility to pay at least a portion of future contingent claims) away from the original insurer.

t. Roll-Up. A Roll-Up benefit results in the guaranteed value associated with a minimum contractual guarantee increasing at a contractually defined interest rate.

u. Volatility. Volatility refers to the annualized standard deviation of asset returns.

3. Contract-by-Contract Application for Contracts that Contain No Guaranteed Living or Death Benefits. The Alternative Methodology reserve for each contract that contains no guaranteed living or death benefits shall be determined by applying Actuarial Guideline XXXIII. The application shall assume a return on separate account assets equal to the year of issue valuation interest rate less appropriate asset based charges. It shall also assume a return for any fixed separate account and general account options equal to the rates guaranteed under the contract.

   The reserve for such contracts shall be no less than the Cash Surrender Value on the valuation date, as defined in Section 2.B.

4. Contract-by-Contract Application for Contracts that Contain GMDBs only. For each contract, factors are used to determine a dollar amount, equal to $R \times (CA + FE) + GC$ (as described below), that is to be added to that contract's Cash Surrender Value as of the valuation date. The dollar amount to be added for any given contract may be negative, zero, or positive. The factors that are applied to each contract shall reflect the following attributes as of the valuation date:

   a. The contractual features of the variable annuity product,

   b. The actual issue age, period since issue, attained age, years-to-maturity, and gender applicable to the contract,

   c. The account value and composition by type of underlying variable or fixed fund,

   d. Any surrender charges,

   e. The GMDB and the type of adjustment made to the GMDB for partial withdrawals (e.g., proportional or dollar-for-dollar adjustment), and

   f. Expenses to be incurred and revenues to be received by the company as estimated on a Prudent Estimate basis as described in Section 2.B.8 and complying with the requirements for Revenue Sharing as described in section 3.A.5.

5. Factor Components. Factors shall be applied to determine each of the following components.

   Guidance Note: Material to assist in the calculation of the components is available on the American Academy of Actuaries' website, at http://www.actuary.org/life/phase2.asp.

   CA = Provision for amortization of the unamortized surrender charges calculated by the insurer based on each contract's surrender charge schedule, using prescribed assumptions, except that

lapse rates shall be based on the insurer's Prudent Estimate, but with no provision for Federal Income Taxes or mortality;

FE = Provision for fixed dollar expenses less fixed dollar revenue calculated using prescribed assumptions, the contract's actual expense charges, the insurer's anticipated actual expenses and lapse rates, both estimated on a Prudent Estimate basis, and with no provision for Federal Income Taxes or mortality;

GC = Provision for the costs of providing the GMDB less net available spread-based charges determined by the formula $F \times GV - G \times AV \times R$, where GV and AV are as defined in section 6.C.1;

R = A scaling factor that is a linear function of the ratio of the margin offset to Total Account Charges (*W*) and takes the form $R(\beta_0, \beta_1) = \beta_0 + \beta_1 \times W$. The intercept and slope factors for this linear function vary according to:

i. Product type,

ii. Pro-rata or dollar-for-dollar reductions in guaranteed value following partial withdrawals,

iii. Fund class,

iv. Attained age,

v. Contract duration,

vi. Asset-based charges, and

vii. 90% of the ratio of account value to guaranteed value, determined in the aggregate for all contracts sharing the same product characteristics.

Tables of factors for *F*, *G*, β_0, and β_1 values, reflecting a 65% confidence level and ignoring Federal Income Tax, are available from the National Association of Insurance Commissioners. In calculating $R(\beta_0, \beta_1)$ directly from the linear function provided above, the margin ratio *W* must be constrained to values greater than or equal to 0.2 and less than or equal to 0.6.

Interpolated values of F, *G* and *R* (calculated using the linear function described above) for all contracts having the same product characteristics and asset class shall be derived from the pre-calculated values using multi-point linear interpolation over the following four contract-level attributes:

a. Attained age,

b. Contract duration,

c. Ratio of account value to GMDB, and

d. The total of all asset based charges, including any fund management fees or allowances based on the underlying variable annuity funds received by the insurer.

The gross asset-based charges for a product shall equal the sum of all contractual asset-based charges plus fund management fees or allowances based on the underlying variable annuity funds received by the insurer determined by complying with the requirements for Prudent Estimate described in Section 2.B.8 and Revenue Sharing described in Section 3.A.5. Net asset-based charges equal gross asset-based charges

less any company expenses assumed to be incurred expressed as a percentage of account value. All expenses that would be assumed if the Conditional Tail Expectation Amount were being computed as described in Section 3.A.1 should be reflected either in the calculation of the net asset based charges or in the expenses reflected in the calculation of the amount *FE*.

No adjustment is made for Federal Income Taxes in any of the components listed above.

For purposes of determining the Conditional Tail Expectation Amount using the Alternative Methodology, any interpretation and application of the requirements of these requirements shall follow the principles discussed in Section 1.

B. Calculation of *CA* and *FE*

1. General Description. Components *CA* and *FE* shall be calculated for each contract, thus reflecting the actual account value and GMDB, as of the valuation date, which is unique to each contract.

Components *CA* and *FE* are defined by deterministic "single-scenario" calculations that account for asset growth, interest and inflation at prescribed rates. Mortality is ignored for these two components. Lapse rates shall be determined on a Prudent Estimate basis as described in Section 2.B.8. Lapse rates shall be adjusted by the formula shown below (the Dynamic Lapse Multiplier, λ), which bases the relationship of the GMDB (denoted as GV in the formula) to the account value (denoted as AV in the formula) on the valuation date. Thus, projected lapse rates are smaller when the GMDB is greater than the account value and larger when the GMDB is less than the account value.

$$\lambda = MIN\left[U, MAX\left[L, 1 - M \times \left(\frac{GV}{AV} - D\right)\right]\right],$$

where U=1, L=0.5, M=1.25, and D=1.1.

Present values shall be computed over the period from the valuation date to contract maturity at a discount rate of 5.75%.

Projected fund performance underlying the account values is as shown in the table below. Unlike the *GC* component, which requires the entire account value to be mapped, using the Fund Categorization Rules set forth in section A4.4, to a single "equivalent" asset class (as described in Section 6.D.3, the *CA* and *FE* calculation separately projects each variable subaccount (as mapped to the 8 prescribed categories shown in Section 6.D using the net asset returns shown in the following table. If surrender charges are based wholly on deposits or premiums as opposed to account value, use of this table may not be necessary.

Asset Class / Fund	**Net Annualized Return**
Fixed Account	Guaranteed Rate
Money Market	0%
Fixed Income (Bond)	0%
Balanced	-1%
Diversified Equity	–2%
Diversified International Equity	–3%
Intermediate Risk Equity	–5%
Aggressive or Exotic Equity	–8%

2. Component *CA*. Component *CA* is computed as the present value of the projected change in surrender charges plus the present value of an implied borrowing cost of 25 basis points at the beginning of each future period applied to the surrender charge at such time.

   This component can be interpreted as the "amount needed to amortize the unamortized surrender charge allowance for the *persisting* policies plus the implied borrowing cost." By definition, the amortization for non-persisting lives in each time period is exactly offset by the collected surrender charge revenue (ignoring timing differences and any waiver upon death). The unamortized balance must be projected to the end of the surrender charge period using the net asset returns and Dynamic Lapse Multiplier, λ, both as described above and the year-by-year amortization discounted also as described above. For simplicity, mortality is ignored in the calculations. Surrender charges and free partial withdrawal provisions are as specified in the contract. Lapse and withdrawal rates are determined on a Prudent Estimate basis, and may vary according to the attributes of the business being valued, including, but not limited to, attained age, contract duration, etc.

3. Component *FE*. Component *FE* establishes a provision for fixed dollar expenses (e.g., allocated costs, including overhead expressed as "per contract" *and* those expenses defined on a "per contract" basis) less any fixed dollar revenue (e.g., annual administrative charges or contract fees) through the earlier of contract maturity or 30 years. *FE* is computed as the present value of the company's assumed fixed expenses projected at an assumed annual rate of inflation starting in the second projection year. This rate grades uniformly from the current inflation rate ("CIR") into an ultimate inflation rate of 3% per annum in the 8th year after the valuation date. The CIR is the greater of 3% and the inflation rate assumed for expenses in the company's most recent asset adequacy analysis for similar business.

C. Calculation of the *GC* Component

1. *GC* Factors. *GC* is calculated as $F \times GV - G \times AV \times R$, where *GV* is the amount of GMDB and *AV* is the contract account value, both as of the valuation date. *F*, *G* and the slope and intercept for the linear function used to determine *R* (identified symbolically as β_0 and β_1) are pre-calculated factors available from the National Association of Insurance Commissioners and known herein as the "Pre-Calculated Factors." These factors shall be interpolated as described in subsection 5, below, and modified as necessary as described in Sections 6.C.7 and 6.C.8.

2. Five Steps. There are five major steps in determining the *GC* component for a given contract:

   a. Classifying the asset exposure (as specified in subparagraph C), below);

   b. Determining the risk attributes (as specified in subparagraphs D) and E), below);

   c. Retrieving the appropriate nodal factors from the factor grid (as described in subparagraph F) below;

   d. Interpolating the nodal factors, where applicable (optional) also as described in subparagraph F), below; and

   e. Applying the factors to the contract values.

3. Classifying Asset Exposure. For purposes of calculating *GC* (unlike what is done for components *CA* and *FE*), the entire account value for each contract must be assigned to one of the eight prescribed fund classes shown in Section 6.D, using the Fund Categorization rules in section 6.D.

4. Product Designs. Factors *F*, *G* and $R(\beta_1, \beta_2)$ are available within the Pre-Calculated Factors for the following GMDB product designs:

a. Return of Premium ("ROP"),

b. Premiums less withdrawals accumulated at 3% per annum, capped at 2.5 times premiums less withdrawals, with no further increase beyond age 80 ("ROLL3"),

c. Premiums less withdrawals accumulated at 5% per annum, capped at 2.5 times premiums less withdrawals, with no further increase beyond age 80 ("ROLL5"),

d. An annual ratchet design (maximum anniversary value), for which the guaranteed benefit never decreases and is increased to equal the previous contract anniversary account value, if larger, with no further increases beyond age 80 ("MAV"),

e. A design having a guaranteed benefit equal to the larger of the benefits in designs 3 and 4, above ("HIGH"),

f. An enhanced death benefit ("EDB") equal to 40% of the net earnings on the account (i.e., 40% of account value less total premiums paid plus withdrawals made) with this latter benefit capped at 40% of premiums less withdrawals ("EDB"),

5. Other Attributes. Factors F, G and $R(\beta_1, \beta_2)$ are available within the Pre-Calculated Factors for the following set of attributes:

   a. Two Partial Withdrawal Rules – one for contracts having a pro-rata reduction in the GMDB and another for contracts having a dollar-for-dollar reduction,

   b. The eight asset classes described in section 6.D.2,

   c. Eight attained ages, with a 5-year age setback for females,

   d. Five contract durations,

   e. Seven values of GV/AV, and

   f. Three levels of asset-based income.

6. Interpolation of F, G and $R(\beta_1,\beta_2)$.

   a. Values of F, G and $R(\beta_1, \beta_2)$ apply to a contract having the product characteristics listed in Section 6.E.1 and shall be determined by selecting values for the appropriate partial withdrawal rule and asset class and then using multi-point linear interpolation among published values for the last four attributes shown in section 6.C.5.

   b. Interpolation over all four dimensions is not required, but if not performed over one or more dimensions, the factor used must result in a conservative (higher) value of GC. However, simple linear interpolation using the $AV \div GV$ ratio is mandatory. In this case, the company must choose nodes for the other three dimensions according to the following rules: next highest attained age, nearest duration, and nearest Annualized Account Charge Differential, as listed in Section 6.E.3 (i.e., capped at +100 and floored at –100 bps).

   c. For $R(\beta_1, \beta_2)$, the interpolation should be performed on the Scaling Factors R calculated using β_1, β_2, using the ratio of Margin Offset to Total Asset Charges (W), not on the factors β_1 and β_2 themselves.

d. An Excel® workbook, Excel® add-in and companion dynamic link library (.dll) program is available from the National Association of Insurance Commissioners that can be used to determine the correct values and perform the multi-point linear interpolation.

e. Alternatively, published documentation can be referenced on performing multi-point linear interpolation and the required sixteen values determined using a key that is documented in the table "*Components of Key Used for GC Factor Look-Up*" located in Section 6.E.3.

7. Adjustments to *GC* for Product Variations & Risk Mitigation/Transfer. In some cases, it may be necessary to make adjustments to the published factors due to:

a. A variation in product form wherein the definition of the guaranteed benefit is materially different from those for which factors are available (see Section 6.C.8); and/or

b. A risk mitigation or other management strategy, other than a hedging strategy, that cannot be accommodated through a straightforward and direct adjustment to the published values.

Adjustments may not be made to *GC* for hedging strategies.

Any adjustments to the published factors must be fully documented and supported through stochastic analysis. Such analysis may require stochastic simulations, but would not ordinarily be based on full inforce projections. Instead, a representative "model office" should be sufficient. Use of these adjusted factors must be supported by a periodic review of the appropriateness of the assumptions and methods used to perform the adjustments, with changes made to the adjustments when deemed necessary by such review.

Note that minor variations in product design do not necessarily require additional effort. In some cases, it may be reasonable to use the factors/formulas for a different product form (e.g., for a roll-up GMDB near or beyond the maximum reset age or amount, the ROP GMDB factors/formulas shall be used, possibly adjusting the guaranteed value to reflect further resets, if any). In other cases, the reserves may be based on two different guarantee definitions and the results interpolated to obtain an appropriate value for the given contract/cell. Likewise, it may be possible to adjust the Alternative Methodology results for certain risk transfer arrangements without significant additional work (e.g., quota-share reinsurance without caps, floors or sliding scales would normally be reflected by a simple pro-rata adjustment to the "gross" *GC* results).

However, if the contract design is sufficiently different from those provided and/or the risk mitigation strategy is non-linear in its impact on the Conditional Tail Expectation Amount, and there is no practical or obvious way to obtain a good result from the prescribed factors/formulas, any adjustments or approximations must be supported using stochastic modeling. Notably this modeling need not be performed on the whole portfolio, but can be undertaken on an appropriate set of representative policies.

8. Adjusting *F* and *G* for Product Design Variations. This subsection describes the typical process for adjusting *F* and *G* factors due to a variation in product design. Note that *R* (as determined by the slope and intercept terms in the factor table) would not be adjusted.

a. Select a contract design among those described in Section 6.C.4 that is similar to the product being valued. Execute cash flow projections using the documented assumptions (see table of *Liability Modeling Assumptions & Product Characteristics* in section 6.E.1 and table of *Asset Based Fund Charges* in section 6.E.2) and the pre-packaged scenarios for a set of representative cells (combinations of attained age, contract duration, asset class, AV/GMDB ratio and asset-based charges). These cells should correspond to nodes in the table of pre-calculated factors. Rank (order) the sample distribution of results for the present value of net cost. Determine those scenarios that comprise CTE (65).

Guidance Note: Present value of net cost = PV[guaranteed benefit claims in excess of account value] – PV[margin offset]. The discounting includes cash flows in all future years (i.e., to the earlier of contract maturity and the end of the horizon).

b. Using the results from step 1, average the present value of cost for the CTE (65) scenarios and divide by the current guaranteed value. For the J^{th} cell, denote this value by F_J. Similarly, average the present value of margin offset revenue for the same subset of scenarios and divide by account value. For the J^{th} cell, denote this value by G_J.

c. Extract the corresponding pre-calculated factors. For each cell, calibrate to the published tables by defining a "model adjustment factor" (denoted by asterisk) separately for the "cost" and "margin offset" components:

$$F_J^* = \frac{f(\tilde{\theta})}{F_J} \text{ and } G_J^* = \frac{\hat{g}(\tilde{\theta})}{G_J}$$

d. Execute "product specific" cash flow projections using the documented assumptions and pre-packaged scenarios for the same set of representative cells. Here, the company should model the actual product design. Rank (order) the sample distribution of results for the present value of net cost. Determine those scenarios that comprise CTE (65).

e. Using the results from step 4, average the present value of cost for the CTE (65) scenarios and divide by the current guaranteed value. For the J^{th} cell, denote this value by $\overline{F}_J$. Similarly, average the present value of margin offset revenue for the same subset of scenarios and divide by account value. For the J^{th} cell, denote this value by $\overline{G}_J$.

f. To calculate the Conditional Tail Expectation Amount for the specific product in question, the company should implement the Alternative Methodology as documented, but use $\overline{F}_J \times F_J^*$ in place of F and $\overline{G}_J \times G_J^*$ instead of G. The same R factors as appropriate for the product evaluated in step 1 shall be used for this step (i.e., the product used to calibrate the cash flow model).

9. Adjusting *GC* for Mortality Experience. The factors that have been developed for use in determining *GC* assume male mortality at 100% of the 1994 Variable Annuity MGDB ALB Mortality Table. Companies electing to use the Alternative Methodology that have not conducted an evaluation of their mortality experience shall use these factors. Other companies should use the procedure described below to adjust for the actuary's Prudent Estimate of mortality. The development of Prudent Estimate mortality shall follow the requirements and guidance of Section 12. Once a company uses the modified method for a block of business, the option to use the unadjusted factors is no longer available for that part of its business. In applying the factors to actual inforce business, a 5-year age setback should be used for female annuitants.

a. Develop a set of mortality assumptions based on Prudent Estimate. In setting these assumptions, the actuary shall be guided by the definition of Prudent Estimate and the principles discussed in Section 11 and 12.

b. Calculate two sets of net single premiums (NSP) at each attained age: one valued using 100% of the 1994 Variable Annuity MGDB ALB Mortality Table (with the aforementioned 5-year age setback for females) and the other using Prudent Estimate mortality. These calculations shall assume an interest rate of 3.75% and a lapse rate of 7% per year.

c. The *GC* factor is multiplied by the ratio, for the specific attained age being valued, of the NSP calculated using the Prudent Estimate mortality to the NSP calculated using the 1994 Variable Annuity MGDB ALB Mortality Table (with the aforementioned 5-year age setback for females).

D. Fund Categorization

1. Criteria. The following criteria should be used to select the appropriate factors, parameters and formulas for the exposure represented by a specified guaranteed benefit. When available, the volatility of the long-term annualized total return for the fund(s) – or an appropriate benchmark – should conform to the limits presented. For this purpose, "long-term" is defined as twice the average projection period that would be applied to test the product in a stochastic model (generally, at least 30 years).

   Where data for the fund or benchmark are too sparse or unreliable, the fund exposure should be moved to the next higher volatility class than otherwise indicated. In reviewing the asset classifications, care should be taken to reflect any additional volatility of returns added by the presence of currency risk, liquidity (bid-ask) effects, short selling and speculative positions.

2. Asset Classes. Variable subaccounts must be categorized into one of the following eight (8) asset classes. For purposes of calculating *CA* or *FE*, each contract will have one or more of the following asset classes represented, whereas for component *GC*, all subaccounts will be mapped into a single asset class.

   a. Fixed Account. This class is credited interest at guaranteed rates for a specified term or according to a 'portfolio rate' or 'benchmark' index. This class offers a minimum positive guaranteed rate that is periodically adjusted according to company policy and market conditions.

   b. Money Market/Short-Term. This class is invested in money market instruments with an average remaining term-to-maturity of less than 365 days.

   c. Fixed Income. This class is invested primarily in investment grade fixed income securities. Up to 25% of the funds within this class may be invested in diversified equities or high-yield bonds. The expected volatility of the returns for this class will be lower than the Balanced fund class.

   d. Balanced. This class is a combination of fixed income securities with a larger equity component. The fixed income component should exceed 25% of the portfolio. Additionally, any aggressive or 'specialized' equity component should not exceed one-third (33.3%) of the total equities held. Should the fund violate either of these constraints, it should be categorized as an equity fund. This class usually has a long-term volatility in the range of 8% – 13%.

   e. Diversified Equity. This class is invested in a broad-based mix of U.S. and foreign equities. The foreign equity component (maximum 25% of total holdings) must be comprised of liquid securities in well-developed markets. Funds in this class would exhibit long-term volatility comparable to that of the S&P500. These funds should usually have a long-term volatility in the range of 13% – 18%.

   f. Diversified International Equity. This class is similar to the Diversified Equity class, except that the majority of fund holdings are in foreign securities. This class should usually have a long-term volatility in the range of 14% – 19%.

   g. Intermediate Risk Equity. This class has a mix of characteristics from both the Diversified and Aggressive Equity Classes. This class has a long-term volatility in the range of 19% – 25%.

   h. Aggressive or Exotic Equity. This class comprises more volatile funds where risk can arise from: underdeveloped markets, uncertain markets, high volatility of returns, narrow focus (e.g., specific market sector), etc. This class (or market benchmark) either does not have sufficient history to allow for the calculation of a long-term expected volatility, or the volatility is very high. This class would be used whenever the long-term expected annualized volatility is indeterminable or exceeds 25%.

3. Selecting Appropriate Investment Classes. The selection of an appropriate investment type should be done at the level for which the guarantee applies. For guarantees applying on a deposit-by-deposit basis, the fund selection is straightforward. However, where the guarantee applies across deposits or for an entire contract, the approach can be more complicated. In such instances, the approach is to identify for each contract where the "grouped holdings" fit within the categories listed and to classify the associated assets on this basis.

   A seriatim process is used to identify the "grouped" fund holdings, to assess the risk profile of the current fund holdings (possibly calculating the expected long-term volatility of the funds held with reference to the indicated market proxies), and to classify the entire 'asset exposure' into one of the specified choices. Here, 'asset exposure' refers to the underlying assets (separate and/or general account investment options) on which the guarantee will be determined. For example, if the guarantee applies separately for each deposit year within the contract, then the classification process would be applied separately for the exposure of each deposit year.

   In summary, mapping the benefit exposure (i.e., the asset exposure that applies to the calculation of the guaranteed minimum death benefits) to one of the prescribed asset classes is a multi-step process:

   a. Map each separate and/or general account investment option to one of the prescribed asset classes. For some funds, this mapping will be obvious, but for others it will involve a review of the fund's investment policy, performance benchmarks, composition and expected long-term volatility.

   b. Combine the mapped exposure to determine the expected long-term "volatility of current fund holdings." This will require a calculation based on the expected long-term volatility for each fund and the correlations between the prescribed asset classes as given in the table "*Correlation Matrix for Prescribed Asset Classes*," in section 6.D.4.

   c. Evaluate the asset composition and expected volatility (as calculated in step 2) of current holdings to determine the single asset class that best represents the exposure, with due consideration to the constraints and guidelines presented earlier in this section.

   In step 1, the company should use the fund's actual experience (i.e., historical performance, inclusive of reinvestment) only as a guide in determining the expected long-term volatility. Due to limited data and changes in investment objectives, style and/or management (e.g., fund mergers, revised investment policy, different fund managers, etc.); the company may need to give more weight to the expected long-term volatility of the fund's benchmarks. In general, the company should exercise caution and not be overly optimistic in assuming that future returns will consistently be less volatile than the underlying markets.

   In step 2, the company should calculate the "volatility of current fund holdings" (for the exposure being categorized) by the following formula

$$\sigma = \sqrt{\sum_{i=1}^{n}\sum_{j=1}^{n} w_i w_j \rho_{ij} \sigma_i \sigma_j}$$

   using the volatilities and correlations in the following table where $w_i = \frac{AV_i}{\sum_k AV_k}$ is the relative value of fund i expressed as a proportion of total contract value, ρ_{ij} is the correlation between asset classes i and j and σ_i is the volatility of asset class i. An example is provided after the table.

4. Correlation Matrix for Prescribed Asset Classes.

ANNUAL VOLATILITY		FIXED ACCOUNT	MONEY MARKET	FIXED INCOME	BALANCED	DIVERSE EQUITY	INTL EQUITY	INTERM EQUITY	AGGR EQUITY
1.0%	FIXED ACCOUNT	**1**	0.50	0.15	0	0	0	0	0
1.5%	MONEY MARKET	0.50	**1**	0.20	0	0	0	0	0
5.0%	FIXED INCOME	0.15	0.20	**1**	0.30	0.10	0.10	0.10	0.05
10.0%	BALANCED	0	0	0.30	**1**	0.95	0.60	0.75	0.60
15.5%	DIVERSE EQUITY	0	0	0.10	0.95	**1**	0.60	0.80	0.70
17.5%	INTL EQUITY	0	0	0.10	0.60	0.60	**1**	0.50	0.60
21.5%	INTERM EQUITY	0	0	0.10	0.75	0.80	0.50	**1**	0.70
26.0%	AGGR EQUITY	0	0	0.05	0.60	0.70	0.60	0.70	**1**

5. Fund Categorization Example. As an example, suppose three funds (Fixed Income, diversified U.S. Equity and Aggressive Equity) are offered to clients on a product with a contract level guarantee (i.e., across all funds held within the contract). The current fund holdings (in dollars) for five sample contracts are shown in the following table.

	1	**2**	**3**	**4**	**5**
MV Fund X (Fixed Income):	5,000	4,000	8,000	-	5,000
MV Fund Y (Diversified Equity):	9,000	7,000	2,000	6,000	-
MV Fund Z (Aggressive Equity):	1,000	4,000	-	4,000	5,000
Total Market Value:	15,000	15,000	10,000	10,000	10,000
Total Equity Market Value:	10,000	11,000	2,000	10,000	5,000
Fixed Income % (*A*):	33%	27%	80%	0%	50%
Fixed Income Test (*A*>75%):	No	No	Yes	No	No
Aggressive % of Equity (B):	10%	36%	n/a	40%	100%
Balanced Test (*A*>25% & *B*<33.3%):	Yes	No	n/a	No	No
Volatility of Current Fund Holdings:	10.9%	13.2%	5.3%	19.2%	13.4%
Fund Classification:	**Balanced**	**Diversified*[1]**	**Fixed Income**	**Intermediate**	**Diversified**

As an example, the "Volatility of Current Fund Holdings" for contract #1 is calculated as $\sqrt{A+B}$ where:

[1] Although the volatility suggests "Balanced Fund," the Balanced Fund criteria were not met. Therefore, this 'exposure' is moved "up" to Diversified Equity. For those funds classified as Diversified Equity, additional analysis would be required to assess whether they should be instead designated as "Diversified International Equity."

$$A = \left(\frac{5}{15}\times 0.05\right)^2 + \left(\frac{9}{15}\times 0.155\right)^2 + \left(\frac{1}{15}\times 0.26\right)^2$$

$$B = 2\cdot\left(\frac{5}{15}\cdot\frac{9}{15}\right)(0.1\times 0.05\times 0.155) + 2\cdot\left(\frac{5}{15}\cdot\frac{1}{15}\right)(0.05\times 0.05\times 0.26) + 2\cdot\left(\frac{9}{15}\cdot\frac{1}{15}\right)(0.7\times 0.155\times 0.26)$$

So the volatility for contract #1 = $\sqrt{0.0092 + 0.0026}$ = 0.109 or 10.9%.

E. Tables

1. Liability Modeling Assumptions & Product Characteristics used for *GC* Factors.

Asset Based Charges (MER)	Vary by fund class. See section 6.E.2.
Base Margin Offset	100 basis points per annum.
GMDB Description	1. ROP = return of premium ROP. 2. ROLL3 = 3% roll-up, capped at 2.5 × premium, frozen at age 80. 3. ROLL5 = 5% roll-up, capped at 2.5 × premium, frozen at age 80. 4. MAV = annual ratchet (maximum anniversary value), frozen at age 80. 5. HIGH = Higher of 5% roll-up and annual ratchet. 6. EDB = 40% Enhanced Death Benefit (capped at 40% of deposit). Note that the Pre-Calculated Factors were originally calculated with a combined ROP benefit, but they have been adjusted to remove the effect of the ROP. Thus, the factors for this benefit 5 are solely for the Enhanced Death Benefit.
Adjustment to GMDB Upon Partial Withdrawal	Separate factors for "Pro-Rata by Market Value" and "Dollar-for-Dollar."
Surrender Charges	Ignored (i.e., zero). Included in the *CA* component.
Single Premium / Deposit	$100,000. No future deposits; no intra-contract fund rebalancing.
Base Contract Lapse Rate (Total Surrenders)	• Pro-rata by MV: 10% p.a. at all contact durations (before dynamics) • Dollar-for-dollar: 2% p.a. at all contract durations (no dynamics)
Partial Withdrawals	• Pro-rata by MV: None (i.e., zero) • Dollar-for-dollar: Flat 8% p.a. at all contract durations (as a % of AV). No dynamics or anti-selective behavior.
Mortality	100% of the 1994 Variable Annuity MGDB Mortality Table (MGDB 94 ALB). For reference, 1000 × q_x rates at ages 65 and 70 for 100% of MGDB 94 ALB Male are 18.191 and 29.363 respectively. Note that section 6.C.9 allows modification to this assumption.
Gender /Age Distribution	100% male. Methodology accommodates different attained ages. A 5-year age setback will be used for female annuitants.
Max. Annuitization Age	All policies terminate at age 95.
Fixed Expenses	Ignored (i.e., zero). Included in the *FE* component.
Annual Fee and Waiver	Ignored (i.e., zero). Included in the *FE* component.
Discount Rate	5.75% pre-tax.

Dynamic Lapse Multiplier (Applies only to policies where GMDB is adjusted "pro-rata by MV" upon withdrawal)	$\lambda = MIN\left[U, MAX\left[L, 1 - M \times \left(\frac{GV}{AV} - D\right)\right]\right]$ U=1, L=0.5, M=1.25, D=1.1 ▪ Applied to the 'Base Contract Lapse Rate' ▪ Does not apply to partial withdrawals.

2. Asset-Based Fund Charges (bps per annum).

Asset Class / Fund	**Account Value Charge**
Fixed Account	0
Money Market	110
Fixed Income (Bond)	200
Balanced	250
Diversified Equity	250
Diversified International Equity	250
Intermediate Risk Equity	265
Aggressive or Exotic Equity	275

3. Components of Key Used for *GC* Factor Look-Up.

(First Digit Always "1")

Contract Attribute	Key : Possible Values & Description	
Product Definition, P	0 : 0	Return-of-premium.
	1 : 1	Roll-up (3% per annum).
	2 : 2	Roll-up (5% per annum).
	3 : 3	Maximum Anniversary Value (MAV).
	4 : 4	High of MAV and 5% Roll-up.
	5 : 5	Enhanced Death Benefit (excludes the ROP GMDB, which would have to be added separately if the contract in question has an ROP benefit.)
GV Adjustment Upon Partial Withdrawal, A	0 : 0	Pro-rata by market value.
	1 : 1	Dollar-for-dollar.
Fund Class, F	0 : 0	Fixed Account.
	1 : 1	Money Market.
	2 : 2	Fixed Income (Bond).
	3 : 3	Balanced Asset Allocation.
	4 : 4	Diversified Equity.
	5 : 5	International Equity.
	6 : 6	Intermediate Risk Equity.
	7 : 7	Aggressive / Exotic Equity.
Attained Age (Last Birthday), X	0 : 35	4 : 65
	1 : 45	5 : 70
	2 : 55	6 : 75
	3 : 60	7 : 80

Contract Duration (years-since-issue), D	0 : 0.5 2 : 6.5 4 : 12.5	1 : 3.5 3 : 9.5
Account Value-to-Guaranteed Value Ratio, ϕ	0 : 0.25 1 : 0.50 2 : 0.75 3 : 1.00	4 : 1.25 5 : 1.50 6 : 2.00
Annualized Account Charge Differential from A4.5)B) Assumptions	0 : –100 bps 1 : +0 2 : +100	

Section 7. Scenario Calibration Criteria

A. General

This Section outlines the requirements for the stochastic models used to simulate fund performance. Specifically, it sets certain standards that must be satisfied and offers guidance to the actuary in the development and validation of the scenario models. Background material and analysis are presented to support the recommendation. The Section focuses on the S&P 500 as a proxy for returns on a broadly diversified U.S. equity fund, but there is also advice on how the techniques and requirements would apply to other types of funds. General modeling considerations such as the number of scenarios and projection frequency are also discussed.

Guidance Note: For more details on the development of these requirements, including the development of the calibration points, see the American Academy of Actuaries recommendation on C-3 Phase II risk-based capital.

The calibration points given in this section are applicable to gross returns (before the deduction of any fees or charges). To determine the net returns appropriate for the projections required by these requirements, the actuary shall reflect applicable fees and contractholder charges in the development of projected account values. The projections shall also include the costs of managing the investments and converting the assets into cash when necessary.

As a general rule, funds with higher expected returns should have higher expected volatilities and in the absence of well-documented mitigating factors (e.g., a highly reliable and favorable correlation to other fund returns), should lead to higher reserve requirements.

Guidance Note: While the model need not strictly adhere to 'mean-variance efficiency,' prudence dictates some form of consistent risk/return relationship between the proxy investment funds. In general, it would be inappropriate to assume consistently 'superior' expected returns (i.e., risk/return point above the frontier).

State or path dependent models are not prohibited, but must be justified by the historic data and meet the calibration criteria. To the degree that the model uses mean-reversion or path-dependent dynamics, this must be well supported by research and clearly documented in the Memorandum supporting the required actuarial certification.

The equity scenarios used to determine reserves must be available in an electronic format to facilitate any regulatory review.

B. Gross Wealth Ratios

Gross Wealth Ratios derived from the stochastic return scenarios for use with a Separate Account variable fund category for diversified U.S. equities must satisfy calibration criteria consistent with that for the S&P 500 shown in the following table. Under these calibration criteria, Gross Wealth Ratios for quantiles less than 50 percent may not exceed the value from the table corresponding to the quantile, while at quantiles greater than 50 percent; Gross

Wealth Ratios may not be less than the corresponding value for the quantile from the table. Gross Wealth Ratios must be tested for holding period 1, 5, 10 and 20 years throughout the projections, except as noted in Section 7.C.

The "wealth factors" are defined as gross accumulated values (i.e., before the deduction of fees and charges) with complete reinvestment of income and maturities, starting with a unit investment. These can be less than 1, with "1" meaning a zero return over the holding period.

S&P 500 Total Return Gross Wealth Ratios at the Calibration Points

Calibration Point	One Year	Five Year	Ten Year	Twenty Year
2.5%	0.78	0.72	0.79	
5.0%	0.84	0.81	0.94	1.51
10.0%	0.90	0.94	1.16	2.10
90.0%	1.28	2.17	3.63	9.02
95.0%	1.35	2.45	4.36	11.70
97.5%	1.42	2.72	5.12	

The scenarios need not strictly satisfy all calibration points, but the actuary should be satisfied that any differences do not materially reduce the resulting reserves. In particular, the actuary should be mindful of which tail most affects the business being valued. If reserves are less dependent on the right (left) tail for all products under consideration (e.g., a return of premium guarantee would primarily depend on the left tail, an enhanced death benefit equal to a percentage of the gain would be most sensitive to the right tail, etc.), it is not necessary to meet the right (left) calibration points.

Guidance Note: See the Preamble to the Accounting Practices and Procedures Manual for an explanation of materiality.

For models that require starting values for certain state variables, long-term ('average' or 'neutral') values should be used for calibration. The same values should normally be used to initialize the models for generating the actual projection scenarios unless an alternative assumption can be clearly justified. It should be noted that a different set of initialization parameters might produce scenarios that do not satisfy all the calibration points shown in the above table. However, the S&P 500 scenarios used to determine reserves must meet the calibration criteria.

Guidance Note: For example, a stochastic log volatility ("SLV") model requires the starting volatility. Also, the regime-switching lognormal model requires an assumption about the starting regime.

Guidance Note: A clear justification exists when state variables are observable or "known" to a high degree of certainty and not merely estimated or inferred based on a "balance of probabilities."

C. Calibration Requirements Beyond Twenty Years

It is possible to parameterize some path and/or state dependent models to produce higher volatility (and/or lower expected returns) in the first 20 years in order to meet the calibration criteria, but with lower volatility (and/or higher expected returns) for other periods during the forecast horizon. While this property may occur for certain scenarios (e.g., the state variables would evolve over the course of the projection and thereby affect future returns), it would be inappropriate and unacceptable for a company to alter the model parameters and/or its characteristics for periods beyond year 20 in a fashion not contemplated at the start of the projection and primarily for the purpose(s) of reducing the volatility and/or severity of ultimate returns.

Guidance Note: Such adjustments must be clearly documented and justified by the historic data.

D. Other Funds

Calibration of other markets (funds) is left to the judgment of the actuary, but the scenarios so generated must be consistent with the calibration points in the table in Section A5.2. This does not imply a strict functional relationship between the model parameters for various markets/funds, but it would generally be inappropriate to assume that a market or fund consistently "outperforms" (lower risk, higher expected return relative to the efficient frontier) over the long term.

The actuary shall document the actual 1-, 5-, 10- and 20-year wealth factors of the scenarios at the same frequencies as in the "S&P 500 Total Return Gross Wealth Ratios at the Calibration Points" table in Section 7.B. The annualized mean and standard deviation of the wealth factors for the 1-, 5-, 10- and 20-year holding periods must also be provided. For equity funds, the actuary shall explain the reasonableness of any significant differences from the S&P500 calibration points.

When parameters are fit to historic data without consideration of the economic setting in which the historic data emerged, the market price of risk may not be consistent with a reasonable long-term model of market equilibrium. One possibility for establishing 'consistent' parameters (or scenarios) across all funds would be to assume that the market price of risk is constant (or nearly constant) and governed by some functional (e.g., linear) relationship. That is, higher expected returns can only be garnered by assuming greater risk.

Guidance Note: As an example, the standard deviation of log returns is often used as a measure of risk.

Specifically, two return distributions X and Y would satisfy the following relationship:

$$\text{Market Price of Risk} = \left(\frac{\mathrm{E}[\mathrm{R_X}] - \mathrm{r}}{\sigma_X} \right) = \left(\frac{E[R_Y] - \mathrm{r}}{\sigma_Y} \right)$$

where $E[R]$ and σ are respectively the (unconditional) expected returns and volatilities and r is the expected risk-free rate over a suitably long holding period commensurate with the projection horizon. One approach to establish consistent scenarios would set the model parameters to maintain a near-constant market price of risk.

A closely related method would assume some form of 'mean-variance' efficiency to establish consistent model parameters. Using the historic data, the mean-variance (alternatively, 'drift-volatility') frontier could be a constructed from a plot of (mean, variance) pairs from a collection of world market indices. The frontier could be assumed to follow some functional form, with the coefficients determined by standard curve fitting or regression techniques. Recognizing the uncertainty in the data, a 'corridor' could be established for the frontier. Model parameters would then be adjusted to move the proxy market (fund) inside the corridor.

Guidance Note: The function forms quadratic polynomials and logarithmic functions tend to work well.

Clearly, there are many other techniques that could be used to establishing consistency between the scenarios. While appealing, the above approaches do have drawbacks and the actuary should not be overly optimistic in constructing the model parameters or the scenarios.

Guidance Note: For example, mean-variance measures ignore the asymmetric and fat-tailed profile of most equity market returns.

Funds can be grouped and projected as a single fund if such grouping is not anticipated to materially reduce reserves. However, care should be taken to avoid exaggerating the benefits of diversification. The actuary must document the development of the investment return scenarios and be able to justify the mapping of the company's variable accounts to the proxy funds used in the modeling.

E. Correlation of Fund Returns

In constructing the scenarios for the proxy funds, the company may require parameter estimates for a number of different market indices. When more than one index is projected, it is generally necessary to allow for correlations in the simulations. It is not necessary to assume that all markets are perfectly positively correlated, but an assumption of independence (zero correlation) between the equity markets would inappropriately exaggerate the benefits of diversification. An examination of the historic data suggests that correlations are not stationary and that they tend to increase during times of high volatility or negative returns. As such, the actuary should take care not to underestimate the correlations in those scenarios used for the reserve calculations.

If the projections include the simulation of interest rates (other than for discounting surplus strain) as well as equity returns, the processes may be independent provided that the actuary can demonstrate that this assumption (i.e., zero correlation) does not materially underestimate the resulting reserves.

F. Number of Scenarios and Efficiency in Estimation

For straight Monte Carlo simulation (with equally probable "paths" of fund returns), the number of scenarios should typically equal or exceed 1000. The appropriate number will depend on how the scenarios will be used and the materiality of the results. The actuary should use a number of scenarios that will provide an acceptable level of precision.

Fewer than 1000 scenarios may be used provided that the actuary has determined through prior testing (perhaps on a subset of the portfolio) that the CTE values so obtained materially reproduce the results from running a larger scenario set.

Variance reduction and other sampling techniques are intended to improve the accuracy of an estimate more efficiently than simply increasing the number of simulations. Such methods can be used provided the actuary can demonstrate that they do not lead to a material understatement of results. Many of the techniques are specifically designed for estimating means, not tail measures, and could in fact reduce accuracy (and efficiency) relative to straight Monte Carlo simulation.

Guidance Note: With careful implementation, many variance reduction techniques can work well for CTE estimators. For example, see Manistre, B.J. and Hancock, G. (2003), "Variance of the CTE Estimator," 2003 Stochastic Modeling Symposium, Toronto, ON, September 2003.

The above requirements and warnings are not meant to preclude or discourage the use of valid and appropriate sampling methods, such as Quasi Random Monte Carlo (QRMC), importance sampling or other techniques designed to improve the efficiency of the simulations (relative to pseudo-random Monte Carlo methods). However, the actuary should maintain documentation that adequately describes any such techniques used in the projections. Specifically, the documentation should include the reasons why such methods can be expected not to result in systematic or material under-statement of the resulting reserves compared to using pseudo-random Monte Carlo numbers.

G. Frequency of Projection and Time Horizon

Use of an annual cashflow frequency ("timestep") is generally acceptable for benefits/features that are not sensitive to projection frequency. The lack of sensitivity to projection frequency should be validated by testing wherein the actuary should determine that the use of a more frequent (i.e., shorter) time step does not materially increase reserves. A more frequent time increment should always be used when the product features are sensitive to projection period frequency.

Care must be taken in simulating fee income and expenses when using an annual time step. For example, recognizing fee income at the end of each period after market movements, but prior to persistency decrements, would normally be an inappropriate assumption. It is also important that the frequency of the investment return model be linked appropriately to the projection horizon in the liability model. In particular, the horizon should be sufficiently long so as to capture the vast majority of costs (on a present value basis) from the scenarios.

Guidance Note: As a general guide, the forecast horizon should not be less than 20 years.

H. Pre-Packaged Scenarios

The American Academy of Actuaries has provided 10,000 scenarios on its website for the following nineteen asset classes.

Guidance Note: The pre-packaged scenarios can be found at http://www.actuary.org/life/phase2.asp and are fully documented at http://www.actuary.org/pdf/life/c3supp_march05.pdf.

Guidance Note: Because the reserves calculated using projections involve cash flow projections, the pre-packaged scenarios were developed under the "real world" probability measure (as opposed to a "risk-neutral" basis). Therefore, the pre-packaged scenarios may not be appropriate for purposes of projecting the market value of future hedge instruments within a projection (to the extent such instruments are used in the projections). For this purpose, it may be more appropriate to use risk neutral scenarios to determine the market value of hedge instruments in the cash flow projections that are based on real world scenarios.

a. 3-month U.S. Treasury yields

b. 6-month U.S. Treasury yields

c. 1-year U.S. Treasury yields

d. 2-year U.S. Treasury yields

e. 3-year U.S. Treasury yields

f. 5-year U.S. Treasury yields

g. 7-year U.S. Treasury yields

h. 10-year U.S. Treasury yields

i. 20-year U.S. Treasury yields

j. 30-year U.S. Treasury yields

k. Money Market / Short-Term

l. U.S. Intermediate Term Government Bonds

m. U.S. Long Term Corporate Bonds

n. Diversified Fixed Income

o. Diversified Balanced Allocation

p. Diversified Large Capitalized U.S. Equity

q. Diversified International Equity

r. Intermediate Risk Equity

s. Aggressive or Specialized Equity

The scenarios are available as gross monthly accumulation factors (or U.S. Treasury yields) over a 30-year horizon in comma-separated value format (**.csv*). These scenarios have been appropriately correlated so that the K^{th} scenario for each asset class must be used together and considered one 'future investment return scenario.' Hence, the

scenarios can be combined (by blending the accumulation factors) to create additional 'proxy' scenarios for the company's funds.

Guidance Note: It is inappropriate to misalign the ordering of scenarios (e.g., scenario J for "Diversified U.S. Equity" cannot be combined with scenario K for "Diversified International Equity," where $J \neq K$).

Guidance Note: It is important to blend the accumulation factors (not the returns) in order to achieve the desired asset mix.

For example, suppose the actuary wanted to construct scenarios for a 'balanced fund' that targets a 60/40 allocation between bonds and U.S. equities. If we denote $[\ AF^{X}\ ]$ as the matrix of accumulation factors for asset class X, then the balanced scenarios would be defined by $[\ AF^{BAL}\ ] = 0.60 \times [\ AF^{BOND}\ ] + 0.40 \times [\ AF^{S\&P500}\ ]$. Care should be taken to avoid exaggerating the benefits of diversification. The actuary shall document the development of the investment return scenarios and be able to justify the mapping of the company's variable accounts to the proxy funds used in the modeling.

The U.S. Treasury yields are expressed as nominal semi-annual bond equivalent yields in decimal format. All other returns are expressed as periodic (not cumulative) market accumulation factors (i.e., monthly "gross wealth ratios"). Interest rates are assumed to change at the start of each month, hence the value in column T applies for month T-1. The market accumulation factor in column T represents the growth in month T-1.

If all or a portion of these scenarios are used, then the actuary shall verify that the scenario calibration criteria are met.

Section 8. Allocation of the Aggregate Reserves to the Contract Level

Section 2 states that the Aggregate Reserve shall be allocated to the contracts falling within the scope of these requirements. When the Conditional Tail Expectation Amount is greater that the Standard Scenario Amount, this allocation requires that the excess be allocated to the contracts falling within the scope of these requirements.

A. Allocation when the Aggregate Reserve equals the Conditional Tail Expectation Amount

1. Single sub-grouping. When the Aggregate Reserve is equal to the Conditional Tail Expectation Amount and the Conditional Tail Expectation Amount is determined in aggregate for all contracts falling within the scope of these requirements (i.e., a single grouping), as described in Section 2.D, the excess of the Conditional Tail Expectation Amount over the Standard Scenario Amount shall be allocated to each contract on the basis of the difference between the Standard Scenario Reserve and the Cash Surrender Value on the valuation date for the contract. If the cash surrender value is not defined or not available, the Standard Scenario Amount will be the basis of allocation.

   Guidance Note: Note that since the Standard Scenario Reserve for a contract is, by definition, greater than or equal to the Cash Surrender Value, it is understood that the difference between the Standard Scenario Reserve and the Cash Surrender Value for each contract will never be less than zero.

2. Multiple sub-groupings. When the Aggregate Reserve is equal to the Conditional Tail Expectation Amount and the Conditional Tail Expectation Amount is determined using more than one sub-grouping, as described in Section 2.D, the allocation of the excess of the Conditional Tail Expectation Amount over the Standard Scenario Amount and shall reflect that sub-grouping of contracts used to determine the Conditional Tail Expectation Amount, as described in Section 2.D.

For example, when the Conditional Tail Expectation Amount is determined using sub-grouping, the excess of the aggregate (i.e., the total for all contracts within the scope of these requirements) Conditional Tail Expectation Amount over the aggregate Standard Scenario Amount shall be allocated only to those contracts that are part of sub-groupings whose contributions to the Conditional Tail Expectation Amount exceed their contribution to the Standard Scenario Amount.

In the case of such sub-groupings, the excess of the aggregate Conditional Tail Expectation Amount over the aggregate Standard Scenario Amount shall be allocated to each sub-grouping in proportion to the difference between the Conditional Tail Expectation and the Standard Scenario Reserve for each sub-grouping for which that excess is positive.

Once the allocation to each sub-grouping is determined, the excess of the reserve allocated to such sub-grouping over the Standard Scenario Amount determined for that sub-grouping shall be allocated to each contract within that sub-grouping on the basis of the difference between the Standard Scenario Reserve and the Cash Surrender Value on the valuation date for the contracts. If the cash surrender value is not defined or not available, the Standard Scenario Amount will be the basis of allocation.

As an example, consider a company with the results of the following three sub-groupings:

Sub-grouping	A	B	C	Total
Conditional Tail Expectation Amount	28	40	52	120
Standard Scenario Amount	20	45	30	95
Aggregate Reserve				**120**
(1) – (2)	8	-5	22	25
Allocation	6.67	0	18.33	25

In this example, the excess of the Conditional Tail Expectation Amount over the Standard Scenario Amount, in aggregate, equals 25 (i.e., the "Total" column of row 1 less row 2, or 120 – 95). This excess of 25 would be allocated only to those contracts that are part of sub-groupings whose contributions to the Conditional Tail Expectation Amount exceed their contributions to the Standard Scenario Amount. In this example, that would be contracts in sub-groupings A and C (since in sub-grouping B, the contribution to the Standard Scenario Amount exceeds the contribution to the Conditional Tail Expectation Amount). Therefore, the excess of 25 would be allocated to the contracts in sub-groupings A and C in proportion to the difference between the Conditional Tail Expectation Amount and the Standard Scenario Reserve for those sub-groupings (i.e. row 4). In this example, the total difference between the Conditional Tail Expectation Amount and the Standard Scenario Reserve for the contracts in sub-groupings A and C equals 8 + 22, or 30. This would result in 8/30 of the excess of the Conditional Tail Expectation Amount over the Standard Scenario Amount (or 6.67) to be allocated to the contracts in sub-groupings A and 22/30 of the excess of the Conditional Tail Expectation Amount over the Standard Scenario Amount (or 18.33) to be allocated to the contracts in sub-groupings C as shown on line (5) above.

In this example, the allocation of the Aggregate Reserve to contracts within sub-grouping B would equal the Standard Scenario Reserve for those contracts (as described in Section 8.B below). For sub-groupings A and C, the difference between the allocation of the Aggregate Reserve to each of those sub-grouping and the Standard Scenario Amount determined for each of those sub-grouping would be allocated to each contract within each of those sub-groupings based on the difference between the Standard Scenario Reserve and the Cash Surrender Value for each of the contracts within the relevant sub-group. The result would be an allocated Aggregate Reserve for a given contract that would be equal to the Standard Scenario Reserve for that contract plus the amount of the difference between 1) and 2) below that is allocated to that contract, where:

1. Equals the allocation of the Aggregate Reserve to that contract's sub-grouping; and

2. Equals the Standard Scenario Amount determined for that contract's sub-grouping.

B. Allocation when the Aggregate Reserve equals the Standard Scenario Amount

The Standard Scenario Amount, as required by Section 2.C, is calculated on a contract-by-contract basis, as described in Section 5. Therefore, when the Aggregate Reserve is equal to the Standard Scenario Amount, the

reserve allocated to each contract shall be the reserve calculated for each contract under the Standard Scenario method.

Section 9. Modeling of Hedges

A. Initial Considerations

The appropriate costs and benefits of hedging instruments that are currently held by the company in support of the contracts falling under the scope of these requirements (excluding those that involve the offsetting of the risks associated with variable annuity guarantees with other products outside of the scope of these requirements, such as equity-indexed annuities) shall be included in the calculation of the Conditional Tail Expectation Amount, determined in accordance with Section 2.D and section 3.D (i.e., Conditional Tail Expectation Amount using projections). If the company is following a Clearly Defined Hedging Strategy ("hedging strategy"), in accordance with an investment policy adopted by the Board of Directors, or a committee of Board members, the company is eligible to reduce the amount of the Conditional Tail Expectation Amount using projections otherwise calculated. The investment policy must clearly articulate the company's hedging objectives, including the metrics that drive rebalancing/trading. This specification could include maximum tolerable values for investment losses, earnings, volatility, exposure, etc. in either absolute or relative terms over one or more investment horizons vis-à-vis the chance of occurrence. Company management is responsible for developing, documenting, executing and evaluating the investment strategy, including the hedging strategy, used to implement the investment policy.

For this purpose, the investment assets refer to all the assets including derivatives supporting covered products and guarantees. This is also referred to as the investment portfolio. The investment strategy is the set of all asset holdings at all points in time in all scenarios. The hedging portfolio, which is also referred to as the hedging assets, is a subset of the investment assets. The hedging strategy is the hedging asset holdings at all points in time in all scenarios. There is no attempt to distinguish what is the hedging portfolio and what is the investment portfolio in this section. Nor is the distinction between investment strategy and hedging strategy formally made here. Where necessary to give effect to the intent of this section, the requirements applicable to the hedging portfolio or the hedging strategy are to apply to the overall investment portfolio and investment strategy.

This particularly applies to restrictions on the reasonableness or acceptability of the models that make up the stochastic cash flow model used to perform the projections, since these restrictions are inherently restrictions on the joint modeling of the hedging and non-hedging portfolio. To give effect to these requirements, they must apply to the overall investment strategy and investment portfolio.

The cost and benefits of hedging instruments that are currently held by the company in support of the contracts falling under the scope of these requirements shall be included in the stochastic cash flow model used to calculate the Conditional Tail Expectation Amount in accordance with Section 2.D (the "model"). If the company is following a Clearly Defined Hedging Strategy, the model shall take into account the cost and benefits of hedge positions expected to be held by the company in the future based on the operation of the hedging strategy.

Before either a new or revised hedging strategy can be used to reduce the amount of the Conditional Tail Expectation Amount otherwise calculated, the hedging strategy should be in place (i.e., effectively implemented by the company) for at least three months. The company may meet the time requirement by having evaluated the effective implementation of the hedging strategy for at least three months without actually having executed the trades indicated by the hedging strategy (e.g., mock testing or by having effectively implemented the strategy with similar annuity products for at least three months).

These requirements do not supersede any statutes, laws, or regulations of any state or jurisdiction related to the use of 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.

B. Background

The analysis of the impact of the hedging strategy on cash flows is typically performed using either one of two methods as described below. Although a hedging strategy would normally be expected to reduce risk provisions, the nature of the hedging strategy and the costs to implement the strategy may result in an increase in the amount of the Conditional Tail Expectation Amount otherwise calculated.

The fundamental characteristic of the first method is that all hedging positions, both the currently held positions and those expected to be held in the future, are included in the stochastic cash flow model used to determine the Scenario Greatest Present Value, as discussed in Section 2.D, for each scenario.

The fundamental characteristic of the second method is that the effectiveness of the current hedging strategy (including currently held hedge positions) on future cash flows is evaluated, in part or in whole, outside of the stochastic cash flow model. In this case, the reduction to the Conditional Tail Expectation Amount otherwise calculated should be commensurate with the degree of effectiveness of the hedging strategy in reducing accumulated deficiencies otherwise calculated.

Regardless of the methodology used by the company, the ultimate effect of the current hedging strategy (including currently held hedge positions), on the Conditional Tail Expectation Amount needs to recognize all risks, associated costs, imperfections in the hedges and hedging mismatch tolerances associated with the hedging strategy. The risks include, but are not limited to: basis, gap, price, parameter estimation, and variation in assumptions (mortality, persistency, withdrawal, annuitization, etc.). Costs include, but are not limited to: transaction, margin (opportunity costs associated with margin requirements) and administration. In addition, the reduction to the Conditional Tail Expectation Amount attributable to the hedging strategy may need to be limited due to the uncertainty associated with the company's ability to implement the hedging strategy in a timely and effective manner. The level of operational uncertainty varies indirectly with the amount of time that the new or revised strategy has been in effect or mock tested.

No hedging strategy is perfect. A given hedging strategy may eliminate or reduce some but not all risks, transforms some risks into others, introduces new risks or has other imperfections. For example, a delta-only hedging strategy does not adequately hedge the risks measured by the "Greeks" other than delta. Another example is that financial indices underlying typical hedging instruments typically do not perform exactly like the separate account funds, and hence the use of hedging instruments has the potential for introducing basis risk.

C. Calculation of CTE Amount (reported)

The company should begin by calculating "CTE Amount (best efforts)" – the results obtained when the Conditional Tail Expectation Amount (or "CTE Amount") is based on incorporating the hedging strategy (including currently held hedge positions) into the stochastic cash flow model, including all of the factors and assumptions needed to execute the hedging strategy (e.g., stochastic implied volatility).

Because most models will include at least some approximations or idealistic assumptions, CTE Amount(best efforts) may overstate the impact of the hedging strategy. To compensate for potential overstatement of the impact of the hedging strategy, the company shall recalculate the Conditional Tail Expectation Amount assuming the company has no dynamic hedging strategy (i.e., reflect only hedge positions held by the company on the valuation date. The result so obtained is called "CTE Amount(adjusted)." In some situations the determination of CTE Amount(adjusted) may include both direct and indirect techniques.

Finally, the reported value for the Conditional Tail Expectation Amount is given by:

CTE Amount(reported) = E x CTE Amount(best efforts) + (1 – E) × CTE Amount(adjusted)

The value for *E* (an "effectiveness factor") reflects the actuary's view as to the level of sophistication of the stochastic cash flow model and its ability to properly reflect the parameters of the hedging strategy (i.e., the "Greeks" being covered by the strategy) as well as the associated costs, risks, and benefits E will be no greater than 0.70. As the sophistication of the stochastic cash flow model increases, the value for *E* increases (i.e., the greater the ability of the CTE Amount(best efforts) model to capture all risks and uncertainties, the higher the value of *E*). If the model used to determine the "CTE Amount(best efforts)" effectively reflects all of the parameters used in the

hedging strategy, the value of E may be up to 0.70. If certain economic risks are not hedged, yet the model does not generate scenarios that sufficiently capture those risks, E must be in the lower end of the range. If hedge cash flows are not modeled directly, E will be no greater than 0.30. Simplistic hedge cash flow models will have a value of *E* in the low range between 0.00 and 0.70.

Additionally, the company shall demonstrate that, based on an analysis of at least the most recent 12 months, the model is able to replicate the hedging strategy in a way that justifies the value used for *E*. A company that does not have 12 months of experience to date shall set *E* to a value no greater than 0.30.

D. Specific Considerations and Requirements

As part of the process of choosing a methodology and assumptions for estimating the future effectiveness of the current hedging strategy (including currently held hedge positions) for purposes of reducing the Conditional Tail Expectation Amount, the actuary should review actual historical hedging effectiveness. The actuary shall evaluate the appropriateness of the assumptions on future trading, transaction costs, and other elements of the model, the strategy, the mix of business, and other items that are likely to result in materially adverse results. This includes an analysis of model assumptions that, when combined with the reliance on the hedging strategy, are likely to result in adverse results relative to those modeled. The parameters and assumptions shall be adjusted (based on testing contingent on the strategy used and other assumptions) to levels that fully reflect the risk based on historical ranges and foreseeable future ranges of the assumptions and parameters. If this is not possible by parameter adjustment, the model shall be modified to reflect them at either Anticipated Experience or adverse estimates of the parameters.

A discontinuous hedging strategy is a hedging strategy where the relationships between the sensitivities to equity markets and interest rates (commonly referred to as the Greeks) associated with the guaranteed contractholder options embedded in the variable annuities and other in-scope products and these same sensitivities associated with the hedging assets are subject to material discontinuities. This includes, but is not limited to, a hedging strategy where material hedging assets will be obtained when the variable annuity account balances reach a predetermined level in relationship to the guarantees. Any hedging strategy, including a delta hedging strategy, can be a discontinuous hedging strategy if implementation of the strategy permits material discontinuities between the sensitivities to equity markets and interest rates associated with the guaranteed contractholder options embedded in the variable annuities and other in-scope products and these same sensitivities associated with the hedging assets. There may be scenarios that are particularly costly to discontinuous hedging strategies, especially where those result in large discontinuous changes in sensitivities (Greeks) associated with the hedging assets. Where discontinuous hedging strategies contribute materially to a reduction in the Conditional Tail Expectation Amount, the actuary must evaluate the interaction of future trigger definitions and the discontinuous hedging strategy, in addition to the items mentioned in the previous paragraph. This includes an analysis of model assumptions that, when combined with the reliance on the discontinuous hedging strategy, may result in adverse results relative to those modeled.

Implementing a strategy that has a strong dependence on acquiring hedging assets at specific times that depend on specific values of an index or other market indicators may not be implemented as precisely as planned.

The combination of elements of the stochastic cash flow model, including the initial actual market asset prices, prices for trading at future dates, transaction costs, and other assumptions should be analyzed by the actuary as to whether the stochastic cash flow model permits hedging strategies that make money in some scenarios without losing a reasonable amount in some other scenarios. This includes, but is not limited to:

1. Hedging strategies with no initial investment that never lose money in any scenario and in some scenarios make money; or

2. Hedging strategies that with a given amount of initial money never make less than accumulation at the one-period risk free rates in any scenario but make more than this in one or more scenarios.

If the stochastic cash flow model allows for such situations, the actuary should be satisfied that the results do not materially rely directly or indirectly on the use of such strategies. In addition, the actuary should disclose the situations and provide supporting documentation as to why the actuary believes the situations are not material for

determining the Conditional Tail Expectation Amount. If the results do materially rely directly or indirectly on the use of such strategies, the strategies may not be used to reduce the Conditional Tail Expectation Amount otherwise calculated.

In addition to the above, the method used to determine prices of financial instruments for trading in scenarios should be compared to actual initial market prices. If there are substantial discrepancies, the actuary should disclose the substantial discrepancies and provide supporting documentation as to why the model-based prices are appropriate for determining the Conditional Tail Expectation Amount. In addition to comparisons to initial market prices, there should be testing of the pricing models that are used to determine subsequent prices when scenarios involve trading financial instruments. This testing should consider historical relationships. For example, if a method is used where recent volatility in the scenario is one of the determinants of prices for trading in that scenario, then that model should approximate actual historic prices in similar circumstances in history.

E. Certification and Documentation

The actuary must provide a certification that the values for *E*, CTE Amount(adjusted) and CTE Amount(best efforts) were calculated using the process discussed above and the assumptions used in the calculations were reasonable for the purpose of determining the Conditional Tail Expectation Amount. The actuary shall document the method(s) and assumptions (including data) used to determine CTE Amount(adjusted) and CTE Amount(best efforts) and maintain adequate documentation as to the methods, procedures and assumptions used to determine the value of *E*.

The actuary must provide a certification as to whether the Clearly Defined Hedging Strategy is fully incorporated into the stochastic cash flow model and any supplementary analysis of the impact of the hedging strategy on the Conditional Tail Expectation Amount. The actuary must document the extent to which elements of the hedging strategy (e.g., time between portfolio rebalancing) are not fully incorporated into the stochastic cash flow model and any supplementary analysis to determine the impact, if any. In addition, the actuary must provide a certification and maintain documentation to support the certification that the hedging strategy designated as the Clearly Defined Hedging Strategy meets the requirements of a Clearly Defined Hedging Strategy including that the implementation of the hedging strategy in the stochastic cash flow model and any supplementary analysis does not include knowledge of events that occur after any action dictated by the hedging strategy (i.e. the model cannot use information about the future that would not be known in actual practice).

A financial officer of the company (e.g., Chief Financial Officer, Treasurer or Chief Investment Officer) or a person designated by them who has direct or indirect supervisory authority over the actual trading of assets and derivatives must certify that the hedging strategy meets the definition of a Clearly Defined Hedging Strategy and that the Clearly Defined Hedging Strategy is the hedging strategy being used by the company in its actual day to day risk mitigation efforts.

Section 10. Certification Requirements

A. Management Certification

Management must provide signed and dated written representations as part of the valuation documentation that the valuation appropriately reflects management's intent and ability to carry out specific courses of actions on behalf of the entity where such is relevant to the valuation.

B. Actuarial Certification

1. General Description. The certification shall be provided by a qualified actuary and consist of at least the following:

   a. A paragraph identifying the actuary and his or her qualifications;

b. A scope paragraph identifying the reserves as of the valuation date for contracts included in the certification categorized by the approaches used to determine the reserves (e.g., Alternative Methodology, Projections, Standard Scenario);

c. A reliance paragraph describing those areas, if any, where the certifying actuary has relied on other experts;

i) A reliance statement from each of those relied on should accompany the certification.

ii) The reliance statements should note the information being provided and a statement as to the accuracy, completeness or reasonableness, as applicable, of the information.

d. A paragraph certifying that the reserve was calculated in accordance with the principles and these requirements;

e. A paragraph certifying that the assumptions used for these calculations are Prudent Estimate assumptions for the products, scenarios, and purpose being tested; and

f. A paragraph stating that the qualified actuary is not opining on the adequacy of the company's surplus or its future financial condition.

C. Supporting Memorandum

1. General Description. A supporting memorandum shall be created to document the methodology and assumptions used to determine the Aggregate Reserve. The information shall include the comparison of the Standard Scenario Amount to the Conditional Tail Expectation Amount required by Section 2.A in the determination of the Aggregate Reserve.

2. Alternative Methodology using Published Factors.

a. If a seriatim approach was not used, disclose how contracts were grouped.

b. Disclosure of assumptions to include:

i Component *CA*

(a) Mapping to prescribed asset categories

(b) Lapse and withdrawal rates

ii. Component *FE*

(a) Determination of fixed dollar costs and revenues

(b) Lapse and withdrawal rates

(c) Inflation rates

iii. Component *GC*

(a) Disclosure of contract features and how the company mapped the contract form to those forms covered by the Alternative Methodology factors

- Product Definition - If not conservatively assigned to a published factor, company specific factors or stochastic modeling is required.

- Partial Withdrawal Provision
- Fund Class - Disclose the process used to determine the single asset class that best represents the exposure for a contract. If individual funds are mapped into prescribed categories, the process used to map the individual funds should be disclosed.
- Attained Age
- Contract Duration
- Ratio of Account Value to Guaranteed Value
- Annualized Account Charge Differential from Base Assumption

(b) Derivation of Equivalent Account Charges

(c) Derivation of margin offset

(d) Disclosure of interpolation procedures and confirmation of node determination

c. Disclosure, if applicable, of reinsurance that exists and how it was handled in applying published factors (For some reinsurance, creation of company-specific factors or stochastic modeling may be required.) and Discuss how reserves before reinsurance were determined.

3. Alternative Factors based on Company-Specific Factors.

a. Disclosure of requirements consistent with Published Factors, as noted in subsection 2 above.

b. Stochastic analysis supporting adjustments to published factors should be fully documented. This analysis needs to be submitted when initially used and be available upon request in subsequent years. Adjustments may include:

i. Contract design;

ii. Risk mitigation strategy (excluding hedging); and

iii. Reinsurance.

4. Stochastic Modeling.

a. Assets

i. Description including type and quality

ii. Investment & disinvestment assumptions

iii. Describe assets used at the start of the projection

iv. Source of asset data

v. Asset valuation basis

vi. Documentation of assumptions

(a) Default costs

(b) Prepayment functions

(c) Market value determination

(d) Yield on assets acquired

(e) Mapping and grouping of funds to modeled asset classes

vii. Hedging Strategy

(a) Documentation of strategy

(b) Identification of current positions

(c) Description on how strategy was incorporated into modeling

- Basis risk, gap risk, price risk, assumption risk

- Document the methods and criterion used to estimate the a priori effectiveness of the hedging strategy

(d) Documentation required for specific consideration raised in Section 9.D.

(e) Documentation and certification required by Section 9.E.

b. Liabilities

i. Product descriptions

ii. Source of Liabilities

iii. Grouping of contracts

iv. Reserve method and modeling (e.g., Working Reserves were set to CSV)

v. Investment Reserves

vi. Describe how reinsurance was handled in the models, including how reserves gross of reinsurance were modeled.

vii. Documentation of assumptions (i.e., list assumptions, discuss the sources and the rationale for using the assumptions).

(a) Premiums and subsequent deposits

(b) Withdrawal, Lapse and Termination Rates

- Partial Withdrawal (including treatment of dollar-for-dollar offsets on GMDBs and VAGLBs, and Required Minimum Distributions

- Lapses / Surrenders

(c) Crediting Strategy

(d) Mortality

(e) Annuitization rates

(f) Income Purchase rates

(g) GMIB and GMWB Utilization rates

(h) Commissions

(i) Expenses

(j) Persistency Bonuses

(k) Investment / Fund Choice

(l) Revenue Sharing

(m) Asset Allocation, Rebalancing and Transfer Assumptions

- Dollar Cost Averaging

viii. The section showing the assumptions used for lapse and utilization assumptions for contracts with guaranteed living benefits in the development of the Conditional Tail Expectation Amount, as described in section 11.G.

c. Scenarios

i. Description of scenario generation for interest rates and equity returns

(a) Disclose the number "n" of scenarios used and the methods used to determine the sampling error of the CTE(70) statistic when using "n" scenarios.

(b) Time step of model (e.g., monthly, quarterly, annual)

(c) Correlation of fund returns

ii. Calibration

(a) Gross Wealth Ratios for equity funds

- Disclosure of adjustments to model parameters, if any.

- Disclosure of 1-year, 5-year and 10-year wealth factors, as well as mean and standard deviation.

(b) Consistency of other funds to equity funds

(c) Correlation between all funds

(d) Estimate of market return volatility assumptions underlying the generated scenarios compared to actual observed volatility underlying market values.

iii. Extent of use of pre-packaged scenarios and support for mapping variable accounts to proxy funds

d. Description and results of sensitivity tests performed. At the request of the domiciliary commissioner, the company shall provide a sensitivity test showing an estimate of the impact of the market return volatility assumption when market volatility is materially higher than assumed in the generated scenarios.

e. Documentation of all material changes in the model or assumptions from that used previously and the estimated impact of such changes. This documentation, or a summary of this documentation, shall be included in an executive summary or some other prominent place in the memorandum.

f. A description of the methods used to validate the model and a summary of the results of the validation testing.

5. Standard Scenario.

a. For the amounts in b, c and d below report the Basic Reserve in Section 5.C.2.b.i, the projection requirements in Section 5.C.2.b.ii, the value of Aggregate reinsurance in Section 5.C.4.a, the value of hedges in Section 5.C.4.b, the total allocation of the value of hedges and Aggregate reinsurance in Section 5.C.2.b.iii and the Standard Scenario Reserve.

b. Report the Standard Scenario Amount as of the valuation date.

c. If applicable, report the Standard Scenario Amount on the inforce prior to the valuation date that was used to project the reserve requirements to the valuation date.

d. If applicable, report the Standard Scenario Amount on the model office used to represent the inforce.

e. Discuss modifications, if any, in the application of the standard scenario requirements to produce the amounts in b, c and d above.

f. Document any assumptions, judgments or procedures not prescribed in the Standard Scenario Method or in these requirements that are used to produce the Standard Scenario Amount.

g. If applicable, documentation of approval by the commissioner to use the Basic Reserve as the Standard Scenario Amount.

h. Document the company's calculation of *DR*.

i. Document the allocation of funds to Equity, Bond, Balanced and Fixed classes.

j. A statement by the actuary that none of the reinsurance treaties included in the Standard Scenario serve solely to reduce the calculated Standard Scenario Reserve without also reducing risk on scenarios similar to those used to determine the Conditional Tail Expectation Reserve. This should be accompanied by a description of any reinsurance treaties that have been excluded from the Standard Scenario along with an explanation of why the treaty was excluded.

Section 11. Contractholder Behavior

A. General

Contractholder behavior assumptions encompass actions such as lapses, withdrawals, transfers, recurring deposits, benefit utilization, option election, etc. Contractholder behavior is difficult to predict and behavior assumptions can

significantly impact the results. In the absence of relevant and fully credible empirical data, the actuary should set behavior assumptions on the conservative end of the plausible spectrum (consistent with the definition of Prudent Estimate).

In setting behavior assumptions, the actuary should examine, but not be limited by, the following considerations:

1. Behavior can vary by product, market, distribution channel, fund performance, time/product duration, etc.

2. Options embedded in the product may impact behavior.

3. Options may be elective or non-elective in nature. Living benefits are often elective and death benefit options are generally non-elective.

4. Elective contractholder options may be more driven by economic conditions than non-elective options.

5. As the value of a product option increases, there is an increased likelihood that contractholders will behave in a manner that maximizes their financial interest (e.g., lower lapses, higher benefit utilization, etc.).

6. Behavior formulas may have both rational and irrational components (irrational behavior is defined as situations where some contractholders may not always act in their best financial interest). The rational component should be dynamic but the concept of rationality need not be interpreted in strict financial terms and might change over time in response to observed trends in contractholder behavior based on increased or decreased financial efficiency in exercising their contractual options.

7. Options that are ancillary to the primary product features may not be significant drivers of behavior. Whether an option is ancillary to the primary product features depends on many things such as:

    a. For what purpose was the product purchased?

    b. Is the option elective or non-elective?

    c. Is the value of the option well known?

8. External influences, including emergence of viatical / life settlement companies, may impact behavior.

B. Aggregate vs. Individual Margins

As noted in Section 2.B.8, Prudent Estimate assumptions are developed by applying a margin for uncertainty to the Anticipated Experience assumption. The issue of whether the level of the margin applied to the Anticipated Experience assumption is determined in aggregate or independently for each and every behavior assumption is discussed in Principle 3 in Section 1, which states:

> The choice of a conservative estimate for each assumption may result in a distorted measure of the total risk. Conceptually, the choice of assumptions and the modeling decisions should be made so that the final result approximates what would be obtained for the Conditional Tail Expectation Amount 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 Conditional Tail Expectation Amount, the actuary should be guided by evolving practice and expanding knowledge base in the measurement and management of risk.

Although this Principle 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 aggregate for all behavior assumptions.

Therefore, the actuary shall determine Prudent Estimate assumptions independently for each behavior (e.g., mortality lapses, and benefit utilization), using the requirements and guidance in this section and throughout these requirements, unless the actuary can demonstrate that an appropriate method was used to determine the level of margin in aggregate for two or more behaviors.

C. Sensitivity Testing

The impact of behavior can vary by product, time period, etc. Sensitivity testing of assumptions is required and shall be more complex than e.g., base lapse assumption minus 1% across all contracts. A more appropriate sensitivity test in this example might be to devise parameters in a dynamic lapse formula to reflect more out-of-the-money contracts lapsing and/or more holders of in-the-money contracts persisting and eventually utilizing the guarantee. The actuary should apply more caution in setting assumptions for behaviors where testing suggests that stochastic modeling results are sensitive to small changes in such assumptions. For such sensitive behaviors, the actuary shall use higher margins when the underlying experience is less than fully relevant and credible.

D. Specific Considerations and Requirements

Within materiality considerations, the actuary should consider all relevant forms of contractholder behavior and persistency, including but not limited to the following:

1. Mortality (additional guidance and requirements regarding mortality is contained in Section 12)

2. Surrenders

3. Partial Withdrawals (Systematic and Elective)

4. Fund Transfers (Switching/Exchanges)

5. Resets/Ratchets of the Guaranteed Amounts (Automatic and Elective)

6. Future Deposits

It may be acceptable to ignore certain items that might otherwise be explicitly modeled in an ideal world, particularly if the inclusion of such items reduces the calculated provisions. For example:

1. The impact of fund transfers (intra-contract fund "switching") might be ignored, unless required under the terms of the contract (e.g., automatic asset re-allocation/rebalancing, dollar cost averaging accounts, etc.)

2. Future deposits might be excluded from the model, unless required by the terms of the contracts under consideration and then only in such cases where future premiums can reasonably be anticipated (e.g., with respect to timing and amount).

However, the actuary should exercise caution in assuming that current behavior will be indefinitely maintained. For example, it might be appropriate to test the impact of a shifting asset mix and/or consider future deposits to the extent they can reasonably be anticipated and increase the calculated amounts.

Normally, the underlying model assumptions would differ according to the attributes of the contract being valued. This would typically mean that contractholder behavior and persistency may be expected to vary according to such characteristics as (this is not an exhaustive list):

1. Gender

2. Attained age

3. Issue age

4. Contract duration

5. Time to maturity

6. Tax status

7. Fund value

8. Investment option

9. Guaranteed benefit amounts

10. Surrender charges, transaction fees or other contract charges

11. Distribution channel

Unless there is clear evidence to the contrary, behavior assumptions should be no less conservative than past experience. Margins for contractholder behavior assumptions shall assume, without relevant and credible experience or clear evidence to the contrary, that contractholders' efficiency will increase over time.

In determining contractholder behavior assumptions, the company shall use actual experience data directly applicable to the business segment (i.e., direct data) if it is available. In the absence of direct data, the company should then look to use data from a segment that are similar to the business segment (i.e., other than direct experience), whether or not the segment is directly written by the company. If data from a similar business segment are used, the assumption shall be adjusted to reflect differences between the two segments. Margins shall reflect the data uncertainty associated with using data from a similar but not identical business segment. The actuary shall document any significant similarities or differences between the two business segments, the data quality of the similar business segment and the adjustments and the margins applied.

Where relevant and fully credible empirical data do not exist for a given contractholder behavior assumption, the actuary shall set the contractholder behavior assumption to reflect the increased uncertainty such that the contractholder behavior assumption is shifted towards the conservative end of the plausible range of expected experience that serves to increase the Aggregate Reserve. If there are no relevant data, the actuary shall set the contractholder behavior assumption to reflect the increased uncertainty such that the contractholder behavior assumption is at the conservative end of the range. Such adjustments shall be consistent with the definition of Prudent Estimate, with the Principles described in Section I, and with the guidance and requirements in this Section.

Ideally, contractholder behavior would be modeled dynamically according to the simulated economic environment and/or other conditions. It is important to note, however, that contractholder behavior should neither assume that all contractholders act with 100% efficiency in a financially rational manner nor assume that contractholders will always act irrationally.

E. Dynamic Assumptions

Consistent with the concept of Prudent Estimate assumptions described earlier, the liability model should incorporate margins for uncertainty for all risk factors which are not dynamic (i.e., the non-scenario tested assumptions) and are assumed not to vary according to the financial interest of the contractholder.

The actuary should exercise care in using static assumptions when it would be more natural and reasonable to use a dynamic model or other scenario-dependent formulation for behavior. With due regard to considerations of materiality and practicality, the use of dynamic models is encouraged, but not mandatory. Risk factors which are not scenario tested, but could reasonably be expected to vary according to a stochastic process, or future states of the world (especially in response to economic drivers) may require higher margins and/or signal a need for higher margins for certain other assumptions.

Risk factors that are modeled dynamically should encompass the plausible range of behavior consistent with the economic scenarios and other variables in the model, including the non-scenario tested assumptions. The actuary shall test the sensitivity of results to understand the materiality of making alternate assumptions and follow the guidance discussed above on setting assumptions for sensitive behaviors.

F. Consistency with the CTE Level

All behaviors (i.e., dynamic, formulaic and non-scenario tested) should be consistent with the scenarios used in the CTE calculations (generally, the approximately top 1/3 of the loss distribution). To maintain such consistency, it is not necessary to iterate (i.e., successive runs of the model) in order to determine exactly which scenario results are included in the CTE measure. Rather, in light of the products being valued, the actuary should be mindful of the general characteristics of those scenarios likely to represent the tail of the loss distribution and consequently use Prudent Estimate assumptions for behavior that are reasonable and appropriate in such scenarios. For variable annuities, these "valuation" scenarios would typically display one or more of the following attributes:

1. Declining and/or volatile separate account asset values;

2. Market index volatility, price gaps and/or liquidity constraints;

3. Rapidly changing interest rates.

The behavior assumptions should be logical and consistent both individually and in aggregate, especially in the scenarios that govern the results. In other words, the actuary should not set behavior assumptions in isolation, but give due consideration to other elements of the model. The interdependence of assumptions (particularly those governing customer behaviors) makes this task difficult and by definition requires professional judgment, but it is important that the model risk factors and assumptions:

1. Remain logically and internally consistent across the scenarios tested;

2. Represent plausible outcomes; and

3. Lead to appropriate, but not excessive, asset requirements.

The actuary should remember that the continuum of "plausibility" should not be confined or constrained to the outcomes and events exhibited by historic experience.

Companies should attempt to track experience for all assumptions that materially affect their risk profiles by collecting and maintaining the data required to conduct credible and meaningful studies of contractholder behavior.

G. Additional Considerations and Requirements for Assumptions Applicable to Guaranteed Living Benefits

Experience for contracts without guaranteed living benefits may be of limited use in setting a lapse assumption for contracts with in-the-money or at-the-money guaranteed living benefits. Such experience may only be used if it is appropriate (e.g., lapse experience on contracts without a living benefit may have relevance to the early durations of contracts with living benefits) and relevant to the business and is accompanied by documentation that clearly demonstrates the relevance of the experience, as discussed in the following paragraph.

The supporting memorandum required by Section 10, shall include a separately identifiable section showing the assumptions used for lapse and utilization assumptions for contracts with guaranteed living benefits in the development of the Conditional Tail Expectation Amount. This section shall be considered part of the supporting memorandum and shall show the formulas used to set the assumptions and describe the key parameters affecting the level of the assumption (e.g., age, duration, in-the-moneyness, during and after the surrender charge period). The section shall include a summary that shows the lapse and utilization rates that result from various combinations of the key parameters. The section shall show any experience data used to develop the assumptions and describe the

source, relevance and credibility of that data. If relevant and credible data were not available, the section should discuss how the assumption is consistent with the requirement that the assumption is to be on the conservative end of the plausible range of expected experience. The section shall also discuss the sensitivity tests performed to support the assumption. This separately identifiable section shall be made available on a standalone basis if requested by the Domiciliary Commissioner. If it is requested, the section shall have the same confidential status as the supporting memorandum and the actuarial memorandum supporting the actuarial opinion, as discussed in Section 4.C.2.

Regarding lapse assumptions for contracts with guaranteed living benefits, the section shall include, at a minimum, the following:

1. Actual to expected lapses on two bases, where "expected" equals one of the following:

    a. Prudent estimate assumptions used in the development of the Conditional Tail Expectation Amount;

    b. The assumptions used in the Standard Scenario;

2. The lapse assumptions used in the development of Conditional Tail Expectation Amount and corresponding actual experience separated by:

    a. Logical blocks of business (based on company's assessment);

    b. Duration (at a minimum this should show during the surrender charge period vs. after the surrender charge period);

    c. In-the-moneyness (consistent with how dynamic assumptions are determined); and

    d. Age (to the extent age impacts the election of benefits lapse).

    This data shall be separated by experience incurred in the following periods:

    a. In the past year;

    b. In the past three years; and

    c. All years.

Section 12. Specific Guidance and Requirements for Setting Prudent Estimate Mortality Assumptions

A. Overview

1. Intent. The guidance and requirements in this Section apply for setting Prudent Estimate mortality assumptions when determining the Conditional Tail Expectation Amount (whether using projections or the Alternative Methodology). The intent is for Prudent Estimate mortality assumptions to be based on facts, circumstances and appropriate actuarial practice (where more than one approach to appropriate actuarial practice exists, the actuary should select the practice that the actuary deems most appropriate under the circumstances) with only a limited role for unsupported actuarial judgment.

2. Description. Prudent Estimate mortality assumptions are determined by first developing expected mortality curves based on either available experience or published tables. Where necessary, margins are applied to the experience to reflect data uncertainty. The expected mortality curves are then adjusted based on the credibility of the experience used to determine the expected mortality curve. Section 12.B addresses guidance and requirements for determining expected mortality curves and Section 12.C addresses guidance and requirements for adjusting the expected mortality curves to determine Prudent Estimate mortality.

Finally, the credibility-adjusted tables shall be adjusted for mortality improvement (where such adjustment is permitted or required) using the guidance and requirements in Section 12.D.

3. Business Segments. For purposes of setting Prudent Estimate mortality assumptions, the products falling under the scope of these requirements shall be grouped into business segments with different mortality assumptions. The grouping should generally follow the pricing, marketing, management and/or reinsurance programs of the company. Where less refined segments are used for setting the mortality assumption than is used in business management the documentation should address the impact, if material, of the less refined segmentation on the resulting reserves.

4. Margin for Data Uncertainty. The expected mortality curves that are determined in Section 12.B may need to include a margin for data uncertainty. The margin could be in the form of an increase or a decrease in mortality, depending on the business segment under consideration. The margin shall be applied in a direction (i.e., increase or decrease in mortality) that results in a higher reserve. A sensitivity test may be needed to determine the appropriate direction of the provision for uncertainty to mortality. The test could be a prior year mortality sensitivity analysis of the business segment or an examination of current representative cells of the segment.

   For purposes of this Section, if mortality must be increased (decreased) to provide for uncertainty the business segment is referred to as a plus (minus) segment.

   It may be necessary, because of a change in the mortality risk profile of the segment, to reclassify a business segment from a plus (minus) segment to a minus (plus) segment to the extent compliance with this subsection requires such a reclassification.

B. Determination of Expected Mortality Curves

1. Experience Data. In determining expected mortality curves the company shall use actual experience data directly applicable to the business segment (i.e., direct data) if it is available. In the absence of direct data, the company should then look to use data from a segment that is similar to the business segment (i.e., other than direct experience). See subsection 2 below for additional considerations. Finally, if there is no data, the company shall use the applicable table, as required in subsection 3 below.

2. Data Other than Direct Experience. If expected mortality curves for a segment are being determined using data from a similar business segment (whether or not directly written by the company), the actuary shall document any similarities or differences between the two business segments (e.g., type of underwriting, marketing channel, average policy size, etc.). The actuary shall also document the data quality of the mortality experience of the similar business. Adjustments shall be applied to the data to reflect differences between the business segments and margins shall be applied to the adjusted expected mortality curves to reflect the data uncertainty associated with using data from a similar but not identical business segment. The actuary shall document the adjustments and the margins applied.

   To the extent the mortality of a business segment is reinsured, any mortality charges that are consistent with the company's own pricing and applicable to a substantial portion of the mortality risk may also be a reasonable starting point for the determination of the company's expected mortality curves. The actuary shall document the application of such reinsurance charges and how they were used to set the company's expected mortality curves for the segment.

3. No Data Requirements. When little or no experience or information is available on a business segment, the company shall use expected mortality curves that would produce expected deaths no less than using 100% of the 1994 Variable Annuity MGDB mortality table for a plus segment and expected deaths no greater than 100% of the Annuity 2000 table for a minus segment. If mortality experience on the business segment is expected to be atypical (e.g., demographics of target markets are known to have higher (lower) mortality than typical), these "no data" mortality requirements may not be adequate.

4. Additional Considerations Involving Data. The following considerations shall apply to mortality data specific to the business segment for which assumptions are being determined (i.e., direct data discussed in subsection 1 above or other than direct data discussed in subsection 2 above).

   a. Underreporting of deaths. Mortality data shall be examined for possible underreporting of deaths. Adjustments shall be made to the data if there is any evidence of underreporting. Alternatively, exposure by lives or amounts on contracts for which death benefits were in the money may be used to determine expected mortality curves. Underreporting on such exposures should be minimal; however, this reduced subset of data will have less credibility.

   b. Experience by contract duration. Experience of a plus segment shall be examined to determine if mortality by contract duration increases materially due to selection at issue. In the absence of information, the actuary shall assume that expected mortality will increase by contract duration for an appropriate select period. As an alternative, if the actuary determines that mortality is impacted by selection, the actuary could apply margins to the expected mortality in such a way that the actual mortality modeled does not depend on contract duration.

   c. Modification and Relevance of data. Even for a large company the quantity of life exposures and deaths are such that a significant amount of smoothing may be required to determine expected mortality curves from mortality experience. Expected mortality curves, when applied to the recent historic exposures (e.g., 3 to 7 years), should not result in an estimate of aggregate number of deaths less (greater) than the actual number deaths during the exposure period for plus (minus) segments. If this condition is not satisfied, the actuary must document the rationale in support of using expected mortality that differs from recent mortality experience.

      In determining expected mortality curves (and the credibility of the underlying data), older data may no longer be relevant. The "age" of the experience data used to determine expected mortality curves should be documented. There should be commentary in the documentation on the relevance of the data (e.g., any actual and expected changes in markets, products and economic conditions over the historic and projected experience).

   d. Other considerations. In determining expected mortality curves, consideration should be given to factors that include, but are not limited to, trends in mortality experience, trends in exposure, volatility in year-to-year A/E mortality ratios, mortality by lives relative to mortality by amounts, changes in the mix of business and product features that could lead to mortality selection.

5. Documentation Requirements.

   a. All Segments. The documentation should include any material considerations necessary to understand the development of mortality assumptions for the statutory valuation even if such considerations are not explicitly mentioned in this section. The documentation should be explicit when material judgments were required and such judgments had to be made without supporting historic experience.

      The documentation shall:

      i. Explain the rationale for the grouping of contracts into different segments for the determination of mortality assumptions and characterize the type and quantity of business that constitute each segment.

      ii. Describe how each segment was determined to be a plus or minus segment.

iii. 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.

iv. Document the age of the experience data used to determine expected mortality curves and comment on the relevance of the data.

v. Document the mathematics used to adjust mortality based on credibility and summarize the result of applying credibility to the mortality segments.

vi. Discuss any assumptions made on mortality improvements, the support for such assumptions and how such assumptions adjusted the modeled mortality.

vii. Describe how the expected mortality curves compare to recent historic experience and comment on any differences.

viii. Discuss how the mortality assumptions are consistent with the goal of achieving the required CTE level over the joint distribution of all future outcomes, in keeping with Principle #3 and Section 11.

If the study was done on a similar business segment, identify the differences in the business segment on which the data were gathered and the business segment on which the data were used to determine mortality assumptions for the statutory valuation. Describe how these differences were reflected in the mortality used in modeling.

If mortality assumptions for the statutory valuation were based in part on reinsurance rates, document how the rates were used to set expected mortality (e.g., assumptions made on loadings in the rates and/or whether the assuming company provided their expected mortality and the rationale for their assumptions).

b) Plus Segments. For a plus segment, the documentation shall also discuss the examination of the mortality data for the underreporting of deaths and experience by duration, and describe any adjustments that were made as a result of the examination.

c) Minus Segments. For a minus segment the documentation shall also discuss how the mortality deviations on minus segments compare to those on any plus segments. To the extent the overall margin is reduced, the documentation should include support for this assumption.

C. Adjustment for Credibility to Determine Prudent Estimate Mortality

1. Adjustment for Credibility. The expected mortality curves determined in section 12.B shall be adjusted based on the credibility of the experience used to determine the curves in order to arrive at Prudent Estimate mortality. The adjustment for credibility shall result in blending the expected mortality curves with a mortality table consistent with a statutory valuation mortality table. For a plus segment, the table shall be consistent with 100% of the 1994 Variable Annuity MGDB table (or a more recent mortality table adopted by the NAIC to replace this table). For a minus segment, the table shall be consistent with 100% of the 2000 Annuity table (or a more recent mortality table adopted by the NAIC to replace that table). The approach used to adjust the curves shall suitably account for credibility.

Guidance Note: For example, when credibility is zero, an appropriate approach should result in a mortality assumption consistent with 100% of the statutory valuation mortality table used in the blending.

2. Adjustment of Statutory Valuation Mortality for Improvement. For purposes of the adjustment for credibility, the statutory valuation mortality table for a plus segment may be and the statutory valuation mortality table for a minus segment must be adjusted for mortality improvement. Such adjustment shall

reflect applicable published industrywide experience from the effective date of the respective statutory valuation mortality table to the experience weighted average date underlying the data used to develop the expected mortality curves (discussed in section 12.B).

3. Credibility Procedure. The credibility procedure used shall:

   a. Produce results that are reasonable in the professional judgment of the actuary,

   b. Not tend to bias the results in any material way,

   c. Be practical to implement,

   d. Give consideration to the need to balance responsiveness and stability,

   e. Take into account not only the level of aggregate claims but the shape of the mortality curve, and

   f. Contain criteria for full credibility and partial credibility that have a sound statistical basis and be appropriately applied.

   Documentation of the credibility procedure used shall include a description of the procedure, the statistical basis for the specific elements of the credibility procedure, and any material changes from prior credibility procedures.

4. Further Adjustment of the Credibility-adjusted Table for Mortality Improvement. The credibility-adjusted table used for plus segments may be and the credibility adjusted date used for minus segments must be adjusted for applicable published industrywide experience from the experience weighted average date underlying the company experience used in the credibility process to the valuation date.

Any adjustment for mortality improvement beyond the valuation date is discussed in section 12.D.

D. Future Mortality Improvement

The mortality assumption resulting from the requirements of section 12.C shall be adjusted for mortality improvements beyond the valuation date if such an adjustment would serve to increase the resulting Conditional Tail Expectation Amount. If such an adjustment would reduce the Conditional Tail Expectation Amount, such assumptions are permitted, but not required. In either case, the assumption must be based on current relevant data with a margin for uncertainty (increasing assumed rates of improvement if that results in a higher reserve, reducing them otherwise).

APPENDIX 1 - 1994 Variable Annuity MGDB Mortality Table

FEMALE Age Last Birthday

AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$
1	0.519	24	0.344	47	1.371	70	16.957	93	192.270
2	0.358	25	0.346	48	1.488	71	18.597	94	210.032
3	0.268	26	0.352	49	1.619	72	20.599	95	228.712
4	0.218	27	0.364	50	1.772	73	22.888	96	248.306
5	0.201	28	0.382	51	1.952	74	25.453	97	268.892
6	0.188	29	0.403	52	2.153	75	28.372	98	290.564
7	0.172	30	0.428	53	2.360	76	31.725	99	313.211
8	0.158	31	0.455	54	2.589	77	35.505	100	336.569
9	0.154	32	0.484	55	2.871	78	39.635	101	360.379
10	0.159	33	0.514	56	3.241	79	44.161	102	385.051
11	0.169	34	0.547	57	3.713	80	49.227	103	411.515
12	0.185	35	0.585	58	4.270	81	54.980	104	439.065
13	0.209	36	0.628	59	4.909	82	61.410	105	465.584
14	0.239	37	0.679	60	5.636	83	68.384	106	488.958
15	0.271	38	0.739	61	6.460	84	75.973	107	507.867
16	0.298	39	0.805	62	7.396	85	84.432	108	522.924
17	0.315	40	0.874	63	8.453	86	94.012	109	534.964
18	0.326	41	0.943	64	9.611	87	104.874	110	543.622
19	0.333	42	1.007	65	10.837	88	116.968	111	548.526
20	0.337	43	1.064	66	12.094	89	130.161	112	550.000
21	0.340	44	1.121	67	13.318	90	144.357	113	550.000
22	0.343	45	1.186	68	14.469	91	159.461	114	550.000
23	0.344	46	1.269	69	15.631	92	175.424	115	1000.000

APPENDIX 11 - 1994 Variable Annuity MGDB Mortality Table

MALE Age Last Birthday

AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$
1	0.587	24	0.760	47	2.366	70	29.363	93	243.533
2	0.433	25	0.803	48	2.618	71	32.169	94	264.171
3	0.350	26	0.842	49	2.900	72	35.268	95	285.199
4	0.293	27	0.876	50	3.223	73	38.558	96	305.931
5	0.274	28	0.907	51	3.598	74	42.106	97	325.849
6	0.263	29	0.935	52	4.019	75	46.121	98	344.977
7	0.248	30	0.959	53	4.472	76	50.813	99	363.757
8	0.234	31	0.981	54	4.969	77	56.327	100	382.606
9	0.231	32	0.997	55	5.543	78	62.629	101	401.942
10	0.239	33	1.003	56	6.226	79	69.595	102	422.569
11	0.256	34	1.005	57	7.025	80	77.114	103	445.282
12	0.284	35	1.013	58	7.916	81	85.075	104	469.115
13	0.327	36	1.037	59	8.907	82	93.273	105	491.923
14	0.380	37	1.082	60	10.029	83	101.578	106	511.560
15	0.435	38	1.146	61	11.312	84	110.252	107	526.441
16	0.486	39	1.225	62	12.781	85	119.764	108	536.732
17	0.526	40	1.317	63	14.431	86	130.583	109	543.602
18	0.558	41	1.424	64	16.241	87	143.012	110	547.664
19	0.586	42	1.540	65	18.191	88	156.969	111	549.540
20	0.613	43	1.662	66	20.259	89	172.199	112	550.000
21	0.642	44	1.796	67	22.398	90	188.517	113	550.000
22	0.677	45	1.952	68	24.581	91	205.742	114	550.000
23	0.717	46	2.141	69	26.869	92	223.978	115	1000.000

APPENDIX 11 - 1994 Variable Annuity MGDB Mortality Table

FEMALE Age Nearest Birthday

AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$
1	0.628	24	0.344	47	1.316	70	16.239	93	184.435
2	0.409	25	0.344	48	1.427	71	17.687	94	201.876
3	0.306	26	0.348	49	1.549	72	19.523	95	220.252
4	0.229	27	0.356	50	1.690	73	21.696	96	239.561
5	0.207	28	0.372	51	1.855	74	24.107	97	259.807
6	0.194	29	0.392	52	2.050	75	26.832	98	281.166
7	0.181	30	0.415	53	2.256	76	29.954	99	303.639
8	0.162	31	0.441	54	2.465	77	33.551	100	326.956
9	0.154	32	0.470	55	2.713	78	37.527	101	350.852
10	0.155	33	0.499	56	3.030	79	41.826	102	375.056
11	0.163	34	0.530	57	3.453	80	46.597	103	401.045
12	0.175	35	0.565	58	3.973	81	51.986	104	428.996
13	0.195	36	0.605	59	4.569	82	58.138	105	456.698
14	0.223	37	0.652	60	5.250	83	64.885	106	481.939
15	0.256	38	0.707	61	6.024	84	72.126	107	502.506
16	0.287	39	0.771	62	6.898	85	80.120	108	518.642
17	0.309	40	0.839	63	7.897	86	89.120	109	531.820
18	0.322	41	0.909	64	9.013	87	99.383	110	541.680
19	0.331	42	0.977	65	10.215	88	110.970	111	547.859
20	0.335	43	1.037	66	11.465	89	123.714	112	550.000
21	0.339	44	1.091	67	12.731	90	137.518	113	550.000
22	0.342	45	1.151	68	13.913	91	152.286	114	550.000
23	0.344	46	1.222	69	15.032	92	167.926	115	1000.000

Requirements for Principle-Based Reserves for Variable Annuities – VM-21

APPENDIX 11 - 1994 Variable Annuity MGDB Mortality Table

MALE Age Nearest Birthday

AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$	AGE	$1000q_x$
1	0.701	24	0.738	47	2.246	70	28.068	93	234.658
2	0.473	25	0.782	48	2.486	71	30.696	94	255.130
3	0.393	26	0.824	49	2.751	72	33.688	95	276.308
4	0.306	27	0.860	50	3.050	73	36.904	96	297.485
5	0.280	28	0.892	51	3.397	74	40.275	97	317.953
6	0.268	29	0.922	52	3.800	75	44.013	98	337.425
7	0.257	30	0.948	53	4.239	76	48.326	99	356.374
8	0.238	31	0.971	54	4.706	77	53.427	100	375.228
9	0.230	32	0.992	55	5.234	78	59.390	101	394.416
10	0.233	33	1.003	56	5.854	79	66.073	102	414.369
11	0.245	34	1.004	57	6.601	80	73.366	103	436.572
12	0.267	35	1.006	58	7.451	81	81.158	104	460.741
13	0.302	36	1.020	59	8.385	82	89.339	105	484.644
14	0.352	37	1.054	60	9.434	83	97.593	106	506.047
15	0.408	38	1.111	61	10.629	84	105.994	107	522.720
16	0.463	39	1.182	62	12.002	85	115.015	108	534.237
17	0.509	40	1.268	63	13.569	86	125.131	109	542.088
18	0.544	41	1.367	64	15.305	87	136.815	110	546.908
19	0.573	42	1.481	65	17.192	88	150.191	111	549.333
20	0.599	43	1.599	66	19.208	89	164.944	112	550.000
21	0.627	44	1.725	67	21.330	90	180.886	113	550.000
22	0.658	45	1.867	68	23.489	91	197.834	114	550.000
23	0.696	46	2.037	69	25.700	92	215.601	115	1000.000

VM-00_090218_03

Amendment Proposal Form*

(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Christopher H. Hause, President of Hause Actuarial Solutions, representing Consumer Credit Industry Association. Inclusion of lump sum credit disability within VM-00 definition of credit disability contracts.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-00, Draft 2/18/09.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   "Credit disability insurance" means insurance on a debtor or debtors to or in connection with a specific loan or other credit transaction, to provide for lump sum or periodic payments ~~due~~ on a specific loan or other credit transaction ~~while~~ due to the disability of the insured debtor ~~is disabled~~.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   Lump sum credit disability should be included in the definition of credit disability for reserving purposes. Also, certain credit disability products contain both periodic and lump sum benefits. Reserving standards should be prescribed and consistent for all credit disability products.

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
5/27/09	JLE		Adopted 7/29/09
Notes:			

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VM-00_090218_04

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Christopher H. Hause, President of Hause Actuarial Solutions, representing Consumer Credit Industry Association. Inclusion of real estate secured credit life insurance within VM-00 definition of credit life contracts.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-00, Draft 2/18/09.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Credit life insurance does NOT include:

   ~~a. Insurance written in connection with a credit transaction that is:~~

   ~~i. Secured by a first mortgage or deed of trust; and~~

   ~~ii. Made to finance the purchase of real property or the construction of a dwelling thereon, or to refinance a prior credit transaction made for such a purpose;~~

   ~~b~~a. Insurance sold as an isolated transaction on the part of the insurer and not related to an agreement or a plan for insuring debtors of the creditor.

   b. Insurance on accounts receivable.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   The current definition of credit life insurance is taken from the credit insurance model regulation, which is intended primarily to regulate rate, and disclosure requirements for credit insurance. Reserving standards should be prescribed and consistent for all credit related products, including real-estate secured credit life.

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
5/27/09	JLE		Tabled 7/29/09; Withdrawn 8/19/09
Notes: The American Academy of Actuaries was asked to review the request on 7/29/09			

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VM-00_090218_05

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Bob DiRico, chair, American Academy of Actuaries' Consistency Work Group; clarify risks to be included in a principle-based valuation.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-00 Exposure Draft, dated February 18, 2009.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

OVERVIEW OF RESERVE CONCEPTS

Reserve requirements prescribed in the Valuation Manual are intended to support a statutory objective of conservative valuation to provide protection to policyholders and promote solvency of companies against adverse fluctuations in financial condition or operating results pursuant to requirements of the SVL. .

A principle-based valuation is a reserve valuation that uses one or more methods or one or more assumptions determined by the insurer pursuant to requirements of the SVL and the Valuation Manual. This is in contrast to valuation approaches that use only prescribed assumptions and methods. Although a reserve valuation may involve a method or assumption determined by the insurer, such valuation is a principle-based valuation only as specified in the Valuation Manual for a product or category of products.

~~**Drafting Note:** Is the Valuation Manual the appropriate place for these concepts?~~

~~Requirements specified by the Valuation Manual as principle based valuation requirements are deemed consistent with the following concepts:~~

~~1. Captures the benefits and guarantees associated with the contracts and their identifiable, quantifiable and material risks, including the 'tail risk' associated with each product and the funding of the risks.~~

~~2. Utilizes risk analysis and risk management techniques to quantify the risks and is guided by the evolving practice and expanding knowledge in the measurement and management of risk. This may include, to the extent required by an appropriate assessment of the underlying risks, stochastic models or other means of analysis that properly reflect the risks of the underlying contracts.~~

~~3. Incorporates assumptions, risk analysis methods and models and management techniques that are consistent with, those utilized within the company's overall risk assessment process. The inclusion of the risk analysis methods and models should consider the original purpose of that analysis. Risk and risk factors explicitly or implicitly included in the company's risk assessment and evaluation processes will be included in the risk analysis and cash flow models used in the principle based valuation. Examples of company risk assessment processes may include economic valuations, internal capital allocation models, experience analysis, asset adequacy testing, GAAP valuation and pricing.~~

~~4. Utilizes the company's anticipated experience, based on the availability of relevant company data and its degree of credibility, to establish assumptions for risks specific to the company and over which the company has some degree of control or influence.~~

~~5. Incorporates assumptions that, when viewed in the aggregate, reflect an appropriate level of conservatism and, together with the methods utilized, recognize the solvency objective of statutory reporting.~~

~~6. Reflects risks and risk factors in the calculation of the principle based valuation minimum statutory reserves and statutory RBC that may be different from one another and may change over time as products and risk measurement techniques evolve, both in a general sense and within the company's risk management processes.~~

A company using a principle-based valuation for one or more policies or contracts must establish reserves for those policies and contracts that reflect risks that arise from future events that are:

a) Directly related to the policies or contracts being valued, or their supporting assets; and

b) Determined capable of materially affecting the reserve.

Risks not to be included in reserves are those of a general business nature that are not specific to the insurance contract, and are best viewed from the company perspective as opposed to the policy or contract perspective. These risks may involve the need for a liability separate from the reserve, or may be provided for in capital and surplus.

Examples of risks to be included in a principle-based valuation include risks associated with policyholder behavior (such as lapse and utilization risk), mortality risk, interest rate risk, asset default risk, separate account fund performance, and the risk related to the performance of indices for contractual guarantees. Examples of risks not to be included in a principle-based valuation include guaranty fund assessment risk or liability, health risk pool liability, reputation risk and fraud/theft risk.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

The proposed wording clarifies the risks that must be included in a principle-based valuation. The list of examples given in the proposed wording is an abbreviated version of more detailed product specific examples that are included in the various sections of the Valuation Manual (and currently in AG43). We believe this clarification is needed to distinguish between risks that are to be reflected in minimum reserve requirements versus other non-reserve liabilities and RBC capital requirements. In the absence of such guidance, a situation could easily develop whereby one state seeks to include some risks in reserves that other states may believe are to be covered by other non-reserve liabilities or RBC requirements.

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
5/27/09	JLE		Withdrawn 9/21/09
Notes: Replaced VM-00_090218_02			

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VM-00_090218_06

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Mike Boerner, Texas Department of Insurance.

   Add Corporate Governance Requirements and provide suggestion for scope to include PBR business issued prior to the operative date of the VM whose reserve requirements follow AG43.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-00 2/18/09 - Table of Contents & new section in Introduction.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Add Corporate Governance Requirements for Principle Based Reserves" in Table of Contents and add corresponding new section in Introduction. Verbiage for this new section is found in the attached working draft and is provided as follows:

   "CORPORATE GOVERNANCE REQUIREMENTS for PRINCIPLE-BASED RESERVES

   The requirements found in VM-Appendix G (VM-G) provide corporate governance requirements applicable to products subject to Principle-Based Reserves as specified in this Valuation Manual. VM-G includes products issued prior to the operative date of the Valuation Manual that are subject to AG43 in VM-Appendix C in addition to those products subject to VM-21 issued on or after the operative date of Valuation Manual."

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   To add Corporate Governance Requirements and a possible scope clarification..

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
7/28/09	JLE		Amended and Adopted 7/29/09
Notes: VM-G ~~includes~~applies to products issued prior to the operative date of the Valuation Manual that are subject to AG43 in VM-Appendix C in addition to those …			

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VM-00_090218_07

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Mike Boerner, Texas Department of Insurance.

   Provide exemption from PBR requirements for pre-need life insurance contracts.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-00 02/18/09, II Reserve Requirements, Life Insurance Products, Item 4a.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   "4. For life contracts issued after the first five years following the operative date of the Valuation Manual:

      a. For individual life policies and individually underwritten certificates issued under a group life insurance contract the minimum reserve requirements are those provided by VM-20 with the exception of pre-need life insurance contracts whose minimum reserve requirements are provided by subsection 4b below."

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   To provide a PBR exemption for pre-need life insurance contracts. Note that a definition of "pre-need" may need to be added to VM-1. Other type of exemptions or considerations can be discussed and touch on the broader issue of scope for PBR.

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
7/28/09	JLE		Adopted 7/29/09
Notes:			

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VM-00_090218_08

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Mike Boerner, Texas Department of Insurance.

   Adjust health reserve requirements to be consistent with table of contents. These requirements would then use VM-25. Also, include a drafting note relative to VM-25 in the health reserve requirements and include a drafting note relative to VM-21 in the annuity reserve requirements to indicate what will be used for these reserve requirements if VM-25 or VM-21 are not ready for inclusion in the VM prior to adoption.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-00 2/18/09, II Reserve Requirements, Annuity Products, & Health Insurance Products.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   HEALTH INSURANCE PRODUCTS:

   "2. Minimum reserve requirements for accident and health insurance contracts, other than Credit Disability, are those requirements provided by VM-25~~found in Appendix A and C of the Valuation Manual (VM-A and VM-C) as applicable~~.

   DRAFTING NOTE: If VM-25 is not ready for inclusion in the VM prior to adoption of the VM then reference to VM-25 above will be changed to, "provided by Appendix A and C of the Valuation Manual (VM-A and VM-C) as applicable." "

   ANNUITY PRODUCTS

   "2. Minimum reserve requirements for variable annuity contracts and similar business, specified in VM-21, shall be those provided by VM-21. The minimum reserve requirements of VM-21 are considered "Principle-based Reserve (PBR)" requirements for purposes of the Valuation Manual.

   DRAFTING NOTE: If VM-21 is not ready for inclusion in the VM prior to adoption of the VM then the reserve requirements in "2" above will be changed to reference Actuarial Guideline 43 (AG43) in VM Appendix C of this Valuation Manual. "

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   To reflect use of VM drafts intended to be ready for inclusion in the VM prior to adoption but to provide through a drafting note what will be used if either VM-21 or VM-25 is not ready for inclusion prior to the time the VM is adopted.

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
7/28/09	JLE		Adopted 7/29/09
Notes:			

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VM-00_090819_01

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Bob DiRico, chair, American Academy of Actuaries' Consistency Work Group; clarify risks to be included in a principle-based valuation.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-00 Exposure Draft, dated August 19, 2009.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (Please red-line it from the current version with existing changes already accepted. You may do this through an attachment.)

OVERVIEW OF RESERVE CONCEPTS

Reserve requirements prescribed in the Valuation Manual are intended to support a statutory objective of conservative valuation to provide protection to policyholders and promote solvency of companies against adverse fluctuations in financial condition or operating results pursuant to requirements of the SVL. .

A principle-based valuation is a reserve valuation that uses one or more methods or one or more assumptions determined by the insurer pursuant to requirements of the SVL and the Valuation Manual. This is in contrast to valuation approaches that use only prescribed assumptions and methods. Although a reserve valuation may involve a method or assumption determined by the insurer, such valuation is a principle-based valuation only as specified in the Valuation Manual for a product or category of products.

~~**Drafting Note:** Is the Valuation Manual the appropriate place for these concepts?~~

~~Requirements specified by the Valuation Manual as principle based valuation requirements are deemed consistent with the following concepts:~~

~~1. Captures the benefits and guarantees associated with the contracts and their identifiable, quantifiable and material risks, including the 'tail risk' associated with each product and the funding of the risks.~~

~~2. Utilizes risk analysis and risk management techniques to quantify the risks and is guided by the evolving practice and expanding knowledge in the measurement and management of risk. This may include, to the extent required by an appropriate assessment of the underlying risks, stochastic models or other means of analysis that properly reflect the risks of the underlying contracts.~~

~~3. Incorporates assumptions, risk analysis methods and models and management techniques that are consistent with, those utilized within the company's overall risk assessment process. The inclusion of the risk analysis methods and models should consider the original purpose of that analysis. Risk and risk factors explicitly or implicitly included in the company's risk assessment and evaluation processes will be included in the risk analysis and cash flow models used in the principle based valuation. Examples of company risk assessment processes may include economic valuations, internal capital allocation models, experience analysis, asset adequacy testing, GAAP valuation and pricing.~~

~~4. Utilizes the company's anticipated experience, based on the availability of relevant company data and its degree of credibility, to establish assumptions for risks specific to the company and over which the company has some degree of control or influence.~~

~~5. Incorporates assumptions that, when viewed in the aggregate, reflect an appropriate level of conservatism and, together with the methods utilized, recognize the solvency objective of statutory reporting.~~

~~6. Reflects risks and risk factors in the calculation of the principle-based valuation minimum statutory reserves and statutory RBC that may be different from one another and may change over time as products and risk measurement techniques evolve, both in a general sense and within the company's risk management processes.~~

A principle-based reserve valuation must only reflect risks that arise from future events that are:

1. Associated with the policies or contracts being valued, or their supporting assets; and
2. Determined capable of materially affecting the reserve.

Risks not to be included in reserves are those of a general business nature, those that are not specific to the insurance contract, or those that are best viewed from the company perspective as opposed to the policy or contract perspective. These risks may involve the need for a liability separate from the reserve, or may be provided for in capital and surplus.

Since no list can be comprehensive and applicable to all types of products, this section of the Manual provides examples of the general approach to the determination of the meaning of "associated with the policies or contracts" while recognizing that each relevant section of the Manual will deal with this issue from the perspective of the products subject to that section. Examples of risks to be included in a principle-based valuation include risks associated with policyholder behavior (such as lapse and utilization risk), mortality risk, interest rate risk, asset default risk, separate account fund performance, and the risk related to the performance of indices for contractual guarantees. Examples of risks not to be included in a principle-based valuation include guaranty fund assessment risk or liability, health risk pool liability, reputation risk and fraud/theft risk.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

The proposed wording clarifies that the Manual will address the risks that must be included in a principle-based valuation. The list of examples given in the proposed wording is an abbreviated version of more detailed product specific examples that are included in the various sections of the Valuation Manual (and currently in AG43). We believe this clarification is needed to distinguish between risks that are to be reflected in minimum reserve requirements versus other non-reserve liabilities and RBC capital requirements.

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
8/28/09	JLE		Amended and Adopted 9/21/09

Notes:
A principle-based reserve valuation must only reflect risks ~~that arise from future events that are~~:

1. Associated with the policies or contracts being valued, or their supporting assets; and
2. Determined capable of materially affecting the reserve.

Drafting Note: The second condition regarding materiality needs further discussion.

Risks not to be included in reserves are those of a general business nature, those that are not ~~specific to the insurance contract~~associated with the policies or contracts being valued, or those that are best viewed from the company perspective as opposed to the policy or contract perspective. These risks may involve the need for a liability separate from the reserve, or may be provided for in capital and surplus.

Since no list can be comprehensive and applicable to all types of products, this section of the Manual provides examples of the general approach to the determination of the meaning of "associated with the policies or contracts" while recognizing that each relevant section of the Manual will deal with this issue from the perspective of the products subject to that section. Examples of risks to be included in a principle-based valuation include risks associated with policyholder behavior (such as lapse and utilization risk), mortality risk, interest rate risk, asset default risk, separate account fund performance, and the risk related to the performance of indices for contractual guarantees. ~~Examples of risks not to be included in a principle based valuation include guaranty fund assessment risk or liability, health risk pool liability, reputation risk and fraud/theft risk.~~

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VALUATION MANUAL – VM-00

Draft: 9/21/09

The NAIC solicits comments on this draft. Comments should be sent to John Engelhardt, NAIC, at JEngelha@naic.org.

VALUATION MANUAL

September 2009
Proposed Draft

VALUATION MANUAL – VM-00

TABLE OF CONTENTS

VALUATION MANUAL – VM-00

I. INTRODUCTION

AUTHORITY AND APPLICABILITY

The Valuation Manual sets forth the minimum reserve and related requirements for jurisdictions where the Standard Valuation Law, as amended by the NAIC in 2009, or legislation including substantially similar terms and provisions has been enacted by jurisdictions, and this Valuation Manual (VM) are operative. The NAIC Model Standard Valuation Law (SVL) is provided in VM-5 of this Valuation Manual. The reserve requirements in the Valuation Manual satisfy the minimum valuation requirements of the Standard Valuation Law.

Requirements in the Valuation Manual are applicable to life insurance contracts, accident and health insurance contracts and deposit-type contracts as provided in the Valuation Manual. These contracts include the meaning provided by Statutory Statement of Accounting Principle (SSAP) 50 as found in the NAIC Accounting Practices and Procedures Manual (APPM). Annuity contracts are therefore included within the term life insurance contracts unless specifically indicated otherwise in this Valuation Manual.

Minimum reserve requirements are provided in this Valuation Manual for contracts issued on or after the Valuation Manual operative date of [insert the initial VM operative date]. Other requirements are applicable as provided pursuant to the SVL and this Valuation Manual.

BACKGROUND

As insurance products have increased in their complexity, and as companies have developed new and innovative product designs that change their risk profile, the need to develop new valuation methodologies or revisions to existing requirements to address these changes has led to the development of the Valuation Manual. In addition, the Valuation Manual addresses the need to develop a valuation standard that enhances uniformity among the principle-based valuation requirements across states and insurance departments. Finally, the Valuation Manual defines a process to facilitate future changes in valuation requirements on a more uniform, timely and efficient basis.

The goals of the National Association of Insurance Commissioners (NAIC) in developing the Valuation Manual are:

1. To consolidate into one document the minimum reserve requirements for life insurance contracts, accident and health insurance contracts and deposit-type contracts pursuant to the SVL, including those products subject to principle-based valuation requirements and those not subject to principle-based valuation requirements.

2. To promote uniformity among states' valuation requirements.

3. To provide for an efficient, consistent, and timely process to update valuation requirements as the need arises.

4. To mandate and facilitate the specific reporting requirements of experience data.

5. To enhance industry compliance with the MM/DD/20XX revisions to the SVL, as adopted in various states.

DESCRIPTION OF VALUATION MANUAL

The Valuation Manual contains five sections which provide requirements covered in Authority and Applicability above, and which discuss principles and concepts underlying these requirements.

1. Section I is an introductory section that includes the general concepts underlying the reserve requirements in the Valuation Manual.

2. Section II summarizes the minimum reserve requirements which apply to a product or type of product including which products or categories of products are subject to principle-based valuation requirements and documentation. As minimum reserve requirements are developed for various products or categories of

products, those requirements will be incorporated into this section. The applicability of the minimum reserve requirements to particular products will be clarified in the appropriate subsection. For example, the minimum reserve requirements that apply to a life insurance product will be identified in the subsection addressing life insurance reserve requirements.

3. Section III sets forth the requirements for the actuarial opinion and memorandum and the principle-based report.

4. Section IV sets forth the experience reporting requirements.

5. Section V contains Valuation Manual minimum standards. These standards contain the specific requirements that are referenced in Sections II - IV.

OPERATIVE DATE OF VALUATION MANUAL

The requirements in the Valuation Manual become operative pursuant to Section 11 of the SVL.

PROCESS FOR UPDATING VALUATION MANUAL

The NAIC is responsible for the ongoing maintenance of the Valuation Manual. The Life and Health Actuarial Task Force (LHATF) is charged with developing changes to the Valuation Manual for NAIC adoption.

Any changes must conform to guidelines, which may be provided in a policy statement(s), developed by the NAIC to support joint use of reserve and other requirements as referenced by the *Accounting Practices and Procedures Manual,* the Valuation Manual and the Standard Valuation Law, etc.

Changes must be consistent with existing model laws or with projects which have received Executive Committee approval to develop new model laws and to the extent the actuarial requirements could have an impact on accounting and reporting guidance in the *Accounting Practices and Procedures Manual* proposed changes must be reviewed by the Statutory Accounting Principles Working Group (SAPWG) for consistency with the *Accounting Practices and Procedures Manual.*

The Life and Health Actuarial Task Force is charged with the maintenance of the Valuation Manual. The Task Force or its staff support will prepare a summary recommendation that will include an analysis of the impact of proposed changes on reserves, the consumer and the industry, including any other impact, based on size of company. LHATF staff support will work with SAPWG staff support to provide a summary and (*or that)* will also include an agenda submission form which will recommend changes to the *Accounting Practices and Procedures Manual,* if needed, to be consistent with the proposed change.

If the proposed changes are inconsistent with the authoritative guidance in the *Accounting Practices and Procedures Manual*, the Life and Health Actuarial Task Force shall not adopt such changes until the Statutory Accounting Principles Working Group:

1. Indicates support for such change, and

2. Adopts corresponding changes to the *Accounting Practices and Procedures Manual*, with a concurrent effective date.

In the event that the Statutory Accounting Principles Working Group and the Life and Health Actuarial Task Force are in dispute regarding a change and are unable to come to a consensus, a joint subgroup will be formed to resolve the particular issue. Both groups shall send an equal number of knowledgeable representatives to the joint subgroup (suggest 3-5 representatives each) and report back on a recommended resolution. The representatives shall be appointed by the Chair of the Life and Health Actuarial Task Force and the Chair of the Statutory Accounting Principles Working Group. The Subgroup(s) shall provide regular updates on the progress of the specified issue. Neither group should take action, until the subgroup has a recommended resolution.

VALUATION MANUAL – VM-00

Both the Statutory Accounting Principles Working Group and the Life and Health Actuarial Task Force will review proposed Valuation Manual changes for conformance with these guidelines and provide written conclusions and approvals. When both the Statutory Accounting Principles Working Group and the Life and Health Actuarial Task Force conclude the proposed Valuation Manual changes are in conformance with these guidelines and provide approval, the Valuation Manual changes must then be adopted by the A, or B (as applicable), and E Committees prior to NAIC adoption by Executive and Plenary.

SAPWG input is not required for changes which are non-substantive or which provide purely actuarial guidance and do not have an accounting impact. These changes should be included in the quarterly summaries, along with a description of the actuarial guidance. Actuarial guidance is expected to be of a nature similar to what has been termed actuarial guidelines.

Guidelines or a policy statement may be developed to expedite the adoption process of LHATF and SAPWG for those Valuation Manual changes where an emergency situation is present as defined by such guidelines.

Valuation Manual changes must be adopted by the NAIC Executive and Plenary at least six months before becoming effective. The following January 1 will generally be the effective date unless otherwise specified in the changes adopted.

OVERVIEW OF RESERVE CONCEPTS

Reserve requirements prescribed in the Valuation Manual are intended to support a statutory objective of conservative valuation to provide protection to policyholders and promote solvency of companies against adverse fluctuations in financial condition or operating results pursuant to requirements of the SVL. .

A principle-based valuation is a reserve valuation that uses one or more methods or one or more assumptions determined by the insurer pursuant to requirements of the SVL and the Valuation Manual. This is in contrast to valuation approaches that use only prescribed assumptions and methods. Although a reserve valuation may involve a method or assumption determined by the insurer, such valuation is a principle-based valuation only as specified in the Valuation Manual for a product or category of products.

~~**Drafting Note:** Is the Valuation Manual the appropriate place for these concepts?~~

~~Requirements specified by the Valuation Manual as principle based valuation requirements are deemed consistent with the following concepts:~~

~~1. Captures the benefits and guarantees associated with the contracts and their identifiable, quantifiable and material risks, including the 'tail risk' associated with each product and the funding of the risks.~~

~~2. Utilizes risk analysis and risk management techniques to quantify the risks and is guided by the evolving practice and expanding knowledge in the measurement and management of risk. This may include, to the extent required by an appropriate assessment of the underlying risks, stochastic models or other means of analysis that properly reflect the risks of the underlying contracts.~~

~~3. Incorporates assumptions, risk analysis methods and models and management techniques that are consistent with, those utilized within the company's overall risk assessment process. The inclusion of the risk analysis methods and models should consider the original purpose of that analysis. Risk and risk factors explicitly or implicitly included in the company's risk assessment and evaluation processes will be included in the risk analysis and cash flow models used in the principle based valuation. Examples of company risk assessment processes may include economic valuations, internal capital allocation models, experience analysis, asset adequacy testing, GAAP valuation and pricing.~~

~~4. Utilizes the company's anticipated experience, based on the availability of relevant company data and its degree of credibility, to establish assumptions for risks specific to the company and over which the company has some degree of control or influence.~~

~~5. Incorporates assumptions that, when viewed in the aggregate, reflect an appropriate level of conservatism and, together with the methods utilized, recognize the solvency objective of statutory reporting.~~

VALUATION MANUAL – VM-00

~~6. Reflects risks and risk factors in the calculation of the principle-based valuation minimum statutory reserves and statutory RBC that may be different from one another and may change over time as products and risk measurement techniques evolve, both in a general sense and within the company's risk management processes.~~

A principle-based reserve valuation must only reflect risks

1. Associated with the policies or contracts being valued, or their supporting assets; and
2. Determined capable of materially affecting the reserve.

Drafting Note: The second condition regarding materiality needs further discussion.

Risks not to be included in reserves are those of a general business nature, those that are not associated with the policies or contracts being valued, or those that are best viewed from the company perspective as opposed to the policy or contract perspective. These risks may involve the need for a liability separate from the reserve, or may be provided for in capital and surplus.

Since no list can be comprehensive and applicable to all types of products, this section of the Manual provides examples of the general approach to the determination of the meaning of "associated with the policies or contracts" while recognizing that each relevant section of the Manual will deal with this issue from the perspective of the products subject to that section. Examples of risks to be included in a principle-based valuation include risks associated with policyholder behavior (such as lapse and utilization risk), mortality risk, interest rate risk, asset default risk, separate account fund performance, and the risk related to the performance of indices for contractual guarantees.

CORPORATE GOVERNANCE REQUIREMENTS FOR PRINCIPLE-BASED RESERVES

The requirements found in VM-Appendix G (VM-G) provide corporate governance requirements applicable to products subject to Principle-Based Reserves as specified in this Valuation Manual. VM-G applies to products issued prior to the operative date of the Valuation Manual that are subject to Actuarial Guideline XLIII in VM-Appendix C in addition to those products subject to VM-21 issued on or after the operative date of Valuation Manual.

II. RESERVE REQUIREMENTS

This section provides the minimum reserve requirements by type of product. All reserve requirements provided by this section relate to business issued on or after the operative date of the Valuation Manual. All reserves must be developed in a manner consistent with the requirements and concepts stated in the Overview of Reserve Concepts in Section I of the Valuation Manual.

LIFE INSURANCE PRODUCTS

1. This subsection establishes reserve requirements for all contracts classified as life contracts defined in the *Accounting Practices and Procedures Manual*, Statutory Statement of Accounting Principle 50 (SSAP 50), with the exception of annuity contracts and credit life contracts.

2. For life contracts issued during the first five years after the operative date of the Valuation Manual the minimum reserve requirements are those requirements as found in Appendix A and C of the Valuation Manual (VM-A and VM-C) as applicable, except as otherwise provided in the following paragraph 3.

3. For individual life policies and individually underwritten certificates issued under a group life insurance contract issued during the first five years after the operative date of the Valuation Manual, a company may elect to apply the minimum reserve requirements in VM-20 for certain blocks of business. Once elected, this block of life contracts must continue to use the minimum reserve requirements of VM-20. The

minimum reserve requirements of VM-20 are considered "Principle-based Reserve (PBR)" requirements for purposes of the Valuation Manual.

4. For life contracts issued after the first five years following the operative date of the Valuation Manual:

   a. For individual life policies and individually underwritten certificates issued under a group life insurance contract the minimum reserve requirements are those provided by VM-20 with the exception of pre-need life insurance contracts whose minimum reserve requirements are provided by subsection 4b below.

   b. For all other life contracts (i.e., excluding individual life policies and individually underwritten certificates issued under a group life insurance contract), the minimum reserve requirements are those requirements as found in Appendix A and C of the Valuation Manual (VM-A and VM-C) as applicable.

ANNUITY PRODUCTS

1. This subsection establishes reserve requirements for all contracts classified as annuity contracts defined in the *Accounting Practices and Procedures Manual,* Statutory Statement of Accounting Principle 50 (SSAP 50).

2. Minimum reserve requirements for variable annuity contracts and similar business, specified in VM-21, shall be those provided by VM-21. The minimum reserve requirements of VM-21 are considered "Principle-based Reserve (PBR)" requirements for purposes of the Valuation Manual.

Drafting Note: If VM-21 is not ready for inclusion in the VM prior to adoption of the VM then the reserve requirements in "2" above will be changed to reference Actuarial Guideline XLIII (AG43) in VM Appendix C of this Valuation Manual.

3. Minimum reserve requirements for fixed annuity contracts are those requirements as found in Appendix A and C of the Valuation Manual (VM-A and VM-C) as applicable.

DEPOSIT-TYPE CONTRACTS

1. This subsection establishes reserve requirements for all contracts classified as deposit-type contracts defined in the *Accounting Practices and Procedures Manual*, Statutory Statement of Accounting Principle 50 (SSAP 50).

2. Minimum reserve requirements for deposit-type contracts are those requirements as found in Appendix A and C of the Valuation Manual (VM-A and VM-C) as applicable.

HEALTH INSURANCE PRODUCTS

1. This subsection establishes reserve requirements for all contracts classified as health contracts defined in the *Accounting Practices and Procedures Manual*, Statutory Statement of Accounting Principle 50 (SSAP 50).

2. Minimum reserve requirements for accident and health insurance contracts, other than Credit Disability, are those requirements ~~found in Appendix A and C of the Valuation Manual (VM-A and VM-C) as applicable~~provided by VM-25.

Drafting Note: If VM-25 is not ready for inclusion in the VM prior to adoption of the VM then reference to VM-25 above will be changed to, "provided by Appendix A and C of the Valuation Manual (VM-A and VM-C) as applicable."

CREDIT LIFE AND DISABILITY PRODUCTS

1. This subsection establishes reserve requirements for all credit life and credit disability products defined as follows:

VALUATION MANUAL – VM-00

2. "Credit life insurance" means insurance on a debtor or debtors, pursuant to or in connection with a specific loan or other credit transaction, to provide for satisfaction of a debt, in whole or in part, upon the death of an insured debtor.

   Credit life insurance does NOT include:

   a. Insurance written in connection with a credit transaction that is:

      i. Secured by a first mortgage or deed of trust; and

      ii. Made to finance the purchase of real property or the construction of a dwelling thereon, or to refinance a prior credit transaction made for such a purpose;

   b. Insurance sold as an isolated transaction on the part of the insurer and not related to an agreement or a plan for insuring debtors of the creditor.

   c. Insurance on accounts receivable.

3. "Credit disability insurance" means insurance on a debtor or debtors to or in connection with a specific loan or other credit transaction, to provide for lump sum or periodic payments ~~due~~ on a specific loan or other credit transaction ~~while~~due to the disability of the insured debtor ~~is disabled~~.

4. Minimum reserve requirements for credit life and credit disability contracts issued on or after the operative date of the Valuation Manual are provided in VM-26.

RIDERS AND SUPPLEMENTAL BENEFITS

1. If a rider or supplemental benefit to one of the above types of products has a separate premium, then the following apply:

   a. If the premium is not paid through a reduction in any value (such as account value) of the base policy, the minimum reserve standard for the rider or supplemental benefit is the minimum reserve standard for the above product or type of product with the most comparable risks and benefits. For example, the minimum reserve standard for a long term care rider to a universal life policy is the minimum reserve standard for long term care in VM-25;

   b. If the premium is paid through a reduction in any value (such as account value) of the base policy, all cash flows associated with the rider or supplemental benefit must be included in the calculation of the reserve for the base policy. A separate reserve is not determined for the rider or supplemental benefit.

2. If a rider or supplemental benefit does not have a separate premium, all cash flows associated with the rider or supplemental benefit must be included in the calculation of the reserve for the base policy. For example, reserves for a universal life policy with an accelerated benefit for long term care must include cash flows from the long term care policy in determining minimum reserves in compliance with VM-20. A separate reserve is not determined for the rider or supplemental benefit.

CLAIM RESERVES

Regardless of the requirement for use of the PBR approach to policy reserves, the claim reserves, including waiver of premium claims, are not subject to PBR requirements of the Valuation Manual.

III. ACTUARIAL OPINION AND ~~PBR~~ REPORT REQUIREMENTS

Requirements regarding the annual actuarial opinion and memorandum pursuant to Section 3 of the NAIC Model Standard Valuation Law (VM-5) are provided in VM-30.

PBR Report requirements applicable to products or types of products subject to principle-based reserve valuations (PBR) as specified in the Valuation Manual are provided in VM-31.

IV. EXPERIENCE REPORTING REQUIREMENTS

Experience reporting requirements are provided in VM-50. The associated experience reporting formats and additional instructions are provided in VM-51.

Drafting Note: The scope of experience reporting requirements is still under development. Further LHATF input will be sought.

V. VALUATION MANUAL MINIMUM STANDARDS

This section provides the specific minimum reserve standards as referenced by the preceding sections.

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Draft: 10/1/09

Accident and Health Working Group
Conference Call
September 14, 2009

The Accident and Health Working Group of the Life and Health Actuarial Task Force met via conference call Sept. 14, 2009. The following Working Group members participated: Steven Ostlund, Chair (AL); Katie Campbell (AK); Ali Zaker-Shahrak (CA); Mary Ellen Breault (CT); Dan Keating (FL); Julia Philips (MN); John Rink (NE); Frank Horn (NY); Alan Furan (OH); Andrew Dvorine (SC); Mike Boerner (TX); and Tomasz Serbinowski (UT).

1. Report of the Medicare Supplement Refund Subgroup

Mr. Rink reported that the Subgroup had two conference calls during the quarter, during which it had discussed all of the items in the report from the American Academy of Actuaries (AAA) (Attachment Twenty-Eight-D of 1st Quarter 2009 *Proceedings*. He said he would be drafting a proposal for the Medicare supplement refund formula with input from the Subgroup.

2. Report of the Health Actuarial Opinion Subgroup

Mr. Furan reported that there is a draft of the actuarial opinion section of the 2010 health *Annual Statement Instructions* (Attachment Ten-A) that has been released for comment. The Subgroup will discuss comments on a conference call. The Casualty Actuarial and Statistical (C) Task Force is considering the premium deficiency reserve topic, and the Subgroup is waiting for proposed verbiage from the Task Force.

Attached is a letter from Rowen Bell (Health Care Service Corp) (Attachment Ten-B).

3. NAIC 1985 Cancer Claim Cost Table Update

There was no report on the status of the replacement to the 1985 Cancer Claim Cost Table, although concern was expressed about a continuing lack of participation.

4. 2008 Long-Term Disability Report

Mr. Ostlund reported that the Society of Actuaries (SOA) has published the *2008 Long-Term Disability Experience Study Report*. He said he would like to work with the SOA and the AAA to use this study to develop a new valuation table for group long-term disability and suggested scheduling a conference call to discuss the report.

5. Accident and Health Policy Experience Exhibit by State

Ms. Philips reported that there has been no progress on developing an Accident and Health Policy Experience Exhibit by State.

6. Report of the Rate Filing Guideline Subgroup

Ms. Philips presented the report of the Rate Filing Guideline Subgroup (Attachment Ten-C). The subgroup had one conference call and developed 26 subjects to be considered in developing changes to the Guidelines for Filing of Rates for Individual Health Insurance Forms (#134).

7. 2010 Charges

John Engelhardt (NAIC) reported that the Working Group's 2009 charge to update the *Medicare Supplement Compliance Manual* for the new plans to be effective in 2010 has been completed. Therefore, the continuing charges are as follows: 1) Develop a new cancer claim cost table; 2) Study closed blocks of long-term care insurance; 3) Review the Medicare supplement refund formula; 4) Study the minimum standards for statutory reserves for long-term care insurance; and 5) Provide assistance and commentary to other NAIC committees.

Mr. Weller suggested that the wording of the charge on long-term care statutory reserves be changed from "Begin developing…" to "Consider developing …" To a large extent, he said, current requirements for health reserves are already principle-based. The principle-based reserving system being developed for life insurance is useful to consider but, he said, "begin" implies that the current system is not principle-based and the decision has been made to move to the life principle-based system with some modifications. He explained that the AAA Work Group is working on a principle-based approach that might not be similar to the life insurance principle-based framework.

Ms. Campbell asked what the AAA work group is doing with regard to long-term care insurance statutory reserves. Brad Spenney (AFLAC) said the Work Group is creating a computer model of long-term care, but does not have any recommended changes to any model regulations.

Mr. Keating said that long-term care insurance reserves are principle-based to the extent the claim-cost development for long-term care is based on company experience along with actuarial judgment. It is not principle-based in the sense of the framework for life insurance in the VM-20 section of the Valuation Manual.

The Working Group decided to keep the wording of the current charge.

Mr. Ostlund suggested adding a charge to develop a replacement for the 1987 Commissioners Group Disability Table.

Ms. Philips suggested adding a charge to review and update the Guidelines for Filing of Rates for Individual Health Insurance Forms (#134).

Ms. Philips moved and Mr. Furan seconded to recommend to the Life and Health Actuarial Task Force that the 2010 charges be the continuing charges, plus the two new charges. The motion passed unanimously.

8. Other Matters

Mr. Engelhardt reported that there would be a conference call in early October regarding the Federal Pension Protection Act.

Having no further business, the Accident and Health Working Group adjourned.

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Health Actuarial Opinion Subgroup
Draft: 7/14/09
Proposed for the 2010 Health Annual Statement Instructions

The NAIC solicits comments on this draft. Revision marks show changes from the existing Health Annual Statement Instructions. Comments should be sent to John Engelhardt, NAIC, at JEngelha@naic.org by August 28, 2009.

ACTUARIAL OPINION

1. There is to be included on or attached to Page 1 of the annual statement, the statement of the appointed actuary setting forth his or her opinion relating to claim reserves and any other actuarial items. The appointed actuary must be a qualified health actuary appointed by the board of directors, or its equivalent, or by a committee of the board, by December 31 of the calendar year for which the opinion is rendered. Within five (5) business days of the appointment, the company shall notify the domiciliary commissioner of the name, title (and, in the case of a consulting actuary, the name of the firm) and manner of appointment or retention of each person appointed or retained by the company as an appointed actuary and shall state in the notice that the person meets the requirements of a qualified health actuary. Once these notices are furnished, no further notice is required with respect to this person unless the actuary ceases to be appointed or retained or ceases to meet the requirements of a qualified health actuary. "Qualified health actuary," as used herein means a member of the American Academy of Actuaries, or a person recognized by the American Academy of Actuaries as qualified for such actuarial valuation.

   If an actuary who was the appointed actuary is replaced, the insurer shall within five (5) business days notify the insurance department of the state of domicile of this event. The insurer shall also furnish the domiciliary commissioner with a separate letter within ten (10) business days of the above notification stating whether in the twenty-four (24) months preceding such event there were any disagreements with the former appointed actuary regarding the content of the opinion on matters of the risk of material adverse deviation, required disclosures, scopes, procedure, or data quality. The disagreements required to be reported in response to this paragraph include both those resolved to the former actuary's satisfaction and those not resolved to the former actuary's satisfaction. The insurer shall also in writing request such former actuary to furnish a letter addressed to the insurer stating whether the actuary agrees with the statements contained in the insurer's letter and, if not, stating the reasons for which he does not agree; and the insurer shall furnish such responsive letter from the former actuary to the domiciliary commissioner together with its own.

   The Appointed Actuary must report to the Board of Directors or the Audit Committee each year on the items within the scope of the Actuarial Opinion. The Actuarial Opinion and the Actuarial Memorandum must be made available to the Board of Directors. The minutes of the Board of Directors should indicate that the Appointed Actuary has presented such information to the Board of Directors or the Audit Committee and that the Actuarial Opinion and the Actuarial Memorandum were made available. A separate Actuarial Opinion is required for each company filing an Annual Statement.

   The Actuarial Opinion and the supporting Actuarial Memorandum and work papers must conform to the appropriate Actuarial Standards of Practice (ASOPs), as promulgated by the Actuarial Standards Board.

1A. Definitions

   "Insurer" means an entity authorized to write accident and health contracts under the laws of any state and which files on the Health Blank.

   "Actuarial Memorandum" means a document or other presentation, prepared as a formal means of conveying the appointed actuary's professional conclusions and recommendations, of recording and communicating the methods and procedures, of assuring that the parties addressed are aware of the significance of the appointed actuary's opinion or findings and that documents the analysis underlying the opinion. The expected content of the memorandum is further described in Section 1B.

1B. Exemptions

An insurer who intends to file for one of the exemptions under this Section must submit a letter of intent to its domiciliary commissioner no later than December 1 of the calendar year for which the exemption is to be claimed. The commissioner may deny the exemption prior to December 31 of the same year if he or she deems the exemption inappropriate.

A copy of the approved exemption must be provided in lieu of the Actuarial Opinion with the Annual Statement in all jurisdictions in which the company is authorized.

Exemption For Small Companies

An insurer that has less than $1,000,000 total direct plus assumed written premiums during a calendar year, and less than $1,000,000 total direct plus assumed loss and loss adjustment expense reserves at year-end, in lieu of the Actuarial Opinion required for the calendar year, may submit an affidavit under oath of an officer of the insurer that specifies the amounts of direct plus assumed written premiums and direct plus assumed loss and loss adjustment reserves.

Exemption for Insurers under Supervision or Conservatorship

Unless ordered by the domiciliary commissioner, an insurer that is under supervision or conservatorship pursuant to statutory provision is exempt from the filing requirements contained herein.

Exemption for Nature of Business

An insurer otherwise subject to the requirement and not eligible for an exemption as enumerated above may apply to its domiciliary commissioner for an exemption based on the nature of business written.

Financial Hardship Exemption

An insurer otherwise subject to this requirement and not eligible for an exemption as enumerated above may apply to the commissioner for a financial hardship exemption. Financial hardship is presumed to exist if the projected reasonable cost of the Actuarial Opinion would exceed the lesser of:

(i) One percent of the insurer's capital and surplus reflected in the insurer's latest quarterly statement for the calendar year for that the exemption is sought; or

(ii) Three percent of the insurer's direct plus assumed premiums written during the calendar year for which the exemption is sought as projected from the insurer's latest quarterly statements filed with its domiciliary commissioner.

1B. The Actuarial Memorandum and underlying actuarial work papers supporting the Actuarial Opinion will be available for regulatory examination for seven (7) years.

The Actuarial Memorandum contains significant proprietary information. It is expected that the Memorandum will be held confidential and is not intended for public inspection. The Memorandum must be available by May 1 of the year following the year-end for which the opinion was rendered or within two weeks after a request from an individual state commissioner.

The Actuarial Memorandum should conform to the documentation and disclosure requirements of the Standards of Practice as promulgated from time to time by the Actuarial Standards Board. The Actuarial Memorandum should contain both narrative and technical components. The narrative component should provide sufficient detail to clearly explain to company management, the regulator, or other authority the findings, recommendations and conclusions, as well as their significance. The technical component should provide sufficient documentation and disclosure for another actuary practicing in the same field to evaluate the work. This technical component must show the analysis from the basic data, e.g., claim lags, to the conclusions.

The Memorandum must also include:

- An exhibit which ties to the Annual Statement and compares the actuary's conclusions to the carried amounts;
- Documentation of the required reconciliation from the data used for analysis to the Underwriting and Investment Exhibit Part 2B;
- Any other follow-up studies documenting the prior year's claim liability and claim reserve run-off as considered necessary by the actuary; and
- Documentation of the assumptions used for contract reserves and any material changes to those assumptions from the assumptions used in the previous memorandum. Such documentation should address any studies which support the adequacy of any margin in such reserves.

2. The Actuarial Opinion must consist of the following sections:

- A TABLE of KEY INDICATORS to alert the reader to the type of opinion and any changes from the prescribed language;
- IDENTIFICATION section - identifies the appointed actuary;
- SCOPE section - identifies the subjects on which an opinion is to be expressed and describes the scope of the appointed actuary's work;
- RELIANCE section – identifies anyone that the actuary has relied upon for the underlying records and/or summaries;
- OPINION section – expresses the appointed actuary's opinion with respect to the subjects identified in the Scope section; and
- RELEVANT COMMENTS section.

Each section must be clearly designated. For each section there is prescribed wording for that section. If the appointed actuary changes this wording or adds additional wording to clarify the prescribed wording, the appropriate box in the TABLE of KEY INDICATORS must be appropriately checked. The prescribed wording should be modified only if needed to meet the circumstances of a particular case, and the actuary should in any case, use language that clearly expresses his or her professional judgment.

3. The TABLE of KEY INDICATORS is to be at the top of the Opinion and the appropriate boxes are to be checked consistent with the remainder of the opinion. The only options are those presented below:

This Opinion is: ☐ Unqualified ☐ Qualified ☐ Adverse ☐ Inconclusive

IDENTIFICATION SECTION

Prescribed Wording Only Prescribed Wording with Additional Wording Revised Wording

SCOPE SECTION

Prescribed Wording Only Prescribed Wording with Additional Wording Revised Wording

RELIANCE SECTION

Prescribed Wording Only Prescribed Wording with Additional Wording Revised Wording

OPINION SECTION

Prescribed Wording Only Prescribed Wording with Additional Wording Revised Wording

RELEVANT COMMENTS

Revised Wording

The Actuarial Memorandum includes "Deviation from Standard" wording regarding conformity with an Actuarial Standard of Practice

4. The IDENTIFICATION section should specifically indicate the appointed actuary's relationship to the company, qualifications for acting as appointed actuary, date of appointment, and specify that the appointment was made by the Board of Directors, or its equivalent, or by a committee of the Board.

A person who is not a Member of the American Academy of Actuaries but is recognized by the Academy as qualified must attach, each year, a copy of the approval letter from the Academy.

This section should contain only one of the following:

For a Member of the American Academy of Actuaries who is an employee of the organization the opening paragraph of the opinion should contain all the following sentences if the appointed actuary is using the prescribed wording:

"I, (name and title of actuary), am an employee of (named organization) and a member of the American Academy of Actuaries. I was appointed on [date of appointment] in accordance with the requirements of the annual statement instructions. I meet the Academy qualification standards for rendering the opinion."

For a consultant who is a Member of the American Academy of Actuaries, the opening paragraph of the opinion should contain all the following sentences if the appointed actuary is using the prescribed wording:

"I, (name and title of consultant), am associated with the firm of (name of firm). I am a member of the American Academy of Actuaries and have been retained by the (name of organization) to render an opinion with regard to loss reserves, actuarial liabilities and related items. I was appointed on [date of appointment] in accordance with the requirements of the annual statement instructions. I meet the Academy qualification standards for rendering the opinion."

For an employee other than a member of the American Academy of Actuaries, the opening paragraph of the opinion should contain both the following sentences if the appointed actuary is using the prescribed wording:

"I, (name and title), am an employee of (name of organization) and am recognized by the American Academy of Actuaries as qualified to perform actuarial valuations for organizations of this kind. I was appointed on [date of appointment] in accordance with the requirements of the annual statement instructions."
For a consultant other than a member of the American Academy of Actuaries, the opening paragraph of the opinion should contain both the following sentences if the appointed actuary is using the prescribed wording:

"I, (name and title of consultant), am associated with the firm of (name of firm). I am recognized by the American Academy of Actuaries as qualified to perform actuarial valuations for organizations of this kind and have been retained by the (name of organization) with regard to such valuation. I was appointed on [date of appointment] in accordance with the requirements of the annual statement instructions."

5. The SCOPE section should contain only the following statement (including all specified lines even if the value is zero) if the appointed actuary is using the prescribed wording:

"I have examined the assumptions and methods used in determining loss reserves, actuarial liabilities and related items listed below, as shown in the annual statement of the organization as prepared for filing with state regulatory officials, as of December 31, 20__.

A. Claims unpaid (Page 3, Line 1);

B. Accrued medical incentive pool and bonus payments (Page 3, Line 2);

C. Unpaid claims adjustment expenses (Page 3, Line 3);

D. Aggregate health policy reserves (Page 3, Line 4) including unearned premium reserves and additional policy reserves from the Underwriting and Investment Exhibit – Part 2D;

E. Aggregate life policy reserves (Page 3, Line 5);

F. Property/casualty unearned premium reserves (Page 3, Line 6);

G. Aggregate health claim reserves (Page 3, Line 7); and

Additional item may be specified on the next line. These items should be itemized beginning with the letter H and given the caption and amount reported in the annual statement.

~~H.~~ Any ~~actuarial~~loss reserves~~, or~~ actuarial liabilities and related items not included in the items above. For example:

H Accrued retrospective premiums (Page 2, line 13.3)"

6. The RELIANCE section should contain only one of the following if the appointed actuary is using the prescribed wording:

If the appointed actuary has examined the liability records, the reliance section should include only the following statement:

"My examination included such review of the actuarial assumptions and actuarial methods and of the underlying basic liability records and such tests of the actuarial calculations as I considered necessary. I also reconciled the underlying basic liability records to the Underwriting and Investment Exhibit Part - 2B of the company's current annual statement."

If the appointed actuary has not examined the underlying records, but has relied upon data (e.g. asset or liability records) prepared by the company, the reliance section should include only the following statement:

"In forming my opinion on [specify types of reserves] I relied upon data prepared by [name and title of company officer certifying liability records or other data] as certified in the attached statements. I evaluated that data for reasonableness and consistency. I also reconciled that data to the Underwriting and Investment Exhibit - Part 2B of the company's current annual statement. In other respects, my examination included review of the actuarial assumptions and actuarial methods used and tests of the calculations I considered necessary."

Attached to the appointed actuary's opinion should be a statement by each person relied upon and a precise identification of the items subject to reliance. In addition, the persons on whom the appointed actuary relies shall each provide a certification that precisely identifies the items on which the person is providing information and a statement as to the accuracy, completeness or reasonableness, as applicable, of the items. 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.

7. The OPINION section should include only the following statement if the appointed actuary is using the prescribed wording:

"In my opinion, the amounts carried in the balance sheet on account of the items identified above:

A. Are in accordance with accepted actuarial standards consistently applied and are fairly stated in accordance with sound actuarial principles,

B. Are based on actuarial assumptions relevant to contract provisions and appropriate to the purpose for which the statement was prepared,

C. Meet the requirements of the Insurance Laws and regulations of the state of [state of domicile];

(Use one of the following phrases as appropriate)

and are at least as great as the minimum aggregate amounts required by the state in which this statement is filed

or

are at least as great as the minimum aggregate amounts required in any state in which this statement is required with the exception of the following states [list these states]. For each listed state a separate statement of actuarial opinion was submitted to that state that complies with the minimum aggregate amounts required in that state.
~~Meet the requirements of the laws of (state of domicile), and are at least as great as the minimum aggregate amounts required by the state in which this statement is filed~~,

Drafting note: Waiting on information from the PBR Review and Reporting Subgroup.

D. Make good and sufficient provision for all unpaid claims and other actuarial liabilities of the organization under the terms of its contracts and agreements,

E. Are computed on the basis of assumptions and methods consistent with those used in computing the corresponding items in the annual statement of the preceding year-end,

F. Include appropriate provision for all actuarial items that ought to be established.

The Underwriting and Investment Exhibit – Part 2B was reviewed for reasonableness and consistency with the applicable Actuarial Standards of Practice.

Actuarial methods, considerations, and analyses used in forming my opinion conform to the relevant Standards of Practice as promulgated from time to time by the Actuarial Standards Board, which standards form the basis of this statement of opinion.~~"~~

The assumptions and methods used to determine the premium deficiency reserve are appropriate."

Drafting note: The Casualty Actuarial Statistical Task Force is also considering the premium deficiency reserve topic. We are awaiting their resolution.

8. The opinion may include a RELEVANT COMMENTS section if the actuary so desires. For example, if there has been any material change in the assumptions and/or methods from those previously employed, a portion of this section can describe that change in the statement of opinion by including a description of the changes such as:

"A material change in assumptions (and/or methods) was made during the past year but such change accords with accepted actuarial standards." A brief description of the change should follow. A more detailed analysis should be contained in the Actuarial Memorandum.

The adoption of new coverages requiring underlying assumptions that differ from assumptions used for prior coverages is not a change in assumption within the meaning of this paragraph.

One or more additional paragraphs may be needed in individual cases to:

- Address topics of regulatory importance, or
- State a qualification of his or her opinion, if the actuary considers it necessary, or

- Explain some aspect of the annual statement that is not already sufficiently explained in the annual statement.

9. If the appointed actuary is able to form an opinion that is not qualified, adverse or inconclusive as those terms are defined below, he or she should issue a statement of unqualified opinion. If the opinion is adverse, qualified or inconclusive, the appointed actuary should issue an adverse, qualified or inconclusive opinion explicitly stating the reason(s) for such opinion. In all circumstances the category of opinion should be explicitly identified in the TABLE of KEY INDICATORS section of the Actuarial Opinion.

An adverse opinion is an actuarial opinion in which the appointed actuary determines that the reserves and liabilities are not good and sufficient. (An adverse opinion does not meet item D of Section 7).

When in the actuary's opinion the reserves for a certain item or items are in question because they cannot be reasonably estimated or the actuary is unable to render an opinion on those items, the actuary should issue a qualified opinion. Such a qualified opinion should state whether the stated reserve amount makes a good and sufficient provision for the liabilities associated with the specified reserves, except for the item or items to which the qualification relates. The actuary is not required to issue a qualified opinion if the actuary reasonably believes that the item or items in question are not likely to be material. (A qualified opinion does not meet one or more of the items A, B, C or F of Section 7).

The actuary's ability to give an opinion is dependent upon data, analyses, assumptions and related information that are sufficient to support a conclusion. If the actuary cannot reach a conclusion due to deficiencies or limitations in the data, analyses, assumptions or related information, then the actuary should issue an inconclusive opinion. An inconclusive opinion shall include a description of the reasons why a conclusion could not be reached.

10.

The Actuarial Opinion should conclude with the signature of the appointed actuary responsible for providing the Actuarial Opinion and the date when the opinion was rendered. The signature and date should appear in the following format:

_____
Signature of Actuary

_____
Printed Name of Actuary

_____
Address of Actuary

_____
Telephone number of Actuary

_____
Date Opinion was Rendered

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Rowen Bell, Health Care Service Corporation
7/10/09

From: Rowen_Bell@bcbsil.com [mailto:Rowen_Bell@bcbsil.com]
Sent: Friday, July 10, 2009 8:41 AM
To: Engelhardt, John; Jakielo, James; Philips, Julia
Cc: shari.westerfield@bcbsa.com; omegasquared@msn.com; BUTZS@BCBSIL.COM
Subject: Fw: 7/14/09 Health Actuarial Opinion Subgroup of AHWG Conference Call

John / Jim / Julia –

I wanted to share with you an observation relating to the email exchange between Jim Jakielo and Julia Philips in the "jaki0420.pdf" document below (7/14/09 Health Actuarial Opinion Subgroup of AHWG conference call notification email).

ASOP 16, which was adopted by the Actuarial Standards Board in 1990 and repealed in 2007, used to contain the following language in Subection 5.1.4: "The actuary should include in all MCHP claim liability and rate opinions a statement disclosing the actuary's knowledge of all capitated risk contracts between the MCHP and provider entities. This statement should indicate whether the actuary has evaluated the financial position of the provider entities." Subection 6.1 of ASOP 16 reiterated this requirement, as follows: "The actuary should include in all MCHP claim liability and rate opinions a statement disclosing the actuary's knowledge of all risk sharing contracts between the MCHP and providers, as described in subsection 5.1."

(MCHP, or Managed-Care Health Plan, was defined in Section 2.12 of ASOP 16 as follows: "A mechanism which integrates the financing and delivery of health care by the following elements: a. Arrangements with providers to furnish health care services to covered individuals; b. Organized arrangements for on-going quality assurance and utilization review; c. Significant financial incentives for covered individuals to use the providers affiliated with the plan. Examples of such plans include HMOs and point-of-service products.")

As such, I believe ASOP 16 was the root source of the "optional" language that Jim refers to in his email to Julia. However, as noted above ASOP 16 has since been repealed. In quickly reviewing the relevant ASOPs currently in force, particularly ASOP 5 and ASOP 42, my tentative conclusion is that the current ASOPs continue to indicate that an actuary should consider the financial position of the provider entities in forming an opinion on a health insurer's liabilities, but that the current ASOPs do not create a specific disclosure requirement for the actuary analogous to the former ASOP 16 requirement discussed above.

Former ASOP 16: http://www.actuarialstandardsboard.org/pdf/superseded/asop016_024.pdf
Repeal of ASOP 16: http://www.actuarialstandardsboard.org/pdf/asops/asop016_104.pdf

Rowen B. Bell, FSA, MAAA
Actuary, Forecasting
Health Care Service Corporation
300 E. Randolph St., Chicago, IL 60601
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email: Rowen_Bell@bcbsil.com

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Rate Filing Subgroup Report to the
Accident and Health Working Group of the
Life and Health Actuarial Task Force
September 2009

The Rate Filing Subgroup is chaired by Julia Philips (MN). Members are Sheldon Summers (CA), Dan Keating (FL), Frank Horn (NY), Alan Furan (OH), and Scott Fitzpatrick (OR).

The Subgroup met by conference call on July 14, 2009.

The Subgroup developed a list of subjects to be considered in developing revision to the Guidelines for Filing of Rates for Individual Health Insurance Forms:

1. The use of loss ratio standards as a measure of reasonableness.
2. The definition of reasonableness. One option would be to meet loss ratio standards but have additional standards to be reasonable.
3. The various state statutes and regulations that apply to health insurance.
4. The issue of unreasonable rate increases including predatory pricing and resulting rate increases.
5. The recouping of past losses in rate increases.
6. The statistical credibility of data.
7. The projections of future experience, including projection period and assumptions.
8. The separation of the increase in rates from the base rates.
9. The comparison of original pricing projections with rate increase projections.
10. The enforcement statutes and regulations to provide both consumer protections and company protection.
11. The avoidance of rules that are too prescriptive.
12. The potential conflict between a change in rating structure on exiting policies and renewability.
13. The value of cost containment expenses when evaluating a rating structure.
14. The materiality of rate increases.
15. The problem of an increase in rates in certain buckets to avoid getting new business which is unfair to existing policyholders.
16. The use of multiplicative factors to set rates.
17. The granularity of categories such as separate age rates versus banding of rates.
18. The issues regarding community rating, issue age rating and attained age rating when required.
19. The consistency between different products for a company or between different companies.
20. The pooling of experience of similar policy forms and relationship of new policy form rates
21. The issue of duration analysis.
22. The evaluation of the original pricing assumptions compared to the assumptions for rate increases.
23. The evaluation of appropriate trends.
24. The qualification of an actuary to sign a rate filing.
25. The definition of a loss ratio and what items are included in claims and in premiums.
26. The issue of closed blocks. Should the review differ from a review of open blocks? Are other coverages available? Should rate increases cease when the closed block becomes very small? There are credibility issues with closed blocks.

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LIFE AND HEALTH ACTUARIAL TASK FORCE
Charges for 2010

The mission of the Life and Health Actuarial Task Force is to identify, investigate and develop solutions to actuarial problems in the life and health insurance industry.

Ongoing Maintenance of NAIC Programs, Products, or Services

1. (LHATF) Study the feasibility of a new nonforfeiture law for life insurance and annuities to replace the existing nonforfeiture standards. Provide quarterly status reports on this project. —*Important*

2. (LHATF) Work with the American Academy of Actuaries and the Society of Actuaries to develop a new mortality table for the valuation of pay out annuities. Provide quarterly status reports on this project. —*Important*

3. (AHWG) Work with the Society of Actuaries to develop a replacement for the 1985 NAIC Cancer Claim Cost Tables as the basis for the valuation of individual cancer policies. Provide quarterly status reports on this project. —*Important*

4. (LHATF) Consider changes to Blanks to include the reporting of channels of distribution information needed to better establish GRET factors. —*Important*

5. (LHATF) Work with other NAIC committees to recommend any changes required to implement the new reserve requirements for variable annuities. Consider a practice note or white paper for guidance on the credit for hedging in these new requirements. —*Important*

6. (LHATF) Review AG XXV relative to IRC 7702 and recommend changes, if needed, to address issues with the current levels of preneed insurance. —*Important*

7. (AHWG) Revise model rules for appropriate long-term care rates, rating practices, and rate changes including a review of closed block of business. —*Important*

8. (AHWG) Review the Medicare supplement refund formula and revise the Appendix A in the Model Regulation to Implement the NAIC Medicare Supplement Insurance Minimum Standards Model Act (#651), as necessary. —*Important*

9. (LHATF) Review certain aspects of the Standard Nonforfeiture Law for Individual Deferred Annuities (#805). —*Important*

10. (AHWG) Review and update the Guidelines for Filing of Rates for Individual Health Insurance Forms (#134). —*Important*

11. (AHWG) Work with the Society of Actuaries and the American Academy of Actuaries to develop a replacement for the 1987 Commissioners Group Disability Income Table.—*Important*

12. (LHATF) Work on implementation of tables necessary for use in current valuation requirements. —*Important*

13. (LHATF and AHWG) Provide assistance and commentary to other NAIC committees relative to their work on actuarial matters. —*Important*

New Objectives and Goals *(representing new NAIC programs or initiatives)*

1. (LHATF) Develop and submit proposals to facilitate the implementation of a principles-based approach to valuation. Monitor international developments regarding life and health insurance reserving. Provide quarterly reports on this project. —*Essential*

2. (LHATF) Work with the American Academy of Actuaries and the Society of Actuaries to develop new valuation and nonforfeiture mortality tables for life insurance. Provide quarterly reports on this project. —*Essential*

3. (AHWG) Study the minimum standards applicable to statutory reserves for long-term care insurance. Begin developing a principles-based framework for a set of minimum standards. —*Important*

4. (LHATF) Review and make recommendations on rules for appropriate reserve mortality tables for simplified issue and guaranteed issue forms of life insurance. Review a revised structure for regulating these forms of life insurance to establish it as a class distinct from industrial and ordinary lines. —*Important*

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Memo

TO: FRED ANDERSEN, CHAIR, VM PBR EXPERIENCE REPORTING SUBGROUP OF LHATF

FROM: TOM RHODES, AVP & ACTUARIAL DIRECTOR, MIB

SUBJECT: BACKGROUND ON DESIGNATING A STATISITICAL AGENT

DATE: AUGUST 10, 2009

CC: JOHN ENGELHARDT

As consideration is being given to the process of designating a statistical agent, I want to emphasize that VM-50 and VM-51 has developed and addressed issues on the importance of data collection and reporting, roles and responsibilities, data quality, confidentiality of data and data formats and reports. My view is that in VM-50 and VM-51 sufficient deliberation has been done to enable your group to move forward on the process of designating a statistical agent.

Importance of Data Collection and Reporting - From VM-50
The data collection and reporting provides information for credibility methods for companies, industry reports, and future valuation tables. Experience reports will provide a rich database for use in the developing areas of policyholder behavior and expense.

Roles and Responsibilities - From VM-50

1. Statistical agent and statistical plan – In most situations, statistical agents will collect experience data based on statistical plans on behalf of state insurance departments. The statistical plans are detailed instructions which define the data elements as well as the formats and time frames for company reporting. Statistical plans are included in VM-51.
2. NAIC Task Force or Working Group – This organization is the counterpart to the functions of the Casualty Actuarial and Statistical (C) Task Force that deal with the NAIC Statistical Handbook of Data Available to Insurance Regulators and Model Regulation 751.
3. Professional Actuarial Organizations – The SOA and the Academy will continue their usual roles in input on data formats, data validation as well as compiling annual studies and producing valuation tables.

Data Quality - From VM-50

1. The experience reporting requirements include two intertwined sets of requirements – one for insurers and one for statistical agents. These requirements are consistent with the corresponding requirements in the NAIC Statistical Handbook of Data Available to Insurance Regulators and Model Regulation 751.
2. While insurers are expected to undertake a reasonable examination of all indications provided to them, they are not required to respond to every indication except for those labeled by the statistical agent as "critical." "Critical indications" are those that, if not corrected or confirmed, would leave a significant degree of doubt whether the affected data should be used in reports to the regulator. An example of a "critical indication" would be apparent underreporting of deaths in a mortality study.

Confidentiality of Data - From VM-50

1. Nothing in the Experience Reporting Requirements is intended to require any disclosures of confidential data or materials that may violate any applicable federal or state laws, rules, regulations, or court orders applicable to such data or materials.
2. Access to Experience Data and Statistical Reports is a section specifically added to address access to data at various levels of detail.

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a. The overall purpose is to limit the use of data and restrict the access to data outside of regulatory authorized functions. At the highest level, companies have ownership of the data and are not restricted in its use. As LHATF requested, regulators can have access to the data at any stage. In order to distribute reports to regulators, the NAIC will have access to summarized data.
b. Statistical agents have limited access to data. Except for the compiling statistical agent, a statistical agent will only have access to the data companies submit to them. In order to provide regulators with combined results from several statistical agents, compiling statistical agents are given access to summarized data from other statistical agents.
c. Other entities are restricted by need to access the data. Audits of companies and statistical agents will require auditors to have access to data. For data validation purposes, actuarial associations have access to data at a staff level. However, volunteers that work with actuarial associations will be limited to data that is both intended for actuarial association studies and is summarized with respect to both policy level and company level data.

Data Formats and Reports - From VM-51

1. These model reports will serve only the basic informational needs of state regulators. These sections are intended for individual life, annuities and long term care policies in the areas of mortality, policyholder behavior and expenses. However, the only substantial work has been done for individual life on the mortality format and policyholder behavior format. Of these two, only the mortality format has had extensive review by committees of actuarial organizations and is ready for use. The report to regulators is based on the report currently given to the SOA.
2. For individual life mortality, there is an annual data call for all companies that are not in the smaller company exemption. The annual data call is made in March with final data to be submitted by the end of August. Data revisions are to be completed by November 30 and a report to regulators sent by February 28.
3. There needs to be a final decision on the smaller company exemption. One proposal is to have no smaller company implementation for five years followed by a reduced data call for smaller companies.

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Memo

TO: FRED ANDERSEN, CHAIR, VM PBR EXPERIENCE REPORTING SUBGROUP OF LHATF

FROM: TOM RHODES, AVP & ACTUARIAL DIRECTOR, MIB

SUBJECT: INDIVIDUAL COMPANY A/E RATIO RESULTS, STATISTICAL AGENT AND REGULATORY REVIEW

DATE: AUGUST 18, 2009

CC: JOHN ENGELHARDT

In the phone call of the VM PBR Experience Reporting Subgroup on August 17, 2009, a discussion arose concerning individual company A/E ratio results, statistical agent and regulatory review. I will clarify the remarks that I made during that phone call.

The calculation of mortality A/E ratios by company is a routine data validation step that is performed by the compiler /statistical agent. If a company's A/E ratios differ by too much either from an overall average or a prior result from that company, a data problem that needs to be addressed is indicated. A compiler/statistical agent almost always expends much more effort in resolving a company's data problems than in calculating A/E ratios. As a matter of fact, failure to resolve data problems can result in some contributing companies being omitted from an SOA study.

Each company that is included has its own A/E ratios calculated by the experience study compiler, under current standard practice.

The question becomes to what extent might regulators have access to the individual company A/E ratios that are contained in the statistical agent's database. In my original contribution to VM-50, I proposed that a statistical agent **not** give individual company results to regulators but have regulators obtain them from companies. As a result of regulators input at LHATF meetings, the VM-50 wording was changed to having the statistical agent give individual company results to regulators.

I support Armand de Palo's comments that the valuation actuary should have input on regulatory review of individual company results. Such an actuary can provide perspective on how the experience study results apply to specific company mortality assumptions.

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Academy Economic Scenario Generator: Supporting Statistics and Sensitivity Analysis

Nancy Bennett, FSA, CERA, MAAA
Senior Life Fellow
American Academy of Actuaries
Chair, Economic Scenario Implementation Work Group

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Agenda for this Session

- Background on the Academy Generator
- Evaluation of the Baseline Academy Generator
  - Statistical Description
  - Mean Reversion Parameter
- Statistical Illustrations of Academy Generator
- Sensitivity Testing of Parameters
- Appendix: ESIWG Update to LHATF, June 2009

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Background on the Academy Generator

- Academy interest rate generator released in December, 2008
- ESWG chose to continue with Stochastic Log Volatility model used for C-3 Phase I adopted in 1999
  - Different types of generators were evaluated, but the Academy decided to continue use of the SLV generator. Comparable results were obtained for different types of generators (e.g., double mean reverting, etc.)
  - Generator design and parameter choices based on intended use of the generator – calculation of long term liabilities and associated capital
- Refreshed some parameters using Treasury data from 1953–2008 with the most historical data available
  - ESWG believes it is important to use a historical period long enough to cover business and credit cycles
  - Selecting a particular historical period as justification for the direction of future rates can create bias in the generator, as many elements influence rates in a selected time frame (e.g., Fed actions)

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Background on the Academy Generator

- Soft cap of 18% limits the maximum long rate (reduces maximum rates with minimal impact on overall results)
- Yield curve interpolation uses historical curves
- Established processes (formulas) for automatically updating Mean Reversion Parameter (MRP) for target long interest rate
  - Long rate is the 20-year Treasury rate
  - Recommended MRP is 5.50%; C-3 Phase I MRP is 6.55%

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….*a list of all the parameters…..*

Parameter	Value	Name	Description
τ_1	Formula	**Tau1**	Target for the long interest rate process, expressed as a nominal semi-annual yield
β_1	0.00509	**Beta1**	Mean reversion strength for the long rate process
θ	1	**Theta**	Exponent for spread volatility factor
τ_2	0.01	**Tau2**	Target spread between nominal long and short rates
β_2	0.02685	**Beta2**	Mean reversion strength for the spread process
σ_2	0.04148	**Sigma2**	Volatility parameter for the spread process
τ_3	0.0287	**Tau3**	Target volatility for the long rate volatility process
β_3	0.04001	**Beta3**	Mean reversion strength for the log volatility process
σ_3	0.11489	**Sigma3**	Volatility of the log volatility process for the long rate
$\rho(1,2)$	-0.19197	**Correl12**	Correlation between the log long rate and nominal spread processes
$\rho(1,3)$	0	**Correl13**	Correlation between the log long rate and log volatility processes
$\rho(2,3)$	0	**Correl23**	Correlation between the nominal spread and log volatility processes
ψ	0.25164	**Psi**	Steepness adjustment
ϕ	0.0002	**Phi**	Spread tilting parameter
	0.004	**Minr2**	Threshold lower bound for nominal short maturity rate
	0.0115	**Minr1**	Minimum nominal long maturity rate (before random innovation)
	0.18	**Maxr1**	Maximum nominal long maturity rate (before random innovation)
κ	0.25	**Kappa**	Short / Long ratio when nominal short rate falls below the threshold lower bound
$_1\sigma_0$	0.0287	**InitialVol**	Initial volatility of the log volatility process

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Evaluation of the Academy Generator: Objectives

- **Dispersion of results across scenarios was a key factor in evaluating the generator and parametric choice**
  - Dispersion of results *across scenarios* is a standard method for evaluating generators
  - Evaluating the dispersion or path of results *within a scenario* would not provide sufficient data points to be credible and characterizing a generator by a path of results would be very similar to specifying deterministic scenarios
- **Particular attention was given to the tail scenarios**
  - Recall that tail scenarios are captured in the reserve and capital calculations in two ways: through the tail scenarios modeled in the generator process and use of CTE risk metric in establishing reserves/capital

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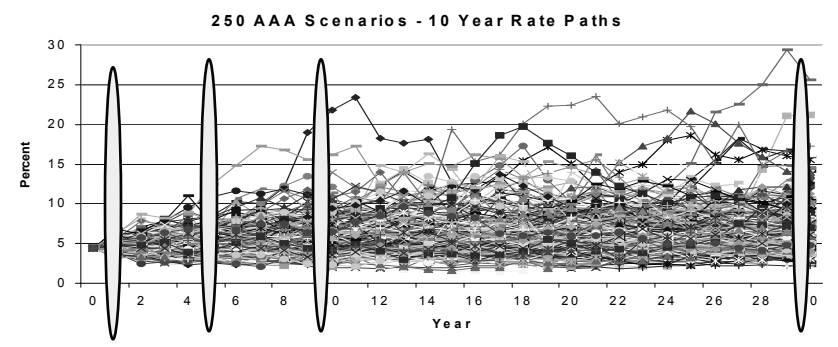
Illustration of Scenario Paths

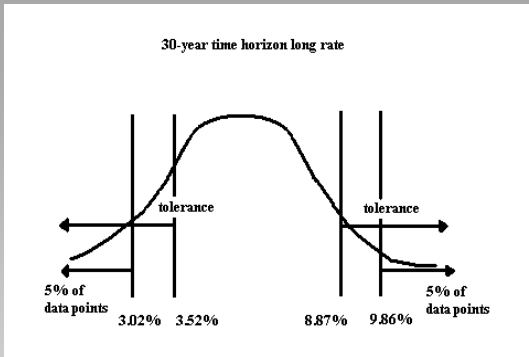


1. Initial yield curve is input into generator
2. Rates on the yield curve are projected (monthly for 30 years)
3. The projection of the 1yr, 5yr, 10yr, and 30yr rates is important
4. A statistical distribution of rates at particular points in time is constructed to evaluate the robustness of the generator

Evaluation of the Generator: Statistical Framework

- For the short rate and long rate, point in time statistics at 1-, 5-, 10-, and 30-year horizons:
  - Left Tail (low interest rates):
  - 5th percentile rate ≤ Academy 5th percentile rate + Max(A, B × Academy 5th percentile rate)
  - Right Tail (high interest rates):
  - 95th percentile rate ≥ Academy 95th percentile rate – Max(A, B × Academy 95th percentile rate)
  - For the 1-year horizon: A = 1.00% and B = 20%
  - For the 5-, 10-, and 30-year horizons: A = 0.50% and B = 10%
- For the spread, cumulative statistics for the 30-year horizon:
  - Left Tail (low spread):
  - 5th percentile spread ≤ Academy 5th percentile spread + 0.50%
  - Right Tail (high spread):
  - 95th percentile spread ≥ Academy 95th percentile spread – 0.50%
- All tests must be considered (point-in-time statistics at four time horizons for long and short rates, 30-year cumulative statistic for the spread, with tail statistics considered for both the 5% and 95% levels)
- The Academy percentiles referred to above reflect the 10,000 scenarios created by the SLV interest rate generator provided by the American Academy of Actuaries using the same starting yield curve

Evaluation of the Generator: Illustration of the Statistical Framework



MEAN REVERSION PARAMETER (MRP)

- MRP is based on the long rate. Academy generator includes 2 changes to MRP:
  - Change to MRP value from 6.55% to a rounded value of 5.50%. Change based on shift from completely historical perspective to a combined historical perspective and prospective view driven by an analysis of Federal Reserve Bank behaviors and objectives.
  - Reversion of the long rate to a simple average of the median long rate over the past 50 years (600-month median adjusted down by 25 bps) and the average over the past 36 months (as of the measurement date).
- Academy generator also includes a process for automatically updating the MRP based on recent experience

Statistical Illustrations: Baseline Scenarios

Statistics as of Time Horizon 10 year

	Short Rate (1 Yr)	Long Rate (20 Yr)	Spread (20YR - 1YR)
Min	0.37%	1.24%	-3.07%
0.01	0.70%	1.88%	-1.19%
0.05	1.37%	2.42%	-0.38%
0.1	1.70%	2.66%	-0.11%
0.15	1.97%	2.89%	0.10%
Median	3.00%	3.83%	0.76%
0.9	5.15%	5.41%	1.64%
0.95	5.96%	6.15%	1.94%
0.99	7.93%	7.74%	2.57%
Max	17.80%	17.75%	3.55%
Avg	3.24%	4.01%	0.77%
Stdev	1.53%	1.27%	0.74%

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Statistical Illustrations: Sensitivity Testing of the One Year Rate at the Ten Year Horizon

	Baseline	MRP+1%	MRP-1%	mean reversion off	mean reversion off, wider caps
Min	0.37%	0.40%	0.33%	0.28%	0.20%
0.01	0.70%	0.87%	0.52%	0.64%	0.62%
0.05	1.37%	1.64%	1.07%	1.12%	1.12%
0.1	1.70%	1.98%	1.37%	1.46%	1.46%
Median	3.00%	3.43%	2.52%	3.04%	3.04%
0.9	5.15%	5.81%	4.41%	5.92%	5.92%
0.95	5.96%	6.73%	5.13%	7.15%	7.15%
0.99	7.93%	8.90%	6.87%	10.85%	10.85%
Max	17.80%	18.28%	17.18%	23.51%	36.58%
Avg	3.24%	3.70%	2.74%	3.48%	3.48%
Stdev	1.53%	1.68%	1.36%	2.04%	2.07%
Skew	2.113	1.945	2.388	2.047	2.421
Kurt	11.605	9.279	15.639	8.460	15.394

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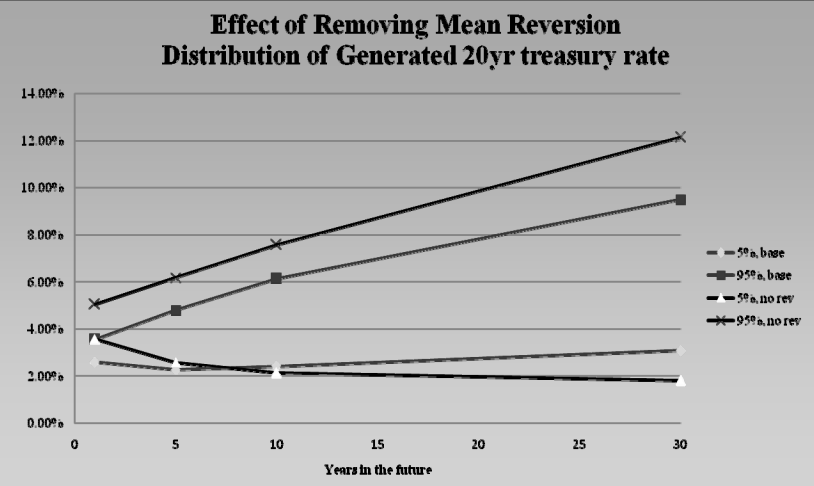
Statistical Illustrations: Sensitivity Testing of the Twenty Year Rate at the Ten Year Horizon

	Baseline	MRP+1%	MRP-1%	mean reversion off	mean reversion off, wider caps
Min	1.24%	1.35%	1.18%	1.03%	0.76%
0.01	1.88%	2.06%	1.68%	1.59%	1.58%
0.05	2.42%	2.65%	2.18%	2.15%	2.15%
0.1	2.66%	2.90%	2.39%	2.48%	2.48%
Median	3.83%	4.21%	3.43%	3.97%	3.97%
0.9	5.41%	5.96%	4.82%	6.47%	6.47%
0.95	6.15%	6.77%	5.48%	7.59%	7.59%
0.99	7.74%	8.54%	6.84%	10.72%	10.72%
Max	17.75%	17.92%	17.52%	18.67%	37.10%
Avg	4.01%	4.40%	3.59%	4.31%	4.31%
Stdev	1.27%	1.39%	1.15%	1.81%	1.84%
Skew	2.218	1.941	2.676	1.854	2.348
Kurt	15.415	11.096	23.166	6.750	16.640
Dispersion	0.930	0.936	0.920	1.371	1.371

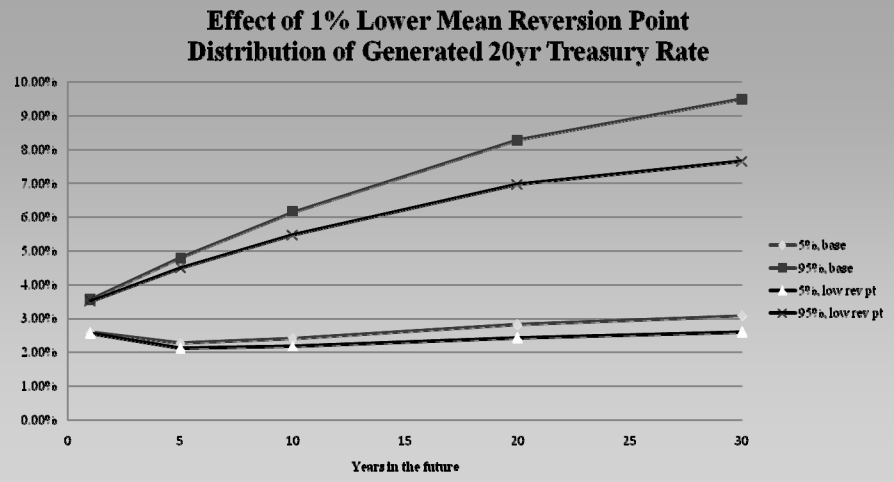
Sensitivity Testing of Parameters



Effect of Removing MRP

- In the short run, the distribution is lower because there is no upward attraction to the mean reversion point, which in this case is higher than the starting level of interest rates
- In the long run, the distribution is wider, with more "very high" and more "very low" interest rates
- The effect of removing the MRP is relatively insignificant over periods less than 30 years since the strength of the MRP is fairly weak in the base case

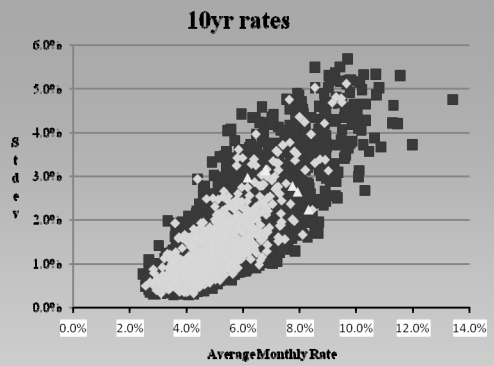
Sensitivity Testing of MRP



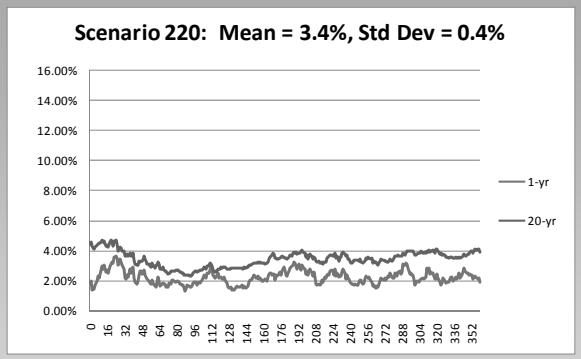
Effect of 1% Lower Mean Reversion Point

- The entire distribution of future rates is dragged down due to the attraction to a lower rate
- The effect on the lower end of the distribution is smaller than the effect on the high end because of the lognormal nature of the model whereby the volatility of interest rates is proportional to the level

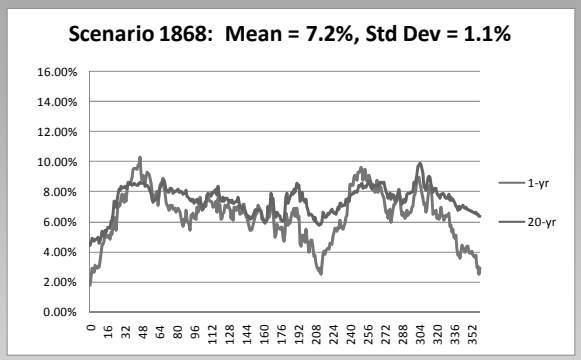
Statistical Illustrations of Academy Generator



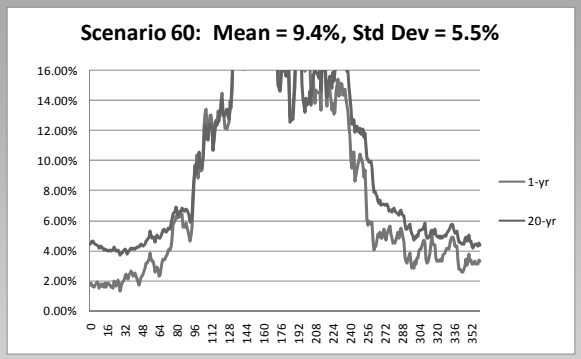
Persistent Low Interest Rates



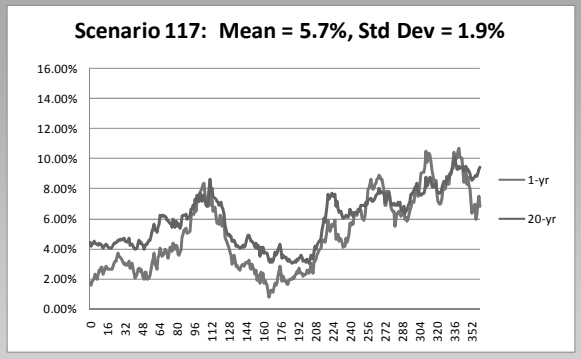
Persistent High Interest Rates



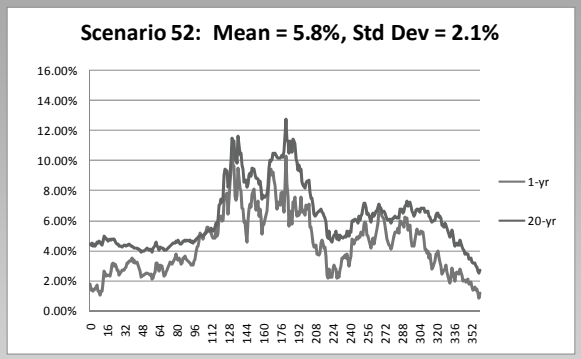
Wide Range of Interest Rates



More Typical Scenario



Another More Typical Scenario



QUESTIONS?

Appendix

Academy's Economic Scenario Implementation Work Group (ESIWG) Update to LHATF

Nancy Bennett, Chair, ESIWG

June, 2009 NAIC Meeting

Discussion Topics

- Use of Economic Generators: Current State
- Use of Economic Generators: Future State
- Recent ESIWG Activity
- ESWG/ESIWG Plans
- ESWG/ESIWG Position on Generators
- NAIC/LHATF Role

Use of Economic Generators: Current State

- The C3P1 and C3P2 calculations are based on multiple economic scenarios.
- C3P1 is based on a pre-packaged set of 12 or 50 interest rate scenarios generated by the company, based on the Academy ESWG interest rate generator. Recall that the chosen scenario sets are based on interest rate mismatch for representative annuities and investment strategies.
- For some companies, C3P2 calculations are based on a set of prepackaged scenarios published by the ESWG. These scenarios satisfy calibration criteria recommended and approved by the NAIC. For other companies, C3P2 calculations are based on scenarios generated from a proprietary generator that also satisfy calibration criteria.
- VACARVM calculations, effective for year end 2009, will use the scenarios provided for the C3P2 calculation.

Use of Economic Generators: Future State

- Stochastic reserve calculations requiring a scenario generator are specified in VM-20 (Life Products), VM-21 (Variable Annuities), and an anticipated VM-22(Annuities).
- With the development of PBA for life insurance (reserves and C3P3), the ESWG developed a more robust interest rate generator and calibration criteria to support stochastic calculations for all products.
  - The ESWG has recommended that this interest rate generator be used in the C3P1 calculation, replacing the existing generator that produces the set of 12 and 50 scenarios.
  - The generator could be used to generate updated prepackaged scenarios and calibration criteria for bond funds and/or interest rate scenarios for the C3P2 and VACARVM calculations for YE2009; updated bond returns from this new generator would likely require approval by the NAIC and could affect company preparation for the new VACARVM requirements.

Recent ESIWG Activity

- Released updated interest rate scenario generator:
  - IR generator is a stochastic log volatility model and generates realistic scenarios. Generator includes a mean reversion parameter updated for recent experience and an automatic process for updating the parameters based on updated historical yield curves.
  - 10,000 scenarios updated for September 30, 2008 have been released
  - Scenario picking tool and 1000 interest scenarios calibrated to September 30, 2008 environment have been released
  - Statistics generator has been released
- Responding to LHATF sub-group's questions
  - Sensitivity of scenario statistics to changes in parameters
  - Additional discussion of certain development choices

ESWG/ESIWG Plans

- Expand documentation with FAQ Document and Getting Started Guide
- Continue to enhance generators
  - Additional user flexibility
  - Develop ability to generate bond fund returns in enhanced IR generator
  - Enhance equity generator to include process for automatically updating parameters based on recent historical experience
- Continue work with LHATF and LRBCWG
  - Discuss process for approving generators
  - Define process for generating economic scenarios on an ongoing basis

ESWG/ESIWG Position on Generators

- Use of one interest rate generator and one equity generator for all principle-based reserve and capital calculations
- Permit the use of a company generator with prescribed calibration criteria in addition to prescribed prepackaged scenarios
- ESWG generator and calibration criteria have been developed with practical considerations in mind
  - Will not require frequent development.
  - Generator includes process to automatically update parameters
  - ESWG generator considered to be a "safe harbor" generator sufficient for regulatory minimums. However, more sophisticated generators will capture additional risks in the scenarios and the use of more sophisticated generators should be allowed in PBA.

NAIC/LHATF Role

- Approve the recently released interest rate generator and calibration criteria
- Discuss the maintenance of the generator process and output on a routine basis (e.g. prepackaged scenarios vs. generators/calibration criteria, updated parameters, resources)
- Update Valuation Manual and RBC Instructions to reflect consistent, clear alternatives

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Update to LHATF on VM-20 Prescribed Default Costs for Existing Investments

Gary Falde, FSA, MAAA
Vice-Chair, American Academy of Actuaries Life Reserve Work Group
Chair, LRWG Asset Subgroup

Alan Routhenstein, FSA, MAAA
Member, LRWG Asset Subgroup
Chair, LRWG Asset Subgroup Hedging Team

Outline of Presentation

- Recap from summer LHATF meeting
- Illustration / assessment of an approach proposed by New York
- Illustration / assessment of revised LRWG methodology - changes to address concerns expressed in Minneapolis
- Suggested topics for Q4 interim calls
- Appendices

Recap of Summer LHATF Meeting

- LRWG illustrated the development of reserves through a four-year time period for a 10-year Funding Agreement (FA) issued 2/28/2005 with proceeds invested in a matching sample portfolio of 10-year bonds
- Illustration followed LRWG's proposed asset default methodology which was designed to meet several regulator and LRWG objectives and incorporated both historical and market price-sensitive elements
- The reserves exhibited unacceptable volatility especially in the 2007-2008 period (*detail on next slide*)
- LRWG explained that the volatility was the logical outcome of the set of constraints placed on the method
- LRWG agreed to devise refinements to cut volatility
- New York asked the LRWG to also explore a specific alternative
- LHATF Chair asked about surplus impact of portfolio turnover

Recap Summer LHATF Meeting (cont'd)

- The key display from that meeting is shown again below
- The average annual default cost over the remaining life of the portfolio rose substantially as market spreads widened, causing about a 10% increase in reserves over the period

	Average	Average	Average	Average	Approximate	Assets
Val Date	Coupon	Default Cost	Expenses	Net Yield	Det Reserve	MV
2/28/2005	5.829%	0.638%	0.145%	5.046%	99.6	100.00
12/31/2006	5.829%	0.751%	0.145%	4.932%	100.4	97.51
11/30/2007	5.829%	1.370%	0.145%	4.313%	104.2	94.12
10/31/2008	5.829%	2.410%	0.145%	3.274%	109.8	76.08

- The asset market values are shown for comparison only. Asset book values are 100 throughout

New York proposed approach: Fixed net spread at asset purchase

- At the summer LHATF meeting, New York proposed an approach whereby default costs are set at asset purchase such that the net spread over Treasuries (i.e., gross spread over Treasuries – default costs – investment expenses) would be the larger of 50 bps or 50% of the Aaa/AAA spread over Treasuries for a bond index asset with the same Weighted Average Life (WAL)

Illustration of NY approach Same FA example

- In order to illustrate the impact of this proposal, the LRWG used the same FA example that was presented in June
  - We assumed that the FA was issued 2/28/2005 at a 5.00% coupon
  - We approximated the VM-20 Deterministic Reserve at issue using a bond price formula and assuming no insurance expenses (for simplicity)
  - We similarly approximated the VM-20 Deterministic Reserve at three additional valuation dates
- The net earned rate for every asset in the portfolio using the NY approach comes out to 4.93%
  - 10y Treasury was 4.43%, NY net spread was 0.50%
  - Benchmark Aaa spread from our bond index data was 0.59%, so 50% of that spread is about 0.29%, which is less than the 0.50% minimum
  - Default costs were backed into to achieve the 0.50% spread net of defaults and investment expenses

Illustration of NY approach
Sample portfolio default cost detail

- The weighted average annual default cost is 75 bps. Asset-by-asset detail is shown below. For comparison, the 70 CTE column shows the historical default component of the LRWG's revised methodology

Bond #	Asset Description	Weight	Coupon	70 CTE	Default Cost	Expenses	Net Yield	Net Spread
1	A3 Benchmark	10	5.364%	0.209%	0.334%	0.100%	4.930%	50.0
2	A3 utility	5	5.280%	0.209%	0.250%	0.100%	4.930%	50.0
3	Baa3 utility	30	5.530%	0.943%	0.500%	0.100%	4.930%	50.0
4	A3 industrial	5	5.080%	0.209%	0.050%	0.100%	4.930%	50.0
5	A3 private	5	5.630%	0.209%	0.500%	0.200%	4.930%	50.0
6	Ba2 sub debt	5	8.930%	2.391%	3.800%	0.200%	4.930%	50.0
7	Aa3 Benchmark	5	5.080%	0.046%	0.050%	0.100%	4.930%	50.0
8	Aa3 CDO tranche	20	6.730%	0.046%	1.550%	0.250%	4.930%	50.0
9	A1 Benchmark	5	5.141%	0.081%	0.111%	0.100%	4.930%	50.0
10	A1 financial	5	5.230%	0.081%	0.200%	0.100%	4.930%	50.0
11	A1 private sub debt	5	5.380%	0.081%	0.250%	0.200%	4.930%	50.0
Total		100						
Wtd Avg	2/28/2005		5.829%		0.754%	0.145%	4.930%	50.0

Illustration of NY approach
Results of 2005 issue date

- Reserves were stable for this cohort over the four valuation dates

Val Date	Approx DR
2/28/2005	100.55
12/31/2006	100.46
11/30/2007	100.41
10/31/2008	100.37

- Since default costs are fixed, stable reserves are expected
- However, since the NY default cost assumption will vary for the same asset depending on the gross spread at purchase, it is critical to test this approach for other cohorts with different asset spread and FA liability spread levels

Illustration of NY approach
Specs for Additional FA Issue Dates

- On each of the other three Val Dates a FA was issued to mature 2/28/2015
- Proceeds from each issuance were used to purchase essentially the same assets maturing 2/28/2015 as were purchased for the 2005 cohort. For ease of calculation, we assumed in each case that new bonds of the same issuers were available at par with coupons equal to the then-current market yields of the original 2005-issued assets
- The FA issuance spread and resulting coupon rate on each date were set at equivalent bond index spreads thought to represent Aa3/AA- insurers under actual market conditions (not based on actual FA data however)

Issue Date	Term	Equiv Rating	Issuance Spread	Coupon
02/28/2005	10.00	Aa2/AA	60 bps	5.000 %
12/31/2006	8.17	Aa2/AA	70 bps	5.375 %
11/30/2007	7.25	Baa1/BBB+	218 bps	6.000 %
10/31/2008	6.33	Baa1/BBB+	657 bps	10.000 %

Illustration of NY approach
Issue date/valuation date results grid

T=Aaa/AAA	NY Proposal: Default Costs Set at Asset Purchase Date				
Funding	FA Iss Date:	2/28/2005	12/31/2006	11/30/2007	10/31/2008
Agreement:	FA Coupon:	5.000%	5.375%	6.000%	10.000%
	SpdOverTsy	60.4	69.8	217.7	656.8
	Gross Yield:	5.829%	6.222%	6.932%	11.290%
Assets:	Net Yield:	4.930%	5.200%	4.408%	5.568%
	SpdOverTsy	50.0	50.0	61.8	212.8
	Default Cost:	75.4	87.7	237.9	557.7
Val Date		Approximate Deterministic Reserve			
2/28/2005		100.55			
12/31/2006		100.46	101.1		
11/30/2007		100.41	101.0	109.8	
10/31/2008		100.37	100.9	108.7	123.4

Illustration of NY approach Observations on FA results

- Reserves for each cohort are again stable through the valuation dates due to the fixed default cost
- In all four cases, there is reserve strain because the coupon rate for the FA (aka "cost of funds" or "credited rate") is greater than the allowable net asset earned rate (negative interest spread)
- The strain is very pronounced for the 2007 and 2008 cohorts, since the illustrative issuance spreads widened substantially relative to the 50% of Aaa asset spread allowed by this approach
- The asset default costs vary substantially for the different cohorts even though each cohort portfolio is virtually identical

Illustration of NY approach Surplus impact of portfolio turnover

- We also evaluated the surplus change if the entire asset portfolio is sold and then immediately repurchased on each Val Date

T=Aaa/AAA	NY Proposal w/ Assets Sold&Repurchased on ValDate				
	FA Iss Date:	2/28/2005	12/31/2006	11/30/2007	10/31/2008
Val Date		Approximate Increase in Surplus			
2/28/2005		0.0			
12/31/2006		-0.8	0.0		
11/30/2007		-10.4	-9.5	0.0	
10/31/2008		-30.4	-29.3	-20.3	0.1

- This transaction would cause the insurer to lose surplus due to the substantial increase in assumed default costs when they are "reset" upon asset repurchase. For example, for the 2005 issue / 2008 valuation cell, the default costs are reset from 75 bps annually to 558 bps annually when the sale/repurchase occurs

Does LHATF wish to continue to consider the NY approach?

- Structural flaws
  - The resulting prescribed default costs would not be the same for the same or similar assets across companies, thus failing the primary objective expressed by LHATF at the winter 2008 meeting
  - Produces sudden surplus gains or losses when portfolio is liquidated, and same or similar assets are repurchased

Does LHATF wish to continue to consider the NY approach?

- High and variable surplus strain
  - A T+50 (or T+50% of AAA) standard is based on far more conservative investments than the life industry has purchased through history to establish and support its credited rates and dividends to policyholders and to recover its expenses
  - The degree of disconnect varies through market cycles and would result in varying and often substantial additional surplus strain
  - Arbitrary limitation goes beyond adjusting for risk
- Could lead to higher cost of life insurance

LRWG methodology - changes to address June concerns

- LRWG has made several changes to our June proposal to reduce volatility and simplify the approach:
  - The benchmark associated with each asset has the same rating as the asset
    - In June examples, assets below an A3 rating were mapped to the A3 benchmark
  - This means the default cost for each asset starts with the level 70 CTE historical default cost for the associated benchmark of the same rating
  - All adjustments to the benchmark historical default cost for an asset are now graded off by the end of N years from the valuation date (N = 3 in all our work thus far). Such adjustments are sensitive to market spreads on the valuation date. Previously the specific and constraint adjustments went until maturity, which was the primary cause of the previous volatility
  - The generic and specific adjustments have been combined into a one-step process (X% constant and Y% table from previous methodology)
  - The maximum net spread constraint is applied at the portfolio level rather than asset-by-asset

Illustration of refined LRWG approach Specifications

- We applied the same asset and FA issuance spread assumptions as for the NY approach to illustrate the revised LRWG methodology over the same four issue dates and valuation dates
- N set equal to 3. This means all adjustments to historical 70 CTE benchmark default costs will grade to zero by the end of 3 years
- X% set equal to 25%. This means that in projection year 1 (grading to 0 by end of 3 years), there will be an adjustment to add to or subtract from the historical benchmark default cost an amount equal to 25% of:
  - Actual asset spread at valuation date minus
  - Historical mean asset spread for benchmark asset
- Threshold T = A3 rating. This means that in projection year 1 (grading to 0 by end of 3 years), an adjustment is made to limit the net current market spread at the portfolio level to that of a benchmark A3 asset

Illustration of refined LRWG approach Results for 2005 issue date

- The table below compares the Sept. 21 and June 11 LRWG methodologies for the 2005 issue date cohort through the four valuation dates. Results shown are the average annual projected default costs and the approximate deterministic reserves

FA Issu Date	6/11/09 LRWG Proposal		9/21/09 LRWG Proposal	
2/28/2005	Average	Approximate	Average	Approximate
Val Date	Default Cost	Det Reserve	Default Cost	Det Reserve
2/28/2005	0.649%	99.7	0.462%	98.3
12/31/2006	0.751%	100.4	0.461%	98.5
11/30/2007	1.370%	104.2	0.568%	99.3
10/31/2008	2.411%	109.8	1.151%	102.5

- September 21 DR variability (rising about 1% from 2006 to 2007, and about 3% from 2007 to 2008) is substantially reduced vs. June 11

Illustration of refined LRWG approach Issue date/valuation date results grid

T=A3	w/portfolio application of Max Net Spread Constraint				
Funding	FA Iss Date:	2/28/2005	12/31/2006	11/30/2007	10/31/2008
Agreement:	FA Coupon:	5.000%	5.375%	6.000%	10.000%
	SpdOverTsy	60.4	69.8	217.7	656.8
	Gross Yield:	5.829%	6.222%	6.932%	11.290%
Assets:	Invest Exp:	0.145%	0.145%	0.145%	0.145%
Val Date	Default Cost	Approximate Deterministic Reserve			
2/28/2005	46.2	98.3			
12/31/2006	46.1	98.5	98.4		
11/30/2007	56.8	99.3	99.2	98.7	
10/31/2008	115.1	102.5	102.4	101.9	100.0

Illustration of refined LRWG approach Surplus impact of portfolio turnover

- Under the LRWG proposal with portfolio application of the Maximum Net Spread Constraint, the sale and repurchase of the portfolio on the Val Date does not affect the Deterministic Reserve or surplus

T=A3	LRWG Portfolio Proposal w/ Assets Sold&Repurchased on ValDate					
	FA Iss Date:	2/28/2005	12/31/2006	11/30/2007	10/31/2008	
Val Date		Approximate Increase in Surplus				
2/28/2005		0.0				
12/31/2006		0.0	0.0			
11/30/2007		0.0	0.0	0.0		
10/31/2008		0.0	0.0	0.0	0.0	

- LRWG default costs are the same for the same assets regardless of purchase price. This assumes default costs will be expressed as a % of par value (not book value), a fine point we learned from this example

Assessment of LRWG Revisions vs. Stated Regulator and LRWG Objectives

- What objectives are better achieved by the revisions?
  - Produces less volatile, more reasonable results as market conditions vary
  - Greater simplicity
- What objectives had to give somewhat?
  - Will not always discourage riskier investments since spread-based adjustments are temporary rather than permanent
  - No longer attempts to specifically adjust for structural risk. Focused on assets with rating and default characteristics similar to corporate bonds
  - LRWG would like to present and discuss further insights on these two objectives on the next interim conference call

Next steps
Suggested topics for Q4 interim call

- Deterrents to risky investments
  - The historical 70 CTE default cost levels under consideration are higher than typically used in cash flow testing and already appear to deter below investment grade assets and the weakest investment grade assets in many spread environments
  - Consideration of additional C-1 RBC as a further deterrent
  - LRWG will be able to illustrate these disincentives both before and after consideration of C-1 charges
- Discuss possibility of leveraging other NAIC projects currently underway to revamp C-1 measurement on other asset classes
  - Valuation of Securities and Capital Adequacy task forces considering revamping of C-1 for residential mortgage backed securities
  - Capital Adequacy considering new approach to commercial mortgages

Appendix

Summary of regulator and LRWG objectives in a prescribed default cost framework

VM-20 Prescribed Default Costs
LHATF / Life PBR Subgroup Objectives

- Default costs for the same or similar asset should be the same across all companies. They should be prescribed
- Companies should not be able to lower reserves by investing in riskier assets beyond some threshold or "line in the sand"
- In the short run, default costs should reflect the current economic environment and can grade into long-term conditions
- The prescribed method should be relatively simple
- The method should produce reasonable results as market conditions vary over time

VM-20 Prescribed Default Costs
Additional LRWG Objectives

- Incorporate risk-based elements in the methodology to the extent possible, while still keeping it a prescribed method. For example:
  - Default risk measured as of valuation date rather than as of original asset purchase date
  - Should ultimately be based on key drivers of default risk for the most common industry asset types. Relevant indicators such as credit rating and/or market spread may be appropriate as proxies until more direct measurement methods are broadly available
- Methodology should be internally consistent in regard to:
  - Default costs on existing assets
  - Gross spreads and default costs on new investments
  - Market values on assets sold in the model

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VM-20_090612_001

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Academy Life Reserve Work Group, David Neve, Chair – Prescribed default assumptions on below investment grade assets.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20: Requirements for Principles-based Reserves for Life Products dated 6/12/09 Section 8.F.1.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (Please red-line it from the current version with existing changes already accepted. You may do this through an attachment.)

   Insert the following drafting note at the end of Section 8.F.1

   Drafting Note: To address the concern that investing in lower quality assets could increase discount rates and thus reduce the minimum reserve, default assumptions (or the approach to determine default assumptions) will be prescribed for starting assets rated below investment grade (for example, assets rated below NAIC 2). The intent is to cap the spread on –starting assets rated below investment grade at a level that does not give "credit" in the discount rate for higher spreads on below investment grade assets. Further research and analysis is needed to:

   - Define what is meant by "investment grade" for this purpose;
   - Define the exact nature of the prescribed default assumptions or the prescribed approach to determine default assumptions for below investment grade assets; and
   - Determine the approach used to identify the specific assets that are subject to this prescribed assumption (for example, when there is no specific quality rating of an asset, or there are conflicting ratings).

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   Some regulators have expressed a concern with the current approach in VM-20 that defines the discount rate to be equal to the path of net asset earned rates, since this may create an incentive for companies to invest in lower quality assets to increase discount rate in order to reduce the minimum reserve. The LRWG believes this concern can be adequately addressed by capping the default assumption on below investment grade assets at a level that gives no "credit" in the discount rate for higher spreads above treasuries on below investment grade assets.

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NAIC Staff Comments:

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4/30/08	JLE		Tabled – 5/6/08
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VM-20_090612_002

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Fred Andersen - New York State Insurance Department – Discount Rate

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20: Requirements for Principles-Based Reserves for Life Products dated 6/12/09 paragraph Section 8.H.4.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and Identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Section 8. Assumptions

   H. Net Asset Earned Rates and Discount Rates

   4. The company shall use the path of net asset earned rates as the discount rates for each model segment in the deterministic reserve calculations in Section 3 with the following exceptions:

      a. For the Deterministic Reserve the Net Asset Earned Rates used in the projections shall be no greater than the applicable corresponding historical U.S. Treasury yield rates most closely coinciding with the dates of purchase and maturity structure of supporting assets, plus 50 basis points.

      b. For the Stochastic Reserve the Net Asset Earned Rates used in the projections shall, on average over all scenarios, be no greater than the applicable corresponding historical U.S. Treasury yield rates most closely coinciding with the dates of purchase and maturity structure of supporting assets, plus 75 basis points.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   Using a discount rate higher than the risk-free rate would imply that the policyholders should not see their insurance benefits as being guaranteed and should instead view them as being exposed to the default risk of the insurer's assets. Some net spread for illiquidity may be appropriate, in that a company would not necessarily need to hold liquid assets to back insurance liabilities.

   There may be cases where an entity can consistently "beat the market" by investing in assets that have spreads in excess of expected defaults. However, we believe this instance to be rare and not sustainable and thus we do not believe that the door should be opened for the possibility of a company holding lower reserves due to the setting of inappropriate default assumptions. This is a level playing field issue as well as a reserve adequacy issue in that taking on additional risk in assets should not result in lower reserves.

   We believe the value of a liability should be independent of the assets supporting it, consistent with the international approach.

   We support insurers being able to set their own assumptions in areas where they have control over the factor (e.g., mortality with company-specific underwriting). However, there should be more structure applied to the setting of assumptions where experience is limited or an insurer is exposed to the same risks as other insurers.

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NAIC Staff Comments:

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VM-20_090612_003

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   John Bruins, ACLI, Revise the need to additional margins when projecting NGE.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20: Requirements for Principles-Based Reserves for Life Products dated 6/12/09 paragraph Section 6.C.4.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and Identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Section 6. Cash Flow Models

   C. Non-Guaranteed Element Cash Flows

   1. The company shall include non-guaranteed elements in the cash flow models used to project future cash flows for both the deterministic reserve and the stochastic reserve. When a non-guaranteed element is based on some aspect of experience, the company shall reflect future changes in the level of non-guaranteed element in the cash flow models based on the experience assumed in each scenario.

   2. The company may not assume that the projected non-guaranteed element changes simultaneously with the change in projected experience, but rather 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 projected non-guaranteed element for each scenario, the company shall take into consideration those factors that affect how the company will modify its current non-guaranteed element scale, such as existence of contract guarantees, the company's past non-guaranteed element practices and current non-guaranteed element policies.

   ~~4. The company shall establish a margin for the projected non-guaranteed element that increases the minimum reserve.~~

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   The reserve should assume that the actuary is appropriately following professional standards, as well as the instructions in 6.C.1, 2, and 3 above, and that a margin for management not following its own strategy is unnecessary. Today, any deviations in actual NGE relative to a company's plan flows through surplus, and we don't see that there is a reason to change this treatment and set up a reserve for such possible changes.

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NAIC Staff Comments:

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VM-20_090612_004

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Amanda Fenwick (NY) – Credit for Reinsurance

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 Requirements for Principles-based Reserves for Life Products dated 6/12/09.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

Section 3. Deterministic Reserve

The company shall calculate the deterministic reserve as follows:

A. Calculate the seriatim reserve for each policy equal to the actuarial present value of benefits, expenses, and related amounts less the actuarial present value of premiums and related amounts where:

1. Cash flows are projected in compliance with the applicable requirements in Sections 6, 7 and 8 over the single economic scenario described in Section 6.E.3.

2. Present values are calculated using the path of discount rates for the corresponding model segment determined in compliance with Section 6.H.4.

3. The actuarial present value of benefits, expenses and related amount equals the sum of

   a. Present value of future benefits;

   Guidance Note: Future benefits include but are not limited to death and cash surrender benefits.

   b. Present value of future expenses;

   c. Policy account value invested in the separate account at the valuation date; and

   d. Policy loan balance at the valuation date with appropriate reflection of any relevant due, accrued, or unearned loan interest, if policy loans are explicitly modeled under Section 6.E.

4. The actuarial present value of premiums and related amounts equals the sum of the present values of

   a. Future gross premium payments and/or other applicable revenue;

   b. Future net cash flows to or from the general account or from or to the separate account;

   c. Future net policy loan cash flows, if policy loans are explicitly modeled under Section 6.E;

   ~~d. Future net reinsurance cash flows determined in compliance with Section 7;~~

~~e. The future net reinsurance aggregate cash flows allocated to such policy as described in Subsection E of this section; and~~

~~f~~d. The future derivative liability program net cash flows (i.e., cash received minus cash paid) that are allocated to such policy.

B. Calculate the per policy reserve for each policy as the greater of the seriatim reserve and the cash surrender value for the policy ~~adjusted for reinsurance as described in Subsection D.4 of this section~~.

Section 7. Reinsurance

B. Reinsurance Ceded

2. ~~The company shall calculate a gross reserve using methods and assumptions consistent with those used in calculating the minimum reserve, but excluding the effect of ceded reinsurance. If the group of policies is required to perform stochastic modeling when the reinsurance is excluded, then the stochastic modeling shall be performed for the gross reserve even if not required for the minimum reserve. The company shall determine the credit for reinsurance ceded as the excess, if any, of the gross reserve over the minimum reserve.~~ If a reinsurance agreement is considered inforce as specified in Section 8.A.4 the ceding company may recognize a credit for reinsurance calculated as RD + RA, where:

a. RD = 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;

b. RA = the present value of the future net reinsurance aggregate cash flows allocated to such policy as described in Section 4.d.5, determined by discounting these future net cash flows using the path of discount rates for the corresponding model segment.

3. The company shall use assumptions that represent company experience in the absence of reinsurance and assuming that the business was managed in a manner consistent with the manner that retained business is managed.

~~**Guidance Note:** The assumptions used to calculate the 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 assuming company, not the ceding company.~~

4. State the reason for the proposed amendment? (You may do this through an attachment.)

The minimum statutory formula reserves are Gross Reserves. A credit for reinsurance is recognized if the reinsurance agreement meets the requirements for reinsurance accounting. The reserve methodology in VM-20 should specify the Gross Reserve and the methodology for determining the Credit for Reinsurance.

The incorporation of reinsurance cash flows should be included in the Section of VM20 regarding the credit for reinsurance, not in the calculation of the minimum reserves.

In addition the wording in the guidance note should be removed.

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VM-20_090612_005

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Fred Andersen (NY) – Equity returns in deterministic reserve

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   6/12/09 VM-20 Draft, Section 6.H.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Section 6. Cash Flow Models

   H. Determination of Net Asset Earned Rates and Discount Rates

      4. The company shall use the path of net asset earned rates as the discount rates for each model segment in the deterministic reserve calculations in Section 3, and the stochastic exclusion test in Section 5. <u>The path of equity returns will be a 3% annual return.</u>

      5. The company shall use the path of one-year U.S. Treasury interest rates in effect at the beginning of each projection year multiplied by 1.05 for each model segment within each scenario as the discount rates in the stochastic reserve calculations in Section 4 and the modified deterministic reserve in Section 5.

      Guidance Note: The use of different discount rate paths for the seriatim and scenario reserves is driven by differences in methodology. The seriatim reserve is based on a present value of all liability cash flows, with the discount rates reflecting the investment returns of the assets backing the liabilities. The scenario reserve is based on a starting estimate of the reserve, and assets that support that estimate, plus the greatest present value of accumulated deficiencies. Here, the discount rates are a standard estimate of the investment returns of only the marginal assets needed to eliminate either a positive or negative deficiency.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   To make the Deterministic Reserve a meaningful proxy for an economic tail CTE value, it needs to account for the volatility of equity returns.

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<u>NAIC Staff Comments</u>:

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7/9/08	JLE		Tabled 7/24/08
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VM-20_090612_006

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Bob DiRico, Chair, American Academy of Actuaries Consistency Work Group

   The recommended changes are proposed in order to make the NGE requirement of VM-20 and other Principle-based Approaches consistent with one another and consistent with the definition in VM-01

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   The document to change is the 6/12/09 draft of VM-20

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   OLD VERSION

   Section 6. Cash Flow Models

   C. Non-Guaranteed Element Cash Flows

      1. The company shall include non-guaranteed elements in the cash flow models used to project future cash flows for both the deterministic reserve and the stochastic reserve. When a non-guaranteed element is based on some aspect of experience, the company shall reflect future changes in the level of non-guaranteed element in the cash flow models based on the experience assumed in each scenario.

      2. The company may not assume that the projected non-guaranteed element changes simultaneously with the change in projected experience, but rather 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 projected non-guaranteed element for each scenario, the company shall take into consideration those factors that affect how the company will modify its current non-guaranteed element scale, such as existence of contract guarantees, the company's past non-guaranteed element practices and current non-guaranteed element policies.

      4. The company shall establish a margin for the projected non-guaranteed element that increases the minimum reserve.

      5. The company shall 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 minimum reserve. Accordingly, where such a separate liability is reported on the statutory balance sheet as of the valuation date, the company shall exclude any dividends that are included in the separate liability from the reserve cash flow projection.

   Drafting Note: The reporting requirements for NGE's should be reviewed.

   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.

   NEW VERSION

   Section 6. Cash Flow Models

   C. Non-Guaranteed Element Cash Flows

1. Include non-guaranteed elements (NGE) that are based on some aspect of the policy's or contract's experience or on the competitive environment in the models used to project future cash flows beyond the time the company has authorized their payment or crediting. Future changes in the level of NGE in the cash flow models should be based on the experience assumed in each Scenario.

2. For NGE that are not based on some aspect of the policy's or contract's experience, include any payment or crediting already authorized by the company in the models used to project future cash flows. Do not include non-experience-based NGE that are not already authorized by the company unless the company determines that inclusion is appropriate based on its practices in dealing with the competitive environment or based on its established NGE policy

3. The projected NGE used in the model shall reflect factors that include but are not limited to the following (not all of these factors will necessarily be present in all situations):

   a. the nature of contractual guarantees;

   b. the company's past NGE practices and established NGE policies;

   c. the timing of any change in NGE relative to the date of recognition of a change in experience;

   d. the source of any past non-experience based payment or crediting; and

   e. the benefits and risks to the company of continuing to authorize NGE.

4. Projected NGE should be established in a way that does not eliminate the margin in the Minimum Reserve.

5. Projected levels of NGE in the cash flow model must be consistent with the experience assumptions used in each scenario. Policyholder Behavior Assumptions in the model must be consistent with the NGE assumed in the model.

6. 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 Minimum 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

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   The old section contains language and requirements that are not consistent with the definition and that, in the view of the Academy, should not have been part of the document. Additionally, it was felt that more guidance was needed in certain areas.

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
9/2/08	JLE		Tabled 10/29/08; Discussed 2/12/09
Notes: Carryover from VM-20_080329_039 New York suggested that if a NGE is illustrated it should be included in the projection. Need more information from mutual companies. Carryover from VM-20_080922_017. Carryover from VM-20_090122_010.			

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VM-20_090612_007

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   American Academy of Actuaries Life Reserves Work Group, David Neve, Chair

   Eliminate the requirement in VM-20 that the credibility adjusted experience rates be "mapped" to a published mortality table when determining the prudent estimate assumption for mortality.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 Requirements for Principle-based Reserves for Life Products dated 6/12/09, E.2.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (Please red-line it from the current version with existing changes already accepted. You may do this through an attachment.)

   See attached document entitled: "Mapping to Published Table, VM-20"

4. State the reason for the proposed amendment (You may do this through an attachment.)

   The current VM-20 draft requires that once the company's credibility adjusted experience rates have been determined, the resulting rates must then be used to "map" to a corresponding published mortality table. The mapping is accomplished by calculating a preliminary seriatim reserve using the credibility adjusted experience rates and then selecting an industry table that produces a seriatim reserve that is at least as large as the preliminary seriatim reserve. This "mapping" was incorporated in VM-20 for reasons that are no longer necessary. Thus, this proposal eliminates this "mapping" requirement as part of the process to determine the prudent estimate mortality assumption.

   Note: as a point of clarification, the process of applying the underwriting criteria scoring procedure to select an appropriate industry basic table for credibility weighting purposes is being maintained. Similarly, the process to select the industry prudent estimate mortality table (under the simplified method) by applying the underwriting criteria scoring procedure is also being maintained. Both of these processes are different from the "mapping" process described above that is being eliminated under this proposal.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
11/14/08	JLE		Tabled 2/5/09
Notes: Carryover from VM-20_080922_020. Carryover from VM-20_090122_012.			

Section 8. Assumptions

C. Prudent Estimate Mortality Assumptions

1. Procedure for Setting Prudent Estimate Mortality Assumptions

a. The company shall determine credibility segments for the purpose of determining which policies will qualify for the simplified method described in Subsection C.1.e. The determination of each credibility segment shall be subject to the following:

i. Each credibility segment shall consist of policies with similar underwriting and mortality experience characteristics.

ii. The company may group policies with different plans of insurance into the same credibility segment, if underwriting and mortality experience characteristics are similar for all the policies.

Guidance Note: It is anticipated that most companies will define a credibility segment to be a block of policies with similar underwriting rules, such as guaranteed issue, or regularly underwritten policies.

iii. The company shall remove from the credibility segments any policies for which the experience is reflected through adjustments to the prudent estimate mortality rate assumptions under Paragraph f below, including policies insuring impaired lives and those for which there is a reasonable expectation, due to conditions such as changes in premiums or other policy provisions, that policyholder behavior will lead to mortality results that vary significantly from those that would otherwise be expected.

b. The company shall determine mortality segments for the purpose of determining separate valuation mortality tables by grouping policies within each credibility segment that the company expects will have similar underwriting characteristics and mortality experience.

c. The company shall determine the credibility data set subject to the following:

i. The credibility data set for each credibility segment includes all in force and claim data pertaining to the last three years prior to the valuation date for all policies currently in the credibility segment or that would have been in the credibility segment at any time during the three- year period.

ii. The company shall use actual mortality experience data directly applicable to the credibility segment when available.

iii. The company shall use actual experience data of one or more mortality pools in which the policies participate under the terms of a reinsurance agreement, provided that the policies in the credibility segment have underwriting and mortality experience characteristics similar to those of the policies in the pool and the aggregate pool data are available to the company.

iv. The company shall update the mortality experience described in subparagraphs i and ii above at least once every three years.

d. If the number of deaths within the credibility data set for a credibility segment is at least 30, the company shall use the following procedure to determine prudent estimate assumption for the credibility segment:

i. Select a credibility procedure meeting the requirements in Subsection C.2 below.

ii. Use the underwriting scoring procedure described in Subsection C.3 below to determine which of the valuation basic tables shall serve as the industry table for that mortality segment required by the selected credibility procedure.

iii. Determine the mortality experience rates and apply the selected credibility procedure to determine credibility adjusted experience rates, as provided in Subsection C.4 below.

iv. Determine margin as provided in Subsection C.5 below.

v. Set the prudent estimate mortality assumption ~~to~~ equal to the ~~corresponding rates in the commissioners' table for which the seriatim reserve for the mortality segment is nearest to, but not less than, the seriatim reserve using the~~ credibility adjusted experience rates increased by the margin.

Guidance Note: Based on a Limited Fluctuation Method calculation which sets the standard for full credibility as being within 3% of the true value with 90% probability, assuming a Poisson distribution for the number of deaths and assuming no variation in net amount at risk, the number of deaths required for 10% credibility is 30 and for 20% credibility it is 120. Note that the credibility data set includes all deaths within the three years prior to the valuation date. Because the purpose of the credibility criterion is to provide a simple test that would improve the efficiency of the principles-based valuation process by exempting small blocks of business, it may be appropriate to determine the level of deaths that is consistent with this goal by, for example, surveying small companies.

e. If the number of deaths within the credibility data set for a credibility segment is less than 30, the company shall use the following simplified method to determine prudent estimate assumption for the credibility segment:

i. Determine the applicable valuation basic table using the underwriting scoring procedure described in Subsection C.3.

ii. Set the prudent estimate mortality assumption for each mortality segment within the credibility segment equal to the mortality rates in the commissioners' table that correspond to the applicable valuation basic table determined in Subparagraph e.i. above.

f. Adjust the prudent estimate mortality assumptions to reflect differences associated with impaired lives, and differences due to policyholder behavior if there is a reasonable expectation that due to conditions such as changes in premiums or other policy provisions, policyholder behavior will lead to mortality results that vary from the mortality results that would otherwise be expected.

i. The adjustment for impaired lives shall follow established actuarial practice, including the use of mortality adjustments determined from clinical and other data.

ii. The adjustment for policyholder behavior shall follow accepted actuarial practice, including the use of dynamic adjustments to base mortality.

VM-20_090612_008

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Fred Andersen, New York State Insurance Department - Revise Revenue Sharing section

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 Requirements for Principle-based Reserves for Life Products dated 6/12/09 - Section 8.G.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

Section 8. Assumptions

G. Revenue Sharing Assumptions

1. The company may include income from projected future revenue sharing (as defined in these requirements equals gross revenue sharing income (GRSI) net of applicable projected expenses (net revenue sharing income)) in cash flow projections, if:

   a. The GRSI is received by the company;

   b. Signed contractual agreement or agreements are in place as of the valuation date and support the current payment of the GRSI; ~~and~~

   c. The GRSI is not already accounted for directly or indirectly as a company asset~~.~~; and

   d. The GRSI is contractually guaranteed to the insurer and its liquidator, receiver, conservator, or statutory successor.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   There should be guidance in so that revenue sharing must be contractually guaranteed.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
2/10/08	JLE		Tabled 3/14/09
Notes: Wait to see what happened to revenue sharing during the past few months. Carryover from VM-20_090122_016.			

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VM-20_090612_009

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Fred Andersen (NY) – Calculation of Reinsurance Credit

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 Requirements for Principles-based Reserves for Life Products, draft dated 6/12/09.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Revise Section 7.B.2 as follows:

   Section 7. Reinsurance

   B. Reinsurance Ceded.

   2. ~~The company shall calculate a gross reserve using methods and assumptions consistent with those used in calculating the minimum reserve, but excluding the effect of ceded reinsurance. If the group of policies is required to perform stochastic modeling when the reinsurance is excluded, then the stochastic modeling shall be performed for the gross reserve even if not required for the minimum reserve. The company shall determine the credit for reinsurance ceded as the excess, if any, of the gross reserve over the minimum reserve.~~
   Credit for Reinsurance. The company shall determine the reinsurance reserve credit from the assuming company's perspective as RD + RA, where

      a. RD = 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;

      b. RA = the present value of the future net reinsurance aggregate cash flows allocated to such policy as described in Section 4.d.5, determined by discounting these future net cash flows using the path of discount rates for the corresponding model segment.

   3. Preliminary gross reserve. The company shall calculate a preliminary gross reserve using methods and assumptions consistent with those used in calculating the minimum reserve, but excluding the effect of ceded reinsurance. In the calculation of the preliminary gross reserve, ~~T~~the ceding company shall use assumptions that represent company experience in the absence of reinsurance and assuming that business was managed in a manner consistent with the manner the retained business is managed.

   4. Gross reserve. The gross reserve is the greater of the following:

      a. The preliminary gross reserve; and

      b. The sum of the minimum reserve and the reinsurance reserve credit.

4. State the reason for the proposed amendment?

   Because it is important to accurately calculate the collateral amount held by the assuming company, it is important to accurately calculate the reserve credit from the assuming company's perspective.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
3/3/09	JLE		Tabled 6/12/09
Notes: Carryover from VM-20_090122_019.			

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VM-20_090612_010

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   AAA Life Reserves Work Group, David Neve, Chair— clarify the requirements to determine assumption margins.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 Requirements for Principles-based Reserves for Life Products, draft dated 6/12/09, Section 8.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (Please red-line it from the current version with existing changes already accepted. You may do this through an attachment.)

   Section 8. Assumptions

   B. Assumption Margins

   The company shall include a margin to provide for adverse deviations and estimation error in the prudent estimate assumption for each risk factor, or combination of risk factors that is not stochastically modeled or prescribed, subject to the following:

   Guidance 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.

   1. Establishing a margin on each assumption may result in a distorted measure of the actual or expected risk in a product and therefore, the company should, if possible, establish margins such that the total margin in the reserves results in a minimum reserve that would equal the minimum reserve assuming the company was able to calculate the reserve using a multivariate probability distribution that reflects all material risks and outcomes.

   2. If the company is unable to establish margins as described in Paragraph 1 above, the company shall determine margins for each assumption independently in compliance with this section. However, if applicable, the level of margins may take into account the fact that risk factors may not be 100% correlated by utilizing an appropriate method to determine the amount of correlation. ~~, unless the company can demonstrate that an appropriate method was used to determine the margin for two or more assumptions in combination.~~

   ~~**Guidance Note:** Due to the difficulty in determining margins in the aggregate, it is expected that jointly determining margins for 2 or more risk factors will be rare, at least in the initial years following the effective date of these requirements. As emerging practice and techniques in this area continue to evolve, this may become a more common practice in future years.~~

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   The proposed wording provides greater clarity in how the company reflects the covariance between multiple risk factors when establishing margins.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
4/20/09	JLE		Discussed 6/12/09
Notes: Carryover from VM-20_090122_020.			

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VM-20_090612_011

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Frank Horn, New York State Department of Insurance - clarify the requirements to determine assumption margins.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 Requirements for Principles-based Reserves for Life Products, draft dated 6/12/09, Section 8.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (Please red-line it from the current version with existing changes already accepted. You may do this through an attachment.)

   Section 8. Assumptions

   B. Assumption Margins

   The company shall include ~~a~~ margins to provide for adverse deviations and estimation error in the prudent estimate assumption for each risk factor, or combination of risk factors that is not stochastically modeled or prescribed, subject to the following:

   Guidance 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.

   ~~1. Establishing a margin on each assumption may result in a distorted measure of the actual or expected risk in a product and therefore, the company should, if possible, establish margins such that the total margin in the reserves results in a minimum reserve that would equal the minimum reserve assuming the company was able to calculate the reserve using a multivariate probability distribution that reflects all material risks.~~

   ~~2~~1. ~~If the company is unable to establish margins as described in Paragraph 1 above, t~~The company shall determine an explicit set of margins for each material assumption independently, in compliance with this section~~, unless the company can demonstrate that an appropriate method was used to determine the margin for two or more assumptions in combination~~. For a particular assumption, margins for different durations shall reflect that in some cases an increase is conservative, and in others a decrease is conservative. If applicable, the level of a particular margin may be adjusted to be less adverse to take into account the fact that risk factors are not normally 100% correlated. However, such margin may not be reduced to an amount that is less than 75% of the initially determined margin, since under adverse circumstances margins may become more heavily correlated than under less adverse circumstances. Examples of assumptions that are generally considered material include but are not limited to mortality, morbidity, interest, equity returns, expenses, lapses, partial withdrawals, loans, and option elections.

   ~~**Guidance Note:** Due to the difficulty in determining margins in the aggregate, it is expected that jointly determining margins for 2 or more risk factors will be rare, at least in the initial years following the effective date of these requirements. As emerging practice and techniques in this area continue to evolve, this may become a more common practice in future years.~~

4. State the reason for the proposed amendment? (You may do this through an attachment.)

It is impossible to verify the reasonableness of a reserve if each assumption is not reasonable and justified.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
5/15/09	JLE		Discussed 6/12/09
Notes: Replaced VM-20_090122_007. Carryover from VM-20_090122_025.			

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VM-20_090612_012

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Tom Kilcoyne, PA Length of Projection Period for VM-20

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 6/12/09 Exposure: Section 6

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Section 6. Cash Flow Models

   A. Model Structure

      1. The company shall design and use a cash flow model that

         a. Complies with applicable Actuarial Standards of Practice in develop cash flow models and projecting cash flows.

         b. Uses model segments consistent with the company's asset segmentation plan, investment strategies, or approach used to allocate investment income for statutory purposes.

         c. Assigns each policy subject to these requirements to only one model segment and shall use a separate cash flow model for each model segment.

         d. Projects cash flows for a period that extends far enough into the future so that ~~no material amount of business remains at the end of the period~~ all obligations have been fully settled or otherwise accounted for, and that no materially greater value of the reported reserve would result from a longer projection period.

      2. The company may use a simplified approach to developing cash flows, if the company shows that the approach produces reserves that are no less than those produced by a more robust cash flow model. For example, it may be reasonable to assume 100% deaths or 100% surrenders after some appropriate period of time.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   When the "Working Reserve" is equal to zero, greater clarity may be needed such that the actuary cannot truncate projected obligation flows based solely on a subjective view of materiality. If all obligations are not accounted for because of judgment exercised with respect to the projection period length, there should be no doubt as to the triviality of the present value of any truncated obligation flows.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
5/19/09	JLE		Discussed 6/12/09; Amended and adopted 7/16/09

Notes: Carryover from VM-20_090122_026.

d. Projects cash flows for a period that extends far enough into the future so that ~~no material amount of business remains at the end of the period~~ no obligations remain.

2. The company may use a simplified approach to developing cash flows, if the company shows that the approach produces reserves that are no less than those produced by a more robust cash flow model.

Guidance Note: For example, it may be reasonable to assume 100% deaths or 100% surrenders after some appropriate period of time.

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VM-20_090612_013

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Fred Andersen, New York State Insurance Department – guidance on setting non-prescribed, non-stochastic assumptions when experience is less than fully credible

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 dated 6/12/09, Section 8.A. and 8.B.

3. Show what changes are needed:

Section 8. Assumptions

A. General Assumption Requirements

1. The company shall determine prudent estimate assumptions in compliance with this section for each risk factor that is not prescribed or is not stochastically modeled by applying a margin to the anticipated experience assumption for the risk factor.

2. The company shall establish the prudent estimate assumption for each risk factor in compliance with the requirements in Section 12 of the Standard Valuation Law and must periodically review and update the assumptions as appropriate in accordance with these requirements.

3. The company shall model the following risk factors stochastically unless the company elects the stochastic modeling exclusion defined in Section 6:

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

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

4. If the company elects to stochastically model risk factors in addition to those listed in A.3 above, the requirements in this section for determining prudent estimate assumptions for these risk factors do not apply.

5. In determining the stochastic reserve the company shall use prudent estimate assumptions that are consistent with those assumptions used for determining the deterministic reserve, modified as appropriate to reflect the effects of each scenario.

6. 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 <u>and blending the relevant company experience with the industry experience or other data using a blending process that is based on a credibility methodology that is recognized by the actuarial profession and is acceptable to the commissioner</u>.

   <u>The appointed actuary shall annually review relevant emerging experience for the purpose of assessing the appropriateness of the anticipated experience assumption. If the results of statistical or other testing indicate that previously anticipated experience for a given factor is inadequate, then the appointed actuary shall set a new, adequate, anticipated experience assumption for the factor.</u>

B. Assumption Margins

1. Establishing a margin on each assumption may result in a distorted measure of the actual or expected risk in a product and therefore, the company should, if possible, establish margins such that the total margin in the reserves results in a minimum reserve that would equal the minimum reserve assuming the company was able to calculate the reserve using a multivariate probability distribution that reflects all material risks. [C.5.4.2]

2. If the company is unable to establish margins as described in Paragraph 1 above, the company shall determine margins for each assumption independently in compliance with this section, unless the company can demonstrate that an appropriate method was used to determine the margin for two or more assumptions in combination. [C.5.4.3]

3. 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 minimum reserve than would otherwise result. For example, the company shall use a higher margin when: [C.5.4.4]

   a. The experience data are ~~either not relevant or not credible~~ of less relevance or lower credibility.

   b. The experience data are of lower quality, such as incomplete, internally inconsistent, or not current.

   c. 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.

   d. There are constraints in the modeling that limit an effective reflection of the risk factor.

4. State the reason for the proposed amendment?

There is a gap in the current general assumption wording in that it does not address the situation of having partially credible experience or provide requirements for updating an assumption.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
5/21/09	JLE		Discussed 7/16/09
Notes: Carryover from VM-20_090122_027. Change "blending process that is based on a credibility methodology" to "blending process that is consistent with a credibility methodology" Change "The appointed actuary shall annually review …" to "The company annually review …" Fred Andersen will revise the language 7/16/09			

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VM-20_090612_014

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   John Bruins, ACLI, Refine the requirements on the modeling of nonguaranteed elements (NGE)

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM20, 6/12/09, Section 6.C

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

Section 6. Cash Flow Models

C. Non-Guaranteed Element Cash Flows

1. ~~The company shall include non-guaranteed elements in the cash flow models used to project future cash flows for both the deterministic reserve and the stochastic reserve. When a non guaranteed element is based on some aspect of experience, the company shall reflect future changes in the level of non-guaranteed element in the cash flow models based on the experience assumed in each scenario.~~Except as noted in 5. below, the company shall include non-guaranteed elements (NGE) in the models to project future cash flows beyond the time the company has authorized their payment or crediting. Future NGE amounts should be adjusted in each scenario to reflect changes in experience in the NGE amounts.

2. ~~The company may not assume that the projected non-guaranteed element changes simultaneously with the change in projected experience, but rather only at the date following the recognition of a change in experience on which the company would normally implement a change.~~The projected NGE shall reflect factors that include but are not limited to the following (not all of these factors will necessarily be present in all situations):

   a. the nature of contractual guarantees;

   b. the company's past NGE practices and established NGE policies;

   c. the timing of any change in NGE relative to the date of recognition of a change in experience;

   d. the benefits and risks to the company of continuing to authorize NGE.

3. ~~When determining the projected non-guaranteed element for each scenario, the company shall take into consideration those factors that affect how the company will modify its current non-guaranteed element scale, such as existence of contract guarantees, the company's past non-guaranteed element practices and current non-guaranteed element policies.~~Projected NGE should be established in a way that does not eliminate the margin in the minimum reserve.

4. ~~The company shall establish a margin for the projected non-guaranteed element that increases the minimum reserve.~~Projected levels o fNGE in the cash flow model must be consistent with the experience assumptions used in each scenario. Policyholder behavior assumptions in the model must be consistent with the NGE assumed in the model.

5. ~~The company shall 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 minimum reserve. Accordingly, where such a separate liability is reported on the statutory balance sheet as of the valuation date, the company shall exclude any dividends that are included in the separate liability from the reserve cash flow projection.~~For any portion of an NGE that is not based on some aspect of the policy's or contract's experience, that portion should not be included unless it has been authorized for payment by the Board of Directors.

6. Report any liability for dividends declared by not yet paid that has been establisted according to statutory accounting principles as of the valuation date separately from the minimum 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 reporting requirements for non-guaranteed elements should be reviewed.~~

~~**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.~~

4. State the reason for the proposed amendment? (You may do this through an attachment.)

Dividends or NGE that arise from a source other than the policy cash flows considered in the modeling will, unless adjusted, result in a reserve for future payment. These payments are under the authority of the Board of Directors to declare or not declare, and should not be reserved in advance.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
6/12/09	JLE		Discussed 6/12/09; Adopted 7/16/09
Notes: Carryover from VM-20_090122_030 Add a drafting note that section 5 need to be reworded to provide clarification that income not reflected in the model should not be included in the NGE unless or until it is authorized by the board.			

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VM-20_090612_015

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Sheldon Summers, California Department of Insurance, reinsurance counter-party credit risk

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20, 6/12/09, Subsection 7.D.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Section 7. Reinsurance

   D. Reinsurance Assumptions

   9. ~~If a ceding company has knowledge that an assuming company is financially impaired, t~~The ceding company shall establish a margin for default by the assuming company. ~~In the absence of knowledge that the assuming company is financially impaired, the ceding company is not required to establish a margin for default by the assuming company.~~

   10. ~~If an assuming company has knowledge that a ceding company is financially impaired, t~~The assuming company shall establish a margin for default by the ceding company. Such margin may be reduced or eliminated if the assuming company has a right to terminate the reinsurance upon non-payment by the ceding company. ~~In the absence of knowledge that a ceding company is financially impaired, the assuming company is not required to establish a margin for default by the ceding company.~~

   11. In setting margins to reflect potential uncertainty regarding the receipt of cash flows from a counterparty, the company shall take into account the ratings, risk-based capital ratio or other available information related to the probability of default by the counterparty, as well as any security or other factor limiting the impact on cash flows.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   The proposed replacement language would require recognition of reinsurance counter-party credit risk in the calculation of reserves. The current language in VM-20 only requires a margin for counter-party credit risk when the reinsurance counter-party is known to be impaired.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
6/12/09	JLE		Rejected 8/21/09
Notes: Carryover from VM-20_090122_031.			

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VM-20_090612_016

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   John Bruins, ACLI, Refine the requirements on the modeling of nonguaranteed elements (NGE)

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM20, 6/12/09, Section 6.C

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

Section 6. Cash Flow Models

C. Non-Guaranteed Element Cash Flows

For purposes of this Section, Non-guaranteed Elements includes both non-guaranteed elements and policyholder dividends. In Sections 4 and 5, this Valuation Manual defines methods to value the obligations of the company relative to life contracts under more realistic methods and assumptions than under the prior valuation law. Since these methods consider additional revenues, dividends and non-guaranteed elements resulting from those additional revenue sources need to be considered or the resulting reserves may be too low. The presence of NGE's, as anticipated payments but not obligations, should not increase the reserves beyond what that reserve would be if experience was such as to not justify any NGE. That is, they should be viewed as an offset to excess income, not as an obligation to be valued.

1. ~~Except as noted in 5. below, t~~The company shall include non-guaranteed elements (NGE) in the models to project future cash flows that would be expected to be paid based on the experience of the model projection. ~~beyond the time the company has authorized their payment or crediting.~~ Future NGE amounts should be adjusted in each scenario to reflect changes in experience in the NGE amounts, and must be consistent with the experience assumptions used in each scenario. ~~-~~

2. The projected NGE shall reflect factors that include but are not limited to the following (not all of these factors will necessarily be present in all situations):
   a. the nature of contractual guarantees;

   b. the company's past NGE practices and established NGE policies;

   c. the timing of any change in NGE relative to the date of recognition of a change in experience;

   d. the benefits and risks to the company of continuing to authorize NGE.

3. The p~~P~~rojected NGE should transition from the current scale to future experience in a way that reflects: ~~be established in a way that does not eliminate the margin in the minimum reserve.~~
   a. the company's past NGE practices and established NGE policies;
   b. the timing of any change in NGE relative to the date of recognition of a change in experience; and
   c. the elimination of that portion of the current scale which is based on a source of income that is not considered in the model.

4. ~~Projected levels of NGE in the cash flow model must be consistent with the experience assumptions used in each scenario. Policyholder behavior assumptions in the model must be consistent with the NGE assumed in the model.~~

5. ~~For any portion of an NGE that is not based on some aspect of the policy's or contract's experience, that portion should not be included unless it has been authorized for payment by the Board of Directors.~~

~~6~~4. Report any liability for dividends declared by not yet paid that has been ~~establisted~~established according to statutory accounting principles as of the valuation date separately from the minimum 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.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

Dividends or NGE that arise from a source other than the policy cash flows considered in the modeling will, unless adjusted, result in a reserve for future payment. Since the focus of Statutory Accounting is to measure a company's ability to meet it obligations, or guarantees, this is drafted to provide for the appropriate level of NGE to include in the modeling.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
7/22/09	JLE		
Notes: Replaces VM-20_090612_014			

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VM-20_090612_017

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Fred Andersen, New York State Insurance Department – guidance on setting non-prescribed, non-stochastic assumptions when experience is less than fully credible

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 dated 6/12/09, Section 8.A.

3. Show what changes are needed:

   Add wording at the end of Section 8.A.6., as follows:

Section 8. Assumptions

A. General Assumption Requirements

1. The company shall determine prudent estimate assumptions in compliance with this section for each risk factor that is not prescribed or is not stochastically modeled by applying a margin to the anticipated experience assumption for the risk factor.

2. The company shall establish the prudent estimate assumption for each risk factor in compliance with the requirements in Section 12 of the Standard Valuation Law and must periodically review and update the assumptions as appropriate in accordance with these requirements.

3. The company shall model the following risk factors stochastically unless the company elects the stochastic modeling exclusion defined in Section 5:

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

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

4. If the company elects to stochastically model risk factors in addition to those listed in A.3 above, the requirements in this section for determining prudent estimate assumptions for these risk factors do not apply.

5. In determining the stochastic reserve the company shall use prudent estimate assumptions that are consistent with those assumptions used for determining the deterministic reserve, modified as appropriate to reflect the effects of each scenario.

6. 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.

   <u>For each company risk factor (including lapse) that is quantifiable and can be expected to have similar characteristics as an industry risk factor, the relevant company experience would be blended with the industry experience or other data using a blending process and applying a credibility procedure that is consistent with accepted actuarial practice</u>.

The appointed actuary shall annually review relevant emerging experience for the purpose of assessing the appropriateness of the anticipated experience assumption. If the results of statistical or other testing indicate that previously anticipated experience for a given factor is inadequate, then the appointed actuary shall set a new, adequate, anticipated experience assumption for the factor.

Change Section 8.B.3., as follows:

Section 8. Assumptions

3. 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 minimum reserve than would otherwise result. For example, the company shall use a higher margin when:

   a. The experience data ~~are either not relevant or not credible~~ have less relevance or lower credibility.

4. State the reason for the proposed amendment?

   There is a gap in the current general assumption wording in that it does not address the situation of having partially credible experience or provide requirements for updating an assumption.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
7/24/09	JLE		
Notes:			

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VM-20_090612_018

Amendment Proposal Form
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Frank Horn, New York State Department of Insurance

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   6/12/2009 VM-20 Exposure Draft

3. Show what changes are needed

Section 8. Assumptions

B. Assumption Margins

The company shall include ~~a~~ margins to provide for adverse deviations and estimation error in the prudent estimate assumption for each risk factor~~, or combination of risk factors~~ that is not stochastically modeled or prescribed, subject to the following:

~~**Guidance 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.~~

~~1~~ ~~Establishing a margin on each assumption may result in a distorted measure of the actual or expected risk in a product and therefore, the company should, if possible, establish margins such that the total margin in the reserves results in a minimum reserve that would equal the minimum reserve assuming the company was able to calculate the reserve using a multivariate probability distribution that reflects all material risks.~~

~~2~~1. ~~If the company is unable to establish margins as described in Paragraph 1 above, t~~The company shall determine an explicit set of initial margins for each material assumption independently (i.e., ignoring any correlation among risk factors) in compliance with this section. ~~, unless the company can demonstrate that an appropriate method was used to determine the margin for two or more assumptions in combination.~~ For a particular assumption, margins for different durations shall reflect that in some cases an increase is conservative, and in others a decrease is conservative. If applicable, the level of a particular initial margin may be adjusted to take into account the fact that risk factors are not normally 100% correlated. However, the initially determined margin may only be reduced to the extent the company can demonstrate that the method used to justify such a reduction is appropriate under adverse circumstances since risk factors may become more heavily correlated under adverse circumstances. Examples of assumptions that are generally considered material include but are not limited to mortality, morbidity, interest, equity returns, expenses, lapses, partial withdrawals, loans, and option elections.

~~**Guidance Note:** Due to the difficulty in determining margins in the aggregate, it is expected that jointly determining margins for 2 or more risk factors will be rare, at least in the initial years following the effective date of these requirements. As emerging practice and techniques in this area continue to evolve, this may become a more common practice in future years.~~

~~3~~2. The greater the uncertainty in the anticipated experience assumption…

4. State the reason for the proposed amendment? (You may do this through an attachment.)

It is very important for verification and auditing purposes that each assumption be reasonable on its own

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
8/7/09	JLE		Discussed 8/13/09
Notes: Will coordinate with the Academy to reconcile with VM-20_090612_019.			

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VM-20_090612_019

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   AAA Life Reserve Work Group, David Neve, Chair
   Clarify the requirements to determine assumption margins.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 Requirements for Principle-based Reserves for Life Products, draft dated 6/12/09, Section 8.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Section 8. Assumptions

   B. Assumption Margins

   The company shall include a margin to provide for adverse deviations and estimation error in the prudent estimate assumption for each risk factor, or combination of risk factors that is not stochastically modeled or prescribed, subject to the following:

   ~~**Guidance 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.~~

   ~~1. Establishing a margin on each assumption may result in a distorted measure of the actual or expected risk in a product and therefore, the company should, if possible, establish margins such that the total margin in the reserves results in a minimum reserve that would equal the minimum reserve assuming the company was able to calculate the reserve using a multivariate probability distribution that reflects all material risks.~~

   1~~2~~. ~~If the company is unable to establish margins as described in Paragraph 1 above, t~~The company shall determine an explicit set of margins for each material assumption independently in compliance with this section. ~~,~~ Alternatively, the company may determine the margins for two or more assumptions in combination in order to reflect interdependence and/or covariance between the related risk factors, provided ~~unless~~ the company can demonstrate that an appropriate method was used to jointly determine such ~~the~~ margins ~~for two or more assumptions in combination~~.

   2. Generally, establishing a margin on each assumption without considering interdependence and/or covariance between the related risk factors may distort the total actual or expected risk in a product. To the extent a company determines the margins for two or more assumptions in combination under 8.B.1, the company shall be guided by the objective to establish the margins such that the resulting minimum reserve approximates the minimum reserve that would be calculated using a multivariate probability distribution that incorporates the jointly determined risk factors together with the stochastically-generated economic variables.

   Guidance Note: Due to the difficulty in determining margins in the aggregate, it is expected that jointly determining margins for 2 or more risk factors will be less common~~rare~~, at least in the initial years following the effective date of these requirements. As emerging practice and techniques in this area continue to evolve, this may become a more common practice in future years.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

By switching the order of the paragraphs, the primary emphasis is on determining margins for each assumption independently. Additional language clarifies that the purpose of determining margins for two or more assumptions in combination is to reflect interdependence and/or covariance between the underlying risk factors.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
8/11/09	JLE		
Notes:			

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VM-20_090612_020

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Pete Weber, Ohio Department of Insurance; Aggregation clarity

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20, 6/12/09, Subsection 4.C.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Section 4.C.

   C. The stochastic reserve equals the amount determined Subsection 5.A above plus the amount determined in Section 4.B.5 above. If the company defines two or more subgroups for aggregation purposes as described in Section 6.B.2.b, the company shall calculate the ~~stochastic reserves~~ amount determined in Section 4.B above for each subgroup of policies on a standalone basis, sum together those ~~stochastic reserves~~ amounts for each subgroup, and then add the modified deterministic reserve to determine the total stochastic reserve.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   Non-substantive change to clarify stochastic calculation.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
8/17/09	JLE		Amended and Adopted 8/20/09
Notes: The stochastic reserve equals the amount determined Subsection ~~5~~4.A above plus the amount determined in Section 4.B.~~5~~ above. If the company defines two or more subgroups for aggregation purposes as described in Section 6.B.2.b, the company shall calculate the ~~stochastic reserves~~ amount determined in Section 4.B above for each subgroup of policies on a standalone basis, sum together those ~~stochastic reserves~~ amounts for each subgroup, and then add the ~~modified deterministic reserve~~amount determined in Section 4A above to determine the total stochastic reserve.			

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VM-20_090612_021

Amendment Proposal Form*

(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Pete Weber, Ohio Department of Insurance; State specifically prudent estimate assumptions are to be used in both the deterministic and stochastic reserves.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20, 6/12/09, Subsection 3.A.1 and Subsection 4.B.1

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Section 3.A.1.

   1. Cash flows are projected <u>using prudent estimate assumptions</u> in compliance with the applicable requirements in Sections 6, 7 and 8 over the single economic scenario described in Section 6.E.3.

   Section 4.B.1.

   1. Project cash flows <u>using prudent estimate assumptions</u> in compliance with the applicable requirements in Sections 6, 7 and 8 over the stochastically generated scenarios described in Section 6.G.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   Non-substantive change to remove any doubt that prudent estimate assumptions are to be used in the deterministic and stochastic reserve calculations.

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<u>NAIC Staff Comments</u>:

Dates: Received	Reviewed by Staff	Distributed	Considered
8/17/09	JLE		Amended and Adopted 8/20/09

Notes:
Section 3.A.1.

1. Cash flows are projected ~~using prudent estimate assumptions~~ in compliance with the applicable requirements in Sections 6, 7 and 8 over the single economic scenario described in Section 6.E.3.

Section 4.B.1.

1. Project cash flows ~~using prudent estimate assumptions~~ in compliance with the applicable requirements in Sections 6, 7 and 8 over the stochastically generated scenarios described in Section 6.G.

Section 8. Assumptions

A. General Assumption Requirements

1. The company shall ~~determine~~use prudent estimate assumptions in compliance with this section for each risk factor that is not prescribed or is not stochastically modeled by applying a margin to the anticipated experience assumption for the risk factor.

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VM-20_090612_022

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Steve Ostlund, Alabama Actuary, proposing VM20 consideration of clarifying use of prudent estimate assumptions

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20-PBR-Life_ED7, draft 6-12-09, incorporating amendments through VM-20_090612_021, (modified to insert "use" for "determine" in 8.A.1.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Section 8. Assumptions

   A. General Assumption Requirements

      5. In determining the stochastic reserve the company shall use prudent estimate assumptions that are consistent with those prudent estimate assumptions used for determining the deterministic reserve, modified as appropriate to reflect the effects of each scenario.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   Amendment 21 was intended to assure prudent estimate assumptions were used for the deterministic reserve, but my concern is, without amendment, section 5 may create a loophole.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
8/20/09	JLE		
Notes:			

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VM-20_090612_023

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   American Academy of Actuaries' Life Reserve Work Group, David Neve, Chair
   Clarify the requirements on determining anticipated experience assumptions.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-20 Requirements for Principle-based Reserves for Life Products, draft dated 6/12/09, Section 8.A.6

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

Section 8. Assumptions

6. ~~_~~The company shall ~~use its own experience, if relevant and credible, to~~ establish an anticipated experience assumption for ~~any~~each material risk factor~~. To the extent that company~~ utilizing its own experience in combination with applicable industry data and other 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.~~.

   a. For risk factors (such as mortality) to which statistical credibility theory may be appropriately applied, the company shall establish anticipated experience assumptions for the risk factor by combining relevant company experience with industry experience data, tables, or other applicable data in a manner that is consistent with credibility theory and accepted actuarial practice.

   b. For risk factors (such as premium patterns on flexible premium contracts) that do not lend themselves to the use of statistical credibility theory, and for risk factors (such as the current situation with some lapse assumptions) to which statistical credibility theory can be appropriately applied, but cannot currently be applied due to lack of industry data, the company shall establish anticipated experience assumptions in a manner that is consistent with accepted actuarial practice and that reflects any available relevant company experience, any available relevant industry experience, or any other experience data that are available and relevant. Such techniques include:

      i. Adopting standard assumptions published by professional, industry or regulatory organizations to the extent they reflect any available relevant company experience or reasonable expectations;

      ii. Applying factors to relevant industry experience tables or other relevant data to reflect any available relevant company experience and differences in expected experience from that underlying the base tables or data due to differences between the risk characteristics of the company experience and the risk characteristics of the experience underlying the base tables or data;

      iii. Blending any available relevant company experience with any available relevant industry experience and/or other applicable data using weightings established in a manner that is consistent with accepted actuarial practice and that reflects the risk characteristics of the underlying policies and/or company practices.

c. For risk factors that have limited or no experience or other applicable data to draw upon, the assumptions shall be established using sound actuarial judgment and the most relevant data available.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

To clarify the requirements on when credibility methods are to be used to determine anticipated experience assumptions, and provide examples of alternative techniques when credibility methods are not applicable.

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
8/28/09	JLE		
Notes:			

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AMERICAN ACADEMY of ACTUARIES

September 21, 2009

Larry Bruning, Chair
Life and Health Actuarial Task Force
National Association of Insurance Commissioners

Dear Larry,

On behalf of the Life Financial Soundness/Risk Management Committee of the American Academy of Actuaries,[1] below are comments on the proposed VM-30 – Actuarial Opinion and Memorandum Requirements.

1. We suggest adding a "write-in" section to the proposed prescribed table in Section 3.A.5 (all references are to the 6/12/2009 Exposure Draft) to allow the appointed actuary to include other appropriate reserves or liabilities in the opinion, provided the amounts and the location in the annual statement of those amounts are properly identified and documented. The prescribed table in the current draft will not capture all situations that currently occur in practice and by adding a section, it will make clear that other amounts may need to (and in many situations should) be included in the opinion, and will facilitate the identification and documentation of such amounts. This section could be further modified to require appointed actuaries utilizing the "write-in" sections to indicate that they added to the prescribed wording in the Scope Section for purposes of the key indicator requirement in Section 3.A.3. More details could be provided in the Relevant Comments section of the opinion.

2. While we understand the need for the requirement to identify whether prescribed wording is used in the opinion, we do not support the first component of proposed key indicators in Section 3.A.3, which would require the appointed actuary to classify the opinion as "unqualified," "qualified," "adverse" or "inconclusive," for the following reasons:

    a. The opinion itself is typically a 2-3 page document, and we believe the appointed actuary typically takes great care in wording the opinion. The requirement to condense the opinion into one of four words, especially to do so in a public document, all of which are defined in a very general manner and none of which are supported by Actuarial Standards of Practice, is potentially misleading to the reader.

    b. The proposed terms may be very confusing to those outside the actuarial profession. For example, the ideal is to receive an *unqualified* opinion from a *qualified* actuary; also it is possible for an opinion to be neither "qualified" or "unqualified."

    c. The classification of the opinion into one of four words could be misinterpreted as changing the 2-3 page opinion provided. For example, it is possible that someone could mistakenly conclude that an "unqualified" opinion means the appointed actuary believes reserves will be adequate under all possible future conditions, when that is not necessarily the case.

[1] The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

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d. The terms could also be confusing within the actuarial profession. A 2004 survey of appointed actuaries (included in the 2004 Asset Adequacy Analysis Practice Note published on the Academy website) shows eight different criteria actuaries might consider in determining a "qualified" opinion. Some of those definitions could encompass proposed VM-30 definitions of "adverse" and "inconclusive."

e. We believe that nothing can take the place of the combination of: 1) the requirement for the appointed actuary to properly communicate the opinion: 2) the need for a thorough review of the work performed; and 3) direct communication between the appointed actuary and the regulatory actuary (especially when the first two are not sufficient).

It is important to note that although we do not support the proposal to classify the opinion into one of four single words, we are note opposed to adding provisions to VM-30 that facilitate the review of the opinion.

We do believe the requirement in the current draft of VM-30 to identify whether prescribed wording is used, particularly for the proposed Opinion Section, will provide the regulatory actuary with a strong starting point in this review. For example, it is clear to us that an opinion using "Prescribed Wording Only" throughout would meet the proposed criteria intended for the opinion to be "Unqualified."

We suggest the current draft of VM-30 be modified to combine the requirement to identify whether prescribed wording is used in the proposed Opinion Section with a specific requirement to explain in the Relevant Comments section any added or revised wording in any of the sections. The explanation would require the appointed actuary to identify what impact, if any, the added or revised language has on the opinion. This modification would allow regulatory actuaries to identify where the appointed actuary has used language in the opinion that varies from the prescribed language and whether any revised language impacts the opinion. We believe this will address all of the issues raised above.

We also offer the following alternatives, which address some, but not all, of the issues we raised above. Combinations of these can also be considered:

i. Include the requirements of Section 3.A.3 in the confidential regulatory asset adequacy issues summary.

ii. Reduce the choices to two terms (e.g., "unmodified/modified").

iii. Add language to clarify that the requirements of Section 3.A.3 are intended to provide general language in the opinion. We would be willing to work with LHATF to draft this language.

We are available to discuss these comments in more detail. If you have any questions or comments, please contact Dianna Pell, Life Policy Analyst, at (202) 785-6924 or email pell@actuary.org. Thank you.

Sincerely,

Donna Claire, Chair
Life Financial Soundness/Risk Management Committee
American Academy of Actuaries

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VM-30_090515_001

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   John Bruins, ACLI

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM30- Draft 5/15/09 Table Column 2.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Principles-Based ~~Valuation~~ Reserves
   (2)

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   The consistent reference has been to Principle-Based Reserves – we don't understand the addition or significance of the word 'Valuation'..

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
8/21/08	JLE		Tabled 8/27/08; Adopted 8/18/09
Notes: Add a footnote defining "Principle-Based Reserve" Carried over from VM-30_081205_002			

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VM-30_090515_002

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Pete Weber, OH Waiver of opinion requirement under certain circumstances

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-30 5/15/09 Exposure: Sections A.1.4 and B.1.1

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   Section 1. Scope

   A. General

      4. These AOM requirements are applicable to all annual statements filed after the operative date of the Valuation Manual. A statement of actuarial opinion on the adequacy of reserves and related actuarial items and a supporting actuarial memorandum is required to be submitted each year, unless the requirement is waived by the commissioner for good cause, as determined by the commissioner. Such waiver should be limited to circumstances where the company has no business in force and no liability exists.

   Section 3. General Requirements for Submission of Statement of a Life Actuarial Opinion

   A. General

      1. The statement of an appointed actuary, entitled "Statement of Actuarial Opinion," setting forth an opinion relating to reserves and related actuarial items held in support of policies and contracts, in accordance with C.1 must be included with an annual statement, unless waived by the commissioner in accordance with Section 1.A.4.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   There are circumstances where the submission of an opinion should not be required. For example, situations where a company has started operations and hasn't actually sold any business yet or a company has sold off all business and has no liability for any business in force. Opinions in such cases are not economically justified and should not be required.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
5/1/09	JLE		Tabled 6/12/09; Withdrawn 8/18/09
Notes: Carryover from VM-30_081205_004			

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VM-30_090515_003

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Shiraz Jetha, WA - Documentation of supporting work and qualification of individual providing support.

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM-30 5/15/09 Exposure: Section C.1.6 and C.1.12

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

Section 4. Requirements Specific to Life Actuarial Opinions

A. Statement of Actuarial Opinion Based On an Asset Adequacy Analysis

6. The reliance section should contain only one of the following if the appointed actuary is using the prescribed wording:

   If the appointed actuary has examined the asset and liability records, the reliance section should include only the following statement:

   "My examination included such review of the assumptions and methods and of the underlying basic asset and liability records and such tests of the calculations as I considered necessary. I also reconciled the underlying basic asset and liability records to [exhibits and schedules listed as applicable] of the company's current annual statement."

   If the appointed actuary has not examined the underlying records, but has relied upon data (e.g., listings and summaries of policies in force or asset records) prepared by the company, the reliance section should include only the following statement:

   "In forming my opinion on [specify types of reserves], I relied upon data and/or certain projections/assumptions prepared by [name and title of company officer certifying in force records or other data] as certified in the attached statements. I evaluated that data for reasonableness and consistency. I also reconciled that data to [list applicable exhibits and schedules] of the company's current annual statement. In other respects, my examination included review of the actuarial assumptions and actuarial methods used and tests of the calculations I considered necessary. Documentation which supports the work upon which I have relied has been provided to me by the individuals listed above."

   Attached to the appointed actuary's opinion should be a statement by each person relied upon in the form prescribed by Section 4.A.1.

12. If the appointed actuary relies on the certification of others on matters concerning the accuracy or completeness of any data underlying the actuarial opinion, or the appropriateness of any other information used by the appointed actuary in forming the actuarial opinion, the actuarial opinion should so indicate the persons the actuary is relying upon and a precise identification of the items subject to reliance. In addition, the persons on whom the appointed actuary relies shall provide a certification that ~~precisely~~ identifies the specific ~~items on which~~information that was provided, whether its supporting documentation was included, ~~the person is providing information~~a statement as to its accuracy, completeness or reasonableness, as applicable and ~~a statement as to~~

~~the accuracy, completeness or reasonableness, as applicable, of the items~~explains in sufficient detail their own competence, within the context of experience, professional and/or academic qualifications and training, to provide the appointed actuary this information. This certification shall include the signature, name, title, company, address and telephone number of the person rendering the certification, as well as the date on which it is signed.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

We feel that the area of reliance on work of others needs to be strengthened for PBR. From the regulators' perspective it is important to be satisfied that the work being relied upon by the actuary has been performed under the supervision of individuals who are reasonably qualified through experience, training and/or professional qualifications and that its supporting documentation is accessible both to the actuary and the regulators for review.

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
5/6/09	JLE		Tabled 8/18/09
Notes: Carryover from VM-30_081205_005			

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VM-30_090515_004

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   John Bruins, ACLI, Make the reliance letters part of the memorandum rather than the Opinion

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM30 exposed 5/15/09 Section 4. A. 1. d., Section 4. A. 6.; Section 4.A.12.; Section 4.B. 3. (new section)

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

Section 4. Requirements Specific to Life Actuarial Opinions

A. Statement of Actuarial Opinion Based On an Asset Adequacy Analysis

1. The statement of actuarial opinion shall consist of:

d. A reliance section describing those areas, if any, where the appointed actuary has deferred to other experts in developing data, procedures or assumptions, (e.g., anticipated cash flows from currently owned assets, including variation in cash flows according to economic scenarios (see Section 4.A.6)~~, supported by a statement of each such expert in the form prescribed by Section 4.A..10~~;

6. The reliance section should contain only one of the following if the appointed actuary is using the prescribed wording:

If the appointed actuary has examined the asset and liability records, the reliance section should include only the following statement:

"My examination included such review of the assumptions and methods and of the underlying basic asset and liability records and such tests of the calculations as I considered necessary. I also reconciled the underlying basic asset and liability records to [exhibits and schedules listed as applicable] of the company's current annual statement."

If the appointed actuary has not examined the underlying records, but has relied upon data (e.g., listings and summaries of policies in force or asset records) prepared by the company, the reliance section should include only the following statement:

"In forming my opinion on [specify types of reserves], I relied upon data prepared by [name and title of company officer certifying in force records or other data] as certified in the attached statements. I evaluated that data for reasonableness and consistency. I also reconciled that data to [list applicable exhibits and schedules] of the company's current annual statement. In other respects, my examination included review of the actuarial assumptions and actuarial methods used and tests of the calculations I considered necessary."

~~Attached to the appointed actuary's opinion should be a statement by each person relied upon in the form prescribed by Section 4.A.1.~~

12. If the appointed actuary relies on the certification of others on matters concerning the accuracy or completeness of any data underlying the actuarial opinion, or the appropriateness of any other information used by the appointed actuary in forming the actuarial opinion, the actuarial opinion should so indicate the persons the actuary is relying upon and a precise identification of the items subject to reliance. ~~In addition, the persons on whom the appointed actuary relies shall provide a certification that precisely identifies the items on which the person is providing information and a statement as to the accuracy, completeness or reasonableness, as applicable, of the items. 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. Description of Actuarial Memorandum Including an Asset Adequacy Analysis and Regulatory Asset Adequacy Issues Summary

1. The appointed actuary shall prepare a memorandum to the company describing the analysis done in support of his or her opinion regarding the reserves. The memorandum shall be made available for examination by a commissioner upon request but shall be returned to the company after such examination and shall not be considered a record of the insurance department or subject to automatic filing with a commissioner.

2. In preparing the memorandum, the appointed actuary may rely on, and include as a part of his or her own memorandum, memoranda prepared and signed by other actuaries who are qualified within the meaning of Section 3.A.2, with respect to the areas covered in such memoranda, and so state in their memoranda.

3. <u>If the appointed actuary relies on the certification of others on matters concerning the accuracy or completeness of any data underlying the actuarial opinion, or the appropriateness of any other information used by the appointed actuary in forming the actuarial opinion, the Actuarial Memorandum should so indicate the persons the actuary is relying upon and a precise identification of the items subject to reliance. In addition, the persons on whom the appointed actuary relies shall provide a certification that precisely identifies the items on which the person is providing information and a statement as to the accuracy, completeness or reasonableness, as applicable, of the items. 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 and shall be incorporated into the Actuarial Memorandum.</u>

4. State the reason for the proposed amendment? (You may do this through an attachment.)

Certifications of information used by the Appointed Actuary are in the nature of documentation and should be incorporated into the Actuarial Memorandum rather than the Opinion itself. The Opinion should identify those areas where the appointed actuary has relied on another expert, but the documentation of that reliance more appropriately belongs in the memorandum.

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<u>NAIC Staff Comments</u>:

Dates: Received	Reviewed by Staff	Distributed	Considered
5/26/09	JLE		
Notes: Carryover from VM-30_081205_008			

VM-30_090515_005

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   John Bruins, ACLI, RAAIS requirement – submit to domestic regulator

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM30 5/15/09 exposure, Section 4. B. 4.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

   The appointed actuary shall prepare a regulatory asset adequacy issues summary, the contents of which are specified in Section 4.B.10. The regulatory asset adequacy issues summary will be submitted to the domiciliary commissioner no later than April 1 of the year following the year for which a statement of actuarial opinion based on asset adequacy is required, and shall be available to all other commissioners on request. A commissioner shall keep the regulatory asset adequacy issues summary confidential to the same extent and under the same conditions as the actuarial memorandum.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

   Increasing in recent years, commissioners have determined that they do not want to automatically received the RAAIS from all companies every year. At least the following states have stopped automatic submission of the RAAISL: Alaska, Colorado, Idaho, Illinois, Washington. We are therefore asking that the model be set so that submission to the state of domicile is required, but that all others are on request.

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NAIC Staff Comments:

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7/27/09	JLE		
Notes:			

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VM-30_090515_006

Amendment Proposal Form*
(NAIC Research Division)

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

   Katie Campbell, Alaska Department of Insurance

2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

   VM30- Draft 5/15/09

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

Section 1. Scope

A. General

3. The AOM requirements shall be applied in a manner that allows the appointed actuary to utilize his or her professional judgment in performing the actuarial analysis and developing the actuarial opinion and supporting actuarial memoranda, conforming to relevant actuarial standards of practice. However, a state commissioner has the authority to specify methods of ~~actuarial~~ analysis and ~~actuarial~~ assumptions when, in the commissioner's judgment, these specifications are necessary for the actuary to render an acceptable opinion relative to the adequacy of reserves and related actuarial items.

4. These AOM requirements are applicable to all annual statements filed after the operative date of the Valuation Manual. A statement of actuarial opinion on the adequacy of the reserves and related actuarial items and a supporting actuarial memorandum is required each year.

Definitions

A. The term "actuarial opinion" means the opinion of an appointed actuary regarding the adequacy of reserves and related actuarial items.

Section 2. General Requirements for Submission of Statement of a Life Actuarial Opinion

A. General

1. The statement of an appointed actuary, entitled "Statement of Actuarial Opinion," setting forth an opinion relating to reserves and related actuarial items held in support of policies and contracts, in accordance with Section 4.A must be included with an annual statement.

Section 3. Requirements Specific to Life Actuarial Opinions

A. Statement of Actuarial Opinion Based On an Asset Adequacy Analysis

1. The statement of actuarial opinion shall consist of:

c. A scope section identifying the subjects on which an opinion is to be expressed and describing the scope of the appointed actuary's work, including a tabulation delineating the reserves and related actuarial items that have been analyzed for asset adequacy and the method of analysis, (see Section 4.A.5) and identifying the reserves and related actuarial items covered by the opinion that have not been so analyzed;

5. The scope section should contain only the following statement (including all specified lines even if the value is zero) if the appointed actuary is using the prescribed wording:

"I have examined the assumptions and methods used in determining reserves~~, actuarial liabilities~~ and related actuarial items listed below, as shown in the annual statement of the company, as prepared for filing with state regulatory officials, as of December 31, 20__. Tabulated below are those reserves and related actuarial items which have been subjected to asset adequacy analysis."

	Asset Adequacy Tested Amounts—Reserves and ~~Liabilities~~Related Actuarial Items					
Statement Item	**Formula Reserves (1)**	**Principles-Based Valuation Reserves (2)**	**Additional ~~Actuarial~~ Reserves (a) (3)**	**Analysis Method (b)**	**Other Amount (4)**	**Total Amount (1)+(2)+(3)+(4) (5)**

Notes:

(a) The additional ~~actuarial~~ reserves are the reserves established under Section 3.C.2.

6. The reliance section should contain only one of the following if the appointed actuary is using the prescribed wording:

If the appointed actuary has examined the asset and liability records, the reliance section should include only the following statement:

My examination included such review of the ~~actuarial~~ assumptions and ~~actuarial~~ methods and of the underlying basic asset and liability records and such tests of the ~~actuarial~~ calculations as I considered necessary. I also reconciled the underlying basic asset and liability records to [exhibits and schedules listed as applicable] of the company's current annual statement."

7. The opinion section should include only the following statement if the actuary is using prescribed wording:

"In my opinion the reserves and related actuarial ~~values~~ items concerning the statement items identified above:

a. Are computed in accordance with presently accepted Actuarial Standards of Practice consistently applied and are fairly stated, in accordance with sound actuarial principles;

b. Are based on ~~actuarial~~ assumptions and methods that produce reserves at least as great as those called for in any contract provision as to reserve basis and method, and are in accordance with all other contract provisions;

c. Meet the requirements of the Insurance Laws and regulations of the state of [state of domicile]; and are at least as great as the minimum aggregate amounts required by the state in which this statement is filed;

d, Are computed on the basis of assumptions and methods consistent with those used in computing the corresponding items in the annual statement of the preceding year-end (with any exceptions noted below); and

e. Include provision for all ~~actuarial~~ reserves and related ~~statement~~ actuarial items which ought to be established.

The reserves and related actuarial items, when considered in light of the assets held by the company with respect to such reserves and related actuarial items including, but not limited to, the investment earnings on the assets, and the considerations anticipated to be received and retained under the policies and contracts, make adequate provision, according to presently accepted actuarial standards of practice, for the anticipated cash flows required by the contractual obligations and related expenses of the company. (At the discretion of the commissioner, this language may be omitted for an opinion filed on behalf of a company doing business only in this state and in no other state.)

The ~~actuarial~~ methods, considerations and analyses used in forming my opinion conform to the appropriate actuarial standards of practice as promulgated by the Actuarial Standards Board, which standards form the basis of this statement of opinion.

10. The adoption for new issues or new claims or other new liabilities of an ~~actuarial~~ assumption that differs from a corresponding assumption used for prior new issues or new claims or other new liabilities is not a change in ~~actuarial~~ assumptions within the meaning of this section (i.e. Section 4.A).

4. State the reason for the proposed amendment? (You may do this through an attachment.)

Consistency and to eliminate redundancy.

* This form is not intended for minor corrections, such as formatting, grammar, cross–references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
5/15/09	JLE		
Notes: Replaced VM-30-081205_003 by retaining "reserves and related actuarial items" throughout.			

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Draft: 9/21/09
Adopted by the Life and Health Actuarial Task Force, 9/21/09.

ACTUARIAL GUIDELINE XXXIII

DETERMINING CARVM RESERVES FOR ANNUITY CONTRACTS WITH ELECTIVE BENEFITS

Background Information

1. Introduction

The Standard Valuation Law (SVL) defines the methods and assumptions which are to be used in determining minimum statutory formula reserves. This law establishes the standards for annuity contracts (which therefore includes any annuity riders or endorsements, and any or all components of which, such as premiums, benefits, contract charges, primary or secondary accumulation values or other components, either relating to annuity benefits provided by the contract or providing separate annuity benefits) and includes the criteria for the interest and mortality assumptions to be used in determining minimum formula contract reserves. The 1980 revisions to the SVL provide for the maximum statutory formula reserve interest rate to be determined through a dynamic formula in order to incorporate changes in economic conditions, liquidity needs and the risks inherent in certain types of contracts.

The SVL defined methodology for annuity contracts, the commissioners annuity reserve valuation method (CARVM), requires that reserves be the greatest of the respective excesses of the present values, at the date of valuation, of the future guaranteed benefits, including guaranteed nonforfeiture benefits, provided for by such contracts at the end of each respective contract year, over the present value, at the date of valuation, of any future valuation considerations derived from future gross considerations, required by the terms of such contracts, that become payable prior to the end of such respective contract year. Such reserves are established to adequately fund all guaranteed contract obligations, including those obligations which are optional to the contract owner and which may not have yet been elected.

Industry practices and methods of reserving under CARVM for annuity contracts with multiple benefit streams have not been found to be consistent. These range from a low reserve equal to the cash surrender value to a reserve representing the greatest actuarial present value of the future benefit streams under all potential annuity or other nonforfeiture benefit election options using a conservative rate of interest.

The major purpose of this Actuarial Guideline is to provide clarification and consistency in applying CARVM to annuities with multiple benefit streams. Some of the areas requiring clarification include: the valuation of annuitization benefits; the application of incidence rates in CARVM; the application of the integrated benefit stream approach in CARVM; how to determine valuation interest rates and mortality tables for multiple benefit streams; and certain practical considerations regarding multiple benefit streams.

2. Annuitization Benefits

Varying forms of contracts provide that the cash value available to the contract owner is less than the amount available to purchase an annuitization option under the terms of the contract.

For purposes of this Actuarial Guideline, “accumulation fund” is defined as the policy value which is used to purchase an annuity option under the terms of the contract.

Frequently there are significant discontinuities in the reserves, both upward and downward, at the time a settlement option is elected, between the reserve held immediately prior to the settlement as compared to the reserve required for the greatest actuarial present value of the annuitization option elected.

One of the most significant reasons for discontinuities in the reserve patterns at the time of election is the difference in the SPIA valuation rate available at the time of election as compared to the valuation rate used based on the date of issue of the original SPDA contract. Another significant reason is the difference between the guaranteed purchase rate

contained in the contract and used for reserve development as compared to the rate actually used to purchase the annuity option at the time of election.

3. Application of Incidence Rates in CARVM

Since CARVM was adopted, there has been an increase in the types of benefits offered under certain annuity contracts, including enhanced death benefits, nursing home benefits, and various partial withdrawal provisions. For some of these benefit types, the SVL is not explicit as to whether incidence tables prescribed under the SVL may be used to determine such benefits, versus requiring consideration of all contract owner options available under the contract, and choosing the set of incidence rates which produce the greatest present value.

4. Integrated Benefit Stream Approach

CARVM requires that reserves be based on the greatest present value of all potential future guaranteed benefits. For annuity contracts offering more than one type of potential benefit stream, the SVL is not explicit regarding whether or how blends of more than one type of benefit must be considered under CARVM.

Under the integrated benefit stream approach, any potential benefit stream must be considered, including blends reflecting the interaction of more than one type of benefit. Such potential benefit streams include all types of benefits for which the greatest present value concept is required. Additionally, adjustments must be made to all such potential benefit streams to reflect those benefit types for which prescribed incidence tables are required (e.g., death benefits).

For example, consider an annuity contract offering surrender, annuitization and death benefits. Potential benefit streams that would be considered include surrender streams, annuitization streams, and streams reflecting blends of surrender and annuitization benefits. All such streams would also be adjusted to reflect death benefits and to discount all benefits for survivorship (based on the mortality table prescribed in the SVL).

5. Valuation Interest Rates

For annuities offering more than one type of benefit, the SVL is not explicit as to how valuation interest rates should be determined. The SVL is also not explicit as to how valuation interest rates should be determined for certain types of benefits offered under annuity contracts, such as death and nursing home benefits.

Purpose

The purpose of this Actuarial Guideline is to codify the basic interpretation of CARVM and does not constitute a change of method or basis from any previously used method, by clarifying the assumptions and methodologies which will comply with the intent of the SVL. This Actuarial Guideline shall apply to all annuity contracts subject to CARVM, where any elective benefits (as defined below) are available to the contract owner under the terms of the contract. However, life or health insurance riders attached to an annuity contract, where all components of the rider (e.g., premiums, benefits, contract charges, accumulation values and other components) are separate and distinct from the components of the annuity contract, should be treated as a separate life or health insurance contract not subject to this Actuarial Guideline. While this Actuarial Guideline applies to all annuity contracts subject to CARVM, in the event an actuarial guideline or regulation dealing with reserves is developed for a specific annuity product design, the product specific actuarial guideline or regulation will take precedence over the Actuarial Guideline.

Definitions

1. Elective and Non-Elective Benefits in CARVM

For purposes of determining reserves under CARVM, each benefit available under the annuity contract must be placed into one of the two categories defined as follows:

Non-Elective Benefits: Benefits that are payable to contract owners or beneficiaries only after the occurrence of a contingent or scheduled event independent of a contract owner's election of an option specified in the contract, including (but not limited to) death benefits, accidental death benefits, disability benefits, nursing home benefits, and benefits

payable under either a deferred or immediate annuity contract (with or without life contingencies), where no benefit options are available under the terms of the contract.

Elective Benefits: Benefits that do not fall under the non-elective benefits category (i.e., benefit options that may be freely elected under the terms of the contract). Elective benefits include (but are not limited to) full surrenders, partial withdrawals, and full and partial annuitizations.

In some cases it may not be clear whether some benefits are elective or non-elective. For example, some annuity contracts offer benefits which vary depending upon the age of retirement. In such cases, the Valuation Actuary should use judgment in making this determination, by considering factors such as the degree to which contract owner actions would be influenced by the availability of the benefit.

2. Elective and Non-Elective Incidence Rates in CARVM

For non-elective benefits, incidence rates from tables prescribed by the SVL should be applied to determine the payment of non-elective benefits and to discount, for survivorship, all benefit payments included in an Integrated Benefit Stream, as defined below. If no incidence tables are prescribed by the SVL, then company or industry experience (with margins for conservatism) may be used, as appropriate. Annuity mortality tables prescribed by the SVL should be used to determine all mortality based benefits under the contract (including, but not limited to, annuitizations and death benefits) and to discount other types of benefit payments for survivorship.

For elective benefits, incidence rates should not be based on tables reflecting past company experience, industry experience or other expectations. Instead, every potential guaranteed elective benefit stream required to be reserved by CARVM must be considered in the determination of integrated benefit streams as defined below. This is accomplished by considering trial sets of guaranteed elective benefit incidence rates, either through numerical testing or analytical means, to determine which trial set produces the "greatest present value" as described in Text paragraph 1 below. Theoretically, this means that all possible elective benefit incidence rates between 0% and 100% should be considered. However, in practice, such a greatest present value will typically occur by assuming an incidence rate of either 0% or 100%.

3. Integrated Benefit Stream

An integrated benefit stream is one potential blend of guaranteed elective and non-elective benefits available under the contract, determined as the combination of A and B, where:

A equals one potential stream of one or more types of guaranteed elective benefits available under the terms of the contract, based upon a chosen set of elective benefit incidence rates; and

B equals the stream of all guaranteed non-elective benefits provided under the terms of the contract, recognizing the guaranteed elective benefit stream under consideration in A above, and the non-elective incidence rates defined in 2. above.

Both A and B above should be discounted for survivorship, based on the non-elective incidence rates defined in 2. above.

Text

1. Greatest Present Value

All guaranteed benefits potentially available under the terms of the contract must be considered in the valuation process and analysis and the ultimate policy reserve held must be sufficient to fund the greatest present value of all potential integrated benefit streams, reflecting all guaranteed elective and non-elective benefits available to the contract owner. Each integrated benefit stream available under the contract must be individually valued and the ultimate reserve established must be the greatest of the present values of these values, based on valuation interest rate(s) as defined in Section 3 below.

2. Examples of Integrated Benefit Streams That Must Be Considered

A. Cash Value Streams

One mandatory set of integrated benefit streams for a deferred annuity with cash settlement values which must always be considered is any possible blend of future guaranteed partial withdrawals and full surrenders available under the contract, as specified in the SVL, accumulated at the guaranteed credited interest rate(s) and discounted at the valuation rate(s) of interest defined in section 3 below, with appropriate recognition of all guaranteed non-elective benefits available under the contract.

B. Annuitization Streams

A second mandatory set of integrated benefit streams that must be considered is any possible blend of future guaranteed full or partial annuitization elections, as specified in the SVL, available to the contract owner at each election date required by CARVM, with appropriate recognition of all guaranteed non-elective benefits available under the terms of the contract. In determining the integrated benefit streams to value the annuitization option, the guaranteed purchase rates contained in the contract, as well as any other contract provisions, excluding any current purchase rates which may be applicable, are applied to the accumulation fund.

C. Other Elective Benefit Streams

In addition to the cash value and annuitization streams described above, all other possible guaranteed elective benefits available under the contract, including blends of more than one type of guaranteed elective benefit, must be considered in a manner consistent with the mandatory cash value and annuitization streams, with appropriate recognition of all guaranteed non-elective benefits available under the contract.

3. Determination of Valuation Interest Rates

Section 4b of the SVL determines valuation rates for an annuity contract based on the following Parameters:

A. The basis of valuation (issue year or change in fund);
B. Whether or not the annuity provides for cash settlement options;
C. Whether interest is guaranteed on premiums received more than 12 months following issue (or the valuation date for change in fund basis);
D. The guarantee duration; and
E. The Plan Type.

Parameters A, B and C above should be determined at a contract level. Additional requirements regarding the change in fund basis of valuation are set forth in Section 5 below. Parameters D and E should be determined at a benefit level, as set forth in Section 4 below.

Under a contract level determination, parameters are set based on the characteristics of the contract as a whole. Under a benefit level determination, parameters are set based on the characteristics of each benefit, resulting in potentially different valuation rates for each benefit type comprising the integrated benefit stream.

4. Determination of Guarantee Duration and Plan Type

Guarantee duration and Plan Type are based upon the specific characteristics of each individual benefit type that comprise the integrated benefit stream, as follows:

A. For portions of the integrated benefit stream attributable to full surrender and partial withdrawal benefits, the Plan Type should be based upon the withdrawal characteristics of the benefit, as stated in the contract. This may result in a Plan Type A, B or C under the 1980 amendments of the SVL. The guarantee duration is the number of years for which interest rates are guaranteed in excess of the calendar year statutory valuation interest rate for life insurance policies with guarantee duration in excess of twenty (20) years.

B. For portions of the integrated benefit stream attributable to full and partial annuitization benefits, the determination of the valuation interest rate involves the use of the appropriate Plan Type and weighting factor as determined by the SVL, with the guarantee duration as the number of years from the original date of issue or date of purchase, to the

date the annuitization is assumed to commence. If the underlying assumption is that the contract owner may withdraw funds only as an immediate life annuity or as installments over 5 years or more, this will generally result in a Plan Type A, under the 1980 amendments of the SVL, with the valuation interest rate changing as different assumed annuitization dates determine guarantee durations which will fall into different guarantee duration bands under the SVL. An assumed annuitization option which has a non-life contingent payout period of less than five (5) years shall be considered a Plan Type C, with the valuation interest rate changing as different assumed annuitization dates determine guarantee durations which will fall into different guarantee duration bands under the SVL.

C. For portions of the integrated benefit stream attributable to non-elective benefits, since the underlying assumption is that no withdrawal is permitted, Plan Type A should generally be used, with a guarantee duration determined as the number of years from issue or purchase to the date non-elective benefits may first be paid. In most cases, the guarantee duration should be less than five years, since non-elective benefit coverage usually begins immediately after issue, with benefits payable commencing in the first contract year.

For benefit types incorporating multiple payments, paragraphs 4(A), 4(B), and 4(C) above should be applied to each separate payment according to the withdrawal, annuitization, or non-elective benefit characteristics of the contract and payment provisions at the time each payment is to be made. If a portion of the integrated benefit stream is part of an immediate life annuity or a series of installments over five (5) years or more, but can be changed directly or indirectly by exercise of contract owner withdrawal options, then it would be inappropriate to apply paragraph 4(B) to that portion of the integrated benefit stream, since the contractholder may withdraw funds other than as a life annuity or in installments of five (5) years or more.

For example, a Guaranteed Lifetime Income Benefit (GLIB) is a guarantee to the owner of a fixed deferred annuity contract, whether traditional or indexed to an external referent such as an equity index, that the owner can have a defined income for life in an amount determined by formula, while the owner retains traditional rights (such as withdrawal) to the other values provided by the underlying deferred annuity and while such values continue to exist. Income benefits are typically deducted from one or more of the annuity's defined values to the extent such values remain positive. Once the GLIB is elected, the contract owner may have rights to stop and restart the income benefit and may also request full or partial surrender of any remaining annuity value, though doing so may negatively impact or eliminate subsequent guaranteed income benefits. Thus, applying 4(A) and 4(B) above, the GLIB benefit stream is seen to be composed of two portions to determine the Plan Type and guarantee duration, as follows:

The first portion consists of the series of defined payments to the extent that the payments, or any fraction thereof, are withdrawals that reduce or deplete the annuity's defined values. Applying paragraph 4(A) to this portion would result in Plan Type A, Plan Type B, or Plan Type C, by following the definitions of such contained within the Standard Valuation Law and reflecting the specific contract provisions, especially with regard to withdrawal. Paragraph 4(A) would also apply to any residual withdrawals that can be made following election of the GLIB benefit.

The second portion is a life annuity without option to take or receive additional amounts under the contract, and consists of the payments not included in the above portion. Applying paragraph 4(B), Plan Type A would generally apply to this segment with the guarantee duration determined using the period from contract issue to commencement of payments in this second portion.

5. Change in Fund Basis

As indicated by section 4b.C.(1)(c)(vi) of the SVL, a company may elect to value annuity contracts with cash settlement options on either an issue year basis or on a change in fund basis. Annuity contracts with no cash settlement options must be valued on an issue year basis. The issue year basis or change in fund basis should be determined for the contract as a whole, and thus must be consistently applied to all portions of all integrated benefit streams available under the annuity contract. The election of issue year or change in fund basis must be made at the issuance of the contract and must not change during the term of the contract without the prior written approval of the commissioner.

6. Purchase Rates

Contracts may provide, as contractual guarantees, the use of preferential purchase rates to those listed in the contract. As an example, a contract may provide that the company will offer, at the time of annuitization, the rates offered to new

purchasers of immediate annuities if such rates will provide a higher annuity benefit than would result from the contractually guaranteed rates provided in the contract. This creates a contract guarantee which must be valued under CARVM. Ignoring this benefit in determining reserves will produce reserves less than the statutory formula reserves required under CARVM. Valuation of this benefit, however, is complicated by the fact that the company does not currently know what the exact rate will be at the time of the settlement election. In order to determine conservative statutory formula reserves, if use of future unknown rates are guaranteed, the company shall establish reserves not less than the contract's accumulation fund value, on the valuation date, reduced by an "expense allowance" not to exceed 7% of such fund. This section does not require the calculation of a reserve for the annuitization of business based upon current purchase rates pursuant to the "annuitization streams" described in Paragraph 2.B. above.

Likewise for contracts which provide for additional amounts during the payout period over those guaranteed at the commencement of the annuity payments, the reserve during the deferred period shall not be less than the contract's accumulation fund reduced by an expense allowance not to exceed 7% of such fund.

7. Practical Considerations

The major purpose of this Actuarial Guideline is to provide clarification and consistency in applying CARVM to annuities with multiple benefit streams. However, in practice there may be other acceptable methods of applying CARVM which are substantially consistent with the methods described in this Actuarial Guideline. Such methods may also be used, with prior regulatory approval.

Additionally, in applying this Actuarial Guideline there may theoretically be an infinite number of contract owner options that are possible under the contract. However, it may not be practical, possible or even appropriate to test every conceivable combination of potential integrated benefit streams theoretically available under the contract. This Actuarial Guideline requires that the actuary consider, not necessarily test, all potential integrated benefit streams to determine to what extent each contract owner option has a material impact on the reserve**.** In practice, the actuary may be able to eliminate some potential integrated benefit streams by analytical methods. The actuary may also be able to demonstrate the reserve adequacy of certain approximations. For example, in certain situations it may be shown that a CARVM reserve ignoring non-elective benefits, plus an "add-on" reserve for non-elective benefits, is a reasonable approximation for the theoretically correct CARVM reserve.

Effective Date

This guideline shall be effective on December 31, 1998 affecting all contracts issued on or after January 1, 1981. A company may request a grade-in period for contracts issued prior to December 31, 1998 from the domiciliary commissioner upon satisfactory demonstration that the method and level of current reserves held for such contracts are adequate in the aggregate. This phase-in will require establishment of no less than 33 1/3% of the additional reserves resulting from the application of this guideline on December 31, 1998, no less than 66 2/3% on December 31, 1999, and 100% by December 31, 2000.

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PROJECT HISTORY

ACTUARIAL GUIDELINE XXXIII
DETERMINING CARVM RESERVES
FOR ANNUITY CONTRACTS WITH ELECTIVE BENEFITS

1. Description of the Project, Issues Addressed, etc.

This project provides guidance on the interpretation of the Standard Valuation Law in the calculation of reserves on a guaranteed lifetime income benefits offered on fixed deferred annuities. This benefit is a guarantee to the contract owner of a defined income for life with an amount defined by formula without the loss of control over the principal amount.

Section 4b of the Standard Valuation Law defines the interest rate to be used in determining the minimum standard for reserves. There are different interest rates depending on withdrawal provisions in the contract.

Actuarial Guideline XXXIII, which was adopted in 1994 and modified in 1998, is an interpretation of Section 4b for benefit options that may be freely elected under the terms of the contract. The guaranteed lifetime income benefit is a benefit option that may be freely elected by the contract owner, but it is not clear how to apply the interpretation of Actuarial Guideline XXXIII to this option.

2. Name of Group Responsible for Drafting the Model and States Participating

The 2009 members of the Life and Health Actuarial Task Force are: Kansas (Chair), South Carolina (Vice-Chair), Alabama, Alaska, Arkansas, California, Connecticut, Florida, Hawaii, Minnesota, Missouri, Nebraska, New York, Ohio, Oklahoma, Texas, and Utah.

3. A General Description of the Drafting Process (e.g., drafted by a subgroup, interested parties, the full group, etc). Include any parties outside the members that participated

The Task Force asked to American Academy of Actuaries to review the guaranteed lifetime income benefit and recommend modifications to Actuarial Guideline XXXIII.

4. A General Description of the Due Process (e.g., exposure periods, public hearings, or any other means by which widespread input from industry, consumers and legislators was solicited)

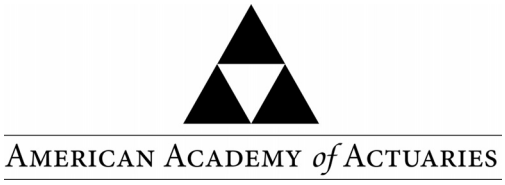
The efforts of the Task Force were closely coordinated with all industry interested parties. In addition to open sessions at the 2009 Summer and Fall National Meetings of the NAIC, two conference calls (May 5, 2009 and August 11, 2009) were held to discuss this matter. A draft of the guideline was released for comment after the August 11, 2009 conference call. Notice of the draft release for comment and the conference calls were posted on the NAIC's home page on the Internet and e-mailed to approximately 300 interested parties.

5. A Discussion of the Significant Issues (items of some controversy raised during the due process and the group's response)

The only issue was how to select the interest rate for payment streams that run past the point that the accumulation value becomes zero. One comment suggested that if a payment stream ran past that point the entire stream be assigned the interest rate reflecting no withdrawal benefits. The American Academy of Actuaries proposed splitting that type of benefit stream and assigning the interest rate reflecting withdrawal benefits are available prior to the depletion of the accumulation value and the interest rate reflecting no withdrawal benefits after that point. The Task Force agreed with the approach recommended by the American Academy of Actuaries.

6. Any Other Important Information (e.g., amending an accreditation standard).

Historically, actuarial guidelines have not been incorporated into the accreditation standards. This guideline provides guidance on the Standard Valuation Law which is an accreditations standard.



Update Regarding a General Revision
Of Life and Annuity Standard Nonforfeiture Laws
From the American Academy of Actuaries' Nonforfeiture Improvement Work Group

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

Washington, DC – September 2009

The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

Nonforfeiture Improvement Work Group

John MacBain, F.S.A., M.A.A.A., Chair

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Mary Bahna-Nolan, F.S.A., M.A.A.A.
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Alice Fontaine, F.S.A., M.A.A.A.
Barbara Gold, F.S.A., M.A.A.A.
David Hippen, F.S.A., M.A.A.A.
Graham Ireland, F.S.A., M.A.A.A.
Dan Keating, F.S.A., M.A.A.A.
Barbara Lautzenheiser, F.S.A.,M.A.A.A
Brian Lessing, F.S.A., M.A.A.A.
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Cande Olsen, F.S.A., M.A.A.A.
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Wayne Stuenkel, F.S.A., M.A.A.A.
Sheldon Summers, F.S.A., M.A.A.A.
Andy Ware, F.S.A., M.A.A.A.
Peter Weber, A.S.A., M.A.A.A.

Since the NAIC Summer 2009 National Meeting, the American Academy of Actuaries' Nonforfeiture Improvement Work Group (NFIWG) has continued to hold regular conference calls and is completing the first draft of its proposed report to LHATF covering the issues affecting the need for life and annuity nonforfeiture reform and a proposed actuarial basis and regulatory framework for reform. In developing its nonforfeiture reform approach, the NFIWG is attempting to respond to numerous deficiencies in the current formula-based nonforfeiture mandates that have become unresponsive to products emerging in the current life insurance and annuity marketplace.

This report constitutes the requested quarterly status report on the progress of the NFIWG's activities.

The NFIWG continues to refine the approach to nonforfeiture reform it feels will accomplish the elements contained in its previously-articulated framework for reform. Those elements as of the date of this report are:

- Minimum nonforfeiture values should be based on the prefunding of benefits resulting from premium payments and credited values.
- Minimum nonforfeiture regulatory requirements should provide guidance with respect to minimum nonforfeiture methodologies and the establishment of assumptions, not explicitly defined values or parameters.
- In determining minimum nonforfeiture values, there should be no recognition of a change in insurability status since the date of policy purchase.
- Any minimum nonforfeiture methodology requirements should be the same for life and annuity products.
- Non-guaranteed elements (including dividends) should not be regulated by minimum nonforfeiture regulatory requirements until they are credited.

The NFIWG appreciates the opportunity to keep LHATF apprised of its activities with regard to the charge assigned.

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Draft: 10/1/09

Life and Health Actuarial Task Force
Conference Call
September 3, 2009

The Life and Health Actuarial Task Force met via conference call Sept. 3, 2009. The following Task Force members participated: Sandy Praeger, Chair, represented by Larry Bruning (KS); Scott Richardson, Vice Chair, represented by Andrew Dvorine (SC); Linda S. Hall represented by Katie Campbell (AK); Jim L. Ridling represented by Steven Ostlund (AL); Jay Bradford represented by Joe Musgrove (AR); Thomas R. Sullivan represented by Jim Jakielo (CT); Kevin McCarty represented by Mary Beth Senkewicz (FL); Glenn Wilson represented by Blaine Shepherd (MN); John Huff represented by David Hippen (MO); James J. Wrynn represented by William Carmello (NY); Mary Jo Hudson represented by Carson Hampton (OH); Mike Geeslin represented by Mike Boerner (TX); and Kent Michie represented by Tomasz Serbinowski (UT).

1. Standard Valuation Law

Mr. Bruning said the purpose of the call was to review comment letters to the Life Insurance and Annuities (A) Committee from the American Council of Life Insurers (ACLI) (Attachment Twenty-A) and the American Academy of Actuaries (AAA) (Attachment Twenty-B).

John Bruins (ACLI) said the proposal to delete paragraph 11D(3)(b) was made in the context of Section 12A, which also contains information on assumptions. Mr. Ostlund said he has concern over the language that currently exists. The regulators can prescribe any assumption in the valuation manual, but paragraph 11D(3)(b) limits that prescription to those assumptions over which the company does not have significant control. He said it would be better to delete it, because there is the authority in Section 12A to prescribe any assumption.

Mr. Jakielo said this section intentionally puts into the law a requirement that the valuation manual will prescribe assumptions over which the company does not have control. He said the question is not whether regulators have the ability to do that elsewhere; it is specifically mandated in paragraph 11D(3)(b). Therefore, he said, if that paragraph were deleted, the mandate would be taken away.

Mr. Boerner said his understanding of Mr. Ostlund's comments is that if the mandate were taken away, the valuation manual could still prescribe assumptions, if necessary. Mr. Ostlund asked if the Standard Valuation Law (SVL) gives the regulators authority to prescribe assumptions — as he would like to have the authority to prescribe assumptions, even those over which the company does not have significant control.

Mr. Hippen said he had a concern that if there were assumptions important for a principle-based valuation, but not yet prescribed, the company and the regulators would be limited in their ability to calculate reserves.

Mr. Carmello said that, if Mr. Ostlund were correct, the Task Force should consider adding the phrase "and may specify other assumptions" at the end of paragraph 11D(3)(b).

Mr. Boerner said that paragraph 11D(5) contains a list of other items that may be included in the valuation manual, one of which is assumptions. Therefore, he said, this paragraph gives authority to specify assumptions in the valuation manual.

Mr. Musgrove said paragraph 11D(3)(b) provides a minimum standard for principle-based reserves, even though the valuation manual might contain additional requirements.

Mr. Bruins said the concern is what happens if an assumption that is required to be prescribed under paragraph 11D(3)(b) is not prescribed in the valuation manual. Armand de Palo (Guardian Life) said that all assumptions for the net premium reserve have to be prescribed.

Mr. Bruning suggested that 11D(3)(b) be deleted and 11D(5) be changed from "Other requirements, including, but not limited to …" to "Requirements, including, but not limited to…" Mr. Carmello said 11D(3)(b) is a principle that has been in the project since the beginning and should stay. Ms. Campbell said there is sufficient authority within the valuation manual to prescribe any assumption. She added that she opposes the deletion of this paragraph. Mr. Bruning said he will recommend to the Life Insurance and Annuities (A) Committee that the paragraph be retained.

The next item was a proposal to modify Section 11G to delete the authority of the commissioner to change an assumption and to replace it with the authority to increase reserves if the reserves do not meet the minimum standards specified in the valuation manual. Mr. Bruins said the focus should be on the adequacy of the reserves, not on each individual assumption. He said he would not oppose retaining the phrase "and the company shall adjust the reserves as required by the commissioner."

Kerry Krantz (FL) asked how the commissioner could determine the adequacy of reserves without reviewing the assumptions. Mr. Bruins said methods and assumptions are interrelated, but that different assumptions could produce similar reserves. He added that a focus on reserve adequacy, rather than individual assumptions, would provide more uniformity among the states.

Mr. Musgrove said the proposed modification to Section 11G allows total aggregation of reserves. Unless the total reserves for the company are inadequate, the commissioner cannot require an increase in reserves for a particular block of business. He added that there is adequate protection in the regulatory process for companies against capricious or unjustified acts of the commissioner. If the commissioner of a state has an unjustified reason for changing an assumption, there is a process for resolving any differences.

Mr. Bruning said he would recommend to the Life Insurance and Annuities (A) Committee that Section 11G be retained without modification.

Mr. Bruins said the next item was to add a paragraph, 12A(3)(b)(iii), which would provide direction if an assumption could not be established based on either company experience or industry experience. Donna Claire (Claire Thinking) said the AAA had a similar proposal regarding this section.

Mr. Hippen said he was more comfortable with the AAA version because it relied on actuarial judgement, whereas the ACLI version could give the appearance that the company is determining an assumption.

Mr. Carmello said he has interpreted "principle-based" as "experience-based." Therefore, he said, if an assumption is not prescribed, it should be determined using statistically credible experience; i.e., either company experience or industry experience. If there is no experience, the assumption should be prescribed or determined with the commissioner's approval.

Ms. Claire asked how an assumption would be determined if there was a new product design and there was no prescribed assumption. The AAA proposal states that the most relevant experience should be used.

Ms. Campbell said she did not think the section needs to be modified. If there were no statistically credible experience, Section 12A(3)(a) would apply. She added that the valuation manual could require approval from the commissioner or there could be a process defined to determine the assumption.

David Neve (Aviva) said "statistically credible" is not well defined and means different things to different people. In the AAA proposal, the idea was not changed and the wording "consistent with credibility theory" was used. Mr. Bruning said the new wording is also not well defined.

Mr. Bruning said he would recommend to the Life Insurance and Annuities (A) Committee that the wording in Section 12A should not be changed.

Mr. Bruins said the last item was a new Section 12B that states a principle-based valuation could include a net premium reserve component. Ms. Campbell said that the conditions in Section 12 should apply to all principle-based reserves; i.e., if the net premium reserve cannot cover all the risks, then it should not be the minimum reserve. She added that, if the new Section 12B were not in the SVL, the test to determine if stochastic reserves may be required and the test to determine if deterministic reserves may be required to be performed.

Mr. Bruins replied that the term "principle-based valuation" means a reserve valuation that uses one or more methods or one or more assumptions determined by the insurer and is required to comply with Section 12 of the SVL, as specified in the valuation manual. The modification is necessary to allow for a reserve that does not use methods and assumptions determined by the company.

Mr. Bruning said he would recommend the new section be Section 12C and the wording be, "A principle-based valuation may include a prescribed formulaic reserve component."

Having no further business, the Life and Health Actuarial Task Force adjourned.
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September 1, 2009

The Honorable Thomas Sullivan
Chair, NAIC Life Insurance and Annuities (A) Committee
Commissioner, Connecticut Insurance Department
153 Market Street, 7th Floor
Hartford, CT 06103

Re: Amendments to the Standard Valuation Law

Commissioner Sullivan:

On the July 28, 2009 conference call of the NAIC Life and Annuities 'A' Committee, the ACLI[1] committed to providing recommended language to address the concerns that we had raised with the exposed version of the amendments to the Standard Valuation Law. The following highlights our specific concerns and recommended actions. Comments from our prior letter are given in *italics*, followed by our recommended changes. Attached is a mark-up of the exposure showing the specific changes recommended.

Importance of National Uniformity

ACLI believes that national uniformity of reserve standards is essential to the success of this new reserve system. As drafted, these amendments to the SVL promote uniformity by authorizing the technical valuation requirements to be documented in a valuation manual. Unfortunately, uniformity is still only encouraged, not required. The SVL continues to allow commissioners, not legislatures, to override the uniform requirements. The SVL provides a commissioner the ability to override the Valuation Manual by regulation if, in their judgment, the Valuation Manual is incomplete or insufficient. (Section 11.E.) In addition, the SVL allows a commissioner to require any company to revise any assumption that they deem not sufficient (Section 11.G.). We strongly encourage a Standard Valuation Law framework which requires a greater degree of uniformity with methods or other requirements that are incorporated into the Valuation Manual, since these will have been vetted in the NAIC process, discussed and voted on by peers, and adopted only after a supermajority vote (75%) of the NAIC.

Recommended changes:

Section 11.E. No changes recommended.

[1] The American Council of Life Insurers represents 340 member companies operating in the United States, of which 332 are legal reserve life insurance companies, and 8 are fraternal benefit societies. These 340 member companies account for 93% of total life insurance company assets, 94% of the life insurance premiums, and 94% of annuity considerations in the United States.

Section 11.G.

The commissioner may require a company to increase the reserves for policies issued after the effective date of the Valuation Manual if, in the opinion of the commissioner, they do not meet the minimum valuation standards defined in the Valuation Manual. The commissioner may take other disciplinary action as permitted pursuant to [insert applicable law].

Rationale – Rather than have the possibility of differing assumptions required by different states resulting in potentially substantial additional work effort, the focus should be on the adequacy of the resulting reserves.

Proposed Standard Valuation Law Revisions

As we have reviewed the language of the SVL for this upcoming discussion by the Life and Annuities (A) Committee, the Principles Based (Ex) Working Group, and the Solvency Modernization Initiative Task Force, we have become concerned that some of the later changes to the wording may have created a situation whereby the SVL does not appropriately take into account the Net Premium Reserve component. Specifically, there is a concern that reserves resulting from the Net Premium Calculation may not meet the Principle-Based Reserve criteria of Section 12 of the SVL. We believe any ambiguity on this issue should be corrected within the SVL prior to adoption since the ACLI will not support the adoption unless it adequately accommodates the Net Premium Reserve.

Proposed changes:

Insert a new Section 12.B.

Notwithstanding the provisions of Section 12.A., a 'principle-based valuation' shall not preclude a prescribed formulaic reserve component.

(Revise the labeling of 12.B. to become 12.C.}

We also recommend an addition to Section 12. A. 3. b. As currently drafted, item i. allows the regulators to prescribe assumptions, and ii. allows the company to determine the assumption if there are specific statistics that relate directly to the assumption. A significant part of actuarial work is to make judgments when no specific statistics are available. As drafted, the industry will not be able to develop valuation assumptions whenever there is an absence of statistically credible data. An item iii. should be added to say that the company can develop assumptions using actuarially sound judgment and the most relevant data available. As with all other assumptions, these will need to be documented and justified.

Recommended changes:

Delete Section 11.D.3.b.

Delete this paragraph.

Rationale: Section 11 defines the requirements for the Valuation Manual. Since assumptions and methods can either be defined, or left to the company to develop and justify, this section is not needed. As written, it creates a void when a factor meeting the specified conditions is not prescribed in the manual. Since Section 12 provides the authority to prescribe assumptions, this section is not necessary.

Insert a new Section 12.A.3.b. (iii)

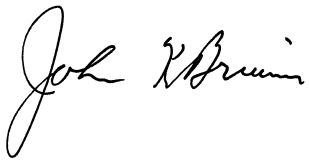
For assumptions that are not prescribed and cannot be established on the basis of company or other relevant, statistically credible experience, be established by the company using generally accepted actuarial methods and techniques or other methods as defined in the Valuation Manual.

Attached is a mark-up of the SVL changes as adopted by LHATF. We will be pleased to discuss these proposed changes on your Sept. 9 conference call and ask that you accept these proposals in the final draft.

Project Completion

We applaud the efforts of the NAIC to keep this project moving as quickly as possible. Because of the significant impact this project could have to the insurance industry, it continues to be important to factor in industry input and testing as key components of the package continue to evolve. If the resulting reserves can meet the objectives of being appropriately but not excessively conservative, a package of laws and regulations could be completed for presentation to states for action sometime in 2010.

Sincerely,



Cc Jolie Matthews

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September 2, 2009

Thomas Sullivan, Chair
Life Insurance and Annuities (A) Committee
National Association of Insurance Commissioners

Dear Commissioner Sullivan:

In anticipation of the A Committee's consideration of revisions to the Standard Valuation Law on its September 9 conference call, the Life Financial Soundness/Risk Management Committee of the American Academy of Actuaries[1] proposes the attached changes to the revised Standard Valuation Law.

These proposed changes:

1. Remove the reference to "statistically credible." We believe this term is problematic, since it could lead to different and unintended interpretations by states and companies, resulting in an inconsistent application of PBR requirements.

2. Add guidance when determining assumptions for risk factors that have limited or no applicable data upon which to draw. This situation is not addressed in the current language.

We are only suggesting clarifying changes. These comments in no way diminish our support of the proposed revision to the Standard Valuation Law.

If you have any questions, please feel free to contact Dianna Pell, Life Policy Analyst, at (202) 785-6924 or email pell@actuary.org. Thank you for your consideration of these changes.

Sincerely,

Donna Claire, Chair
Life Financial Soundness/Risk Management Committee
American Academy of Actuaries

[1] The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

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Section 12. Requirements of a Principle-Based Valuation

A. A company must establish reserves using a principle-based valuation that meets the following conditions for policies or contracts as specified in the valuation manual:

(1) Quantify the benefits and guarantees, and the funding, associated with the contracts and their risks at a level of conservatism that reflects conditions that include unfavorable events that have a reasonable probability of occurring during the lifetime of the contracts. For polices or contracts with significant tail risk, reflects conditions appropriately adverse to quantify the tail risk.

(2) Incorporate assumptions, risk analysis methods and financial models and management techniques that are consistent with, but not necessarily identical to, those utilized within the company's overall risk assessment process, while recognizing potential differences in financial reporting structures and any prescribed assumptions or methods.

(3) Incorporate assumptions that are derived in one of the following manners:

(a) The assumption is prescribed in the valuation manual.

(b) For assumptions that are not prescribed, the assumptions shall be established:

~~(i) Be established utilizing the company's available experience, to the extent it is relevant and statistically credible; or~~

(i) Utilizing relevant company data, in combination with relevant industry and other experience data, in a manner that is consistent with credibility theory and accepted actuarial practice; or

~~(ii) To the extent that company data is not available, relevant, or statistically credible, be established utilizing other relevant, statistically credible experience.~~

(ii) Using sound actuarial judgment and the most relevant data available when there is limited or no applicable data upon which to draw.

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Draft: 10/1/09

Life and Health Actuarial Task Force
Conference Call
August 14, 2009

The Life and Health Actuarial Task Force met via conference call Aug. 14, 2009. The following Task Force members participated: Sandy Praeger, Chair, represented by Larry Bruning (KS); Scott Richardson, Vice Chair, represented by Andrew Dvorine (SC); Jay Bradford represented by Joe Musgrove (AR); Steve Poizner represented by Sheldon Summers (CA); Thomas R. Sullivan represented by Jim Jakielo (CT); Glenn Wilson represented by Blaine Shepherd (MN); John Huff represented by David Hippen (MO); Kermitt Brooks represented by William Carmello (NY); Mary Jo Hudson represented by Pete Weber (OH); Mike Geeslin represented by Mike Boerner (TX).

1. Risks That Should Be in Reserves, Capital and Other Liabilities

Dave Neve (Aviva) presented the report from the American Academy of Actuaries' Consistency Work Group (Attachment Twenty-One-A). The amendments to the Standard Valuation Law (#820) give direction on which risks should be included in reserves. There should be consistent application of the new standard across all lines of business and among companies. The risks reflected in reserves should be a subset of a larger group of risks that should be reflected in the capital requirements. The position of the Consistency Work Group is that the risks reflected in the determination of reserves should be limited to those risks that are material and are directly related to the policies or contracts that are being valued. The primary argument for this position is the wording in Section 12.A.1 shown below. The key words in that section are "associated with the contracts" which exclude risks of a general business nature that are not directly related to the risks of the contracts. There are other risks that are being reflected in other liabilities. If those risks were reflected in reserves, there would be a double-counting.

Section 12.A.1: "Quantify the benefits and guarantees, and the funding, associated with the contracts and their risks at a level of conservatism that reflects conditions that include unfavorable events that have a reasonable probability of occurring during the lifetime of the contracts. For polices or contracts with significant tail risk, reflects conditions appropriately adverse to quantify the tail risk."

Mr. Neve said the idea that the difference between reserves and capital in only the Conditional Tail Expectation (CTE) level is not the proper way to look at the distinction. The CTE calculation reflects only the interest rate risk or the equity return risk and the difference between CTE(70) and CTE(90) identifies only the severity of those two risks. The CTE calculation does not reflect the risks that are not stochastically modeled.

Mr. Summers said the PBR Reinsurance Subgroup will discuss the issue of reflecting counterparty credit risk in reserves. The current language in the VM-20 section of the valuation manual only requires a margin for counterparty credit risk when the reinsurance counterparty is known to be impaired. Mr. Neve said Appendix B of the report states that the probability of impairment or downgrade of a reinsurer should not be reflected in the reserve calculation. Tom Kilcoyne (PA) said there should be correlation between reinsurance risks taken into account in appraisals to the reinsurance risks taken into account in reserves. The Actuarial Standard of Practice No. 7 states that the actuary should consider whether receivables will be collectable when due, and any terms, conditions or other aspects that may be reasonably expected to have a material impact on the cash flow analysis. Mr. Summers said his impression is that counterparty risk is already taken into account in asset adequacy testing; therefore, it should be taken into account in principle-based reserves.

Mr. Carmello asked if the reflection of counterparty credit risk should be similar to the Asset Valuation Reserve or should it be an adjustment in the margin. Mr. Summers suggested it be an adjustment and that any collateral set up by the reinsurer should be taken into account.

Mr. Bruning said that if the contracts are reinsured, the risk of the reinsurer is a risk associated with the contracts. The question is how to reflect that reinsurance risk in the modeling. If there were two blocks of business reinsured with two different reinsurers — one of which had an AAA rating and the other had a B rating — there should be additional margin on the B-rated block. If there were 1,000 economic scenarios run, the question is how to predict reinsurance default risk on some of the disastrous scenarios. The lapse risk is reflected in those scenarios, but he asked how the risk of default of the reinsurer is measured in the worst scenarios.

Perry Kupferman (CA) said that reporting on a basis net of reinsurance allows the actuary to essentially ignore reinsurance cash flows. Mr. Carmello said New York requires the full risk on the reinsurer be considered in the cash flow analysis; i.e., there should not be a blind acceptance of the reinsurance credit.

Mr. Bruning said it would make sense to put additional clarifying language in the valuation manual, but no additional language would be needed in the Standard Valuation Law.

Mr. Carmello suggested that the Task Force review Appendix B line by line, and he would provide input on areas of disagreement with the appendix.

Having no further business, the Life and Health Actuarial Task Force adjourned.

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Consistency Work Group
Discussion Document on the Risks in Reserves vs. Capital or Other Liabilities
August 2009

The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

Robert DiRico, A.S.A., M.A.A.A., Chair of the Consistency Work Group
Phillip Barlow, F.S.A., M.A.A.A.
Tom Campbell, F.S.A., M.A.A.A.
Donna Claire, F.S.A., M.A.A.A.
Jim Lamson, F.S.A., M.A.A.A.
Dave Neve, F.S.A., M.A.A.A.
Bill Wilton, F.S.A., M.A.A.A.
Donald Krouse, F.S.A., M.A.A.A.

The Work Group would also like to recognize Bill Weller for his valuable contributions.

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Risks to be Included in the Principle-based Reserve Calculation as Defined in the SVL

The purpose of this document is to facilitate a discussion with LHATF and other appropriate NAIC work groups regarding the following question: Which risks should be reflected in the principle-based calculation for reserves, as defined by the version of the Standard Valuation Law ("proposed SVL") adopted by LHATF at the NAIC Summer 2009 National Meeting?

It is our intent that such discussion will assist the application of Section 12 of the proposed SVL when developing product-specific reserve requirements in the Valuation Manual. This is a significant issue and the Consistency Work Group (CWG) believes that clear resolution is important.

There are various opinions regarding which risks are appropriate to reflect in calculating principle-based reserves and capital. The CWG believes that only risks directly related to contracts and capable of materially affecting the reserve should be included. Another opinion that has been expressed is that all risks should be reflected in both reserve and capital requirements since the primary difference between reserve and capital requirements results from using different CTE levels (e.g., 70 versus 90), not from excluding certain risks in the reserve calculation. These opinions, as well as others, are discussed in Section 4 below.

This document is comprised of the following sections:

1. Background – work that has been done to-date and importance of the issue
2. Position of the Consistency Work Group
3. Proposed SVL language
4. Arguments in Support of the Consistency Work Group Position
5. Appendix A – October 2007 Consistency Work Group work product
6. Appendix B – Actuarial Guideline 43 wording on risks in the reserve calculation

1. Background

   The CWG published a document in the fall of 2007 that contained its views on the 'Purpose of Reserves and Risk-based Capital under a Principles-Based Approach for Life and Annuity Products.' This document is in Appendix A.

   Appendix B contains the Actuarial Guideline 43 wording on the risks to be reflected in that reserve calculation.

   Language in the proposed SVL has been developed to provide the general requirements for a valuation methodology that incorporates flexibility for future changes to be effected through a separate Valuation Manual. This anticipates establishing PBR calculation requirements for life insurance and prepares the way for similar requirements for products other than life insurance.

   The issue raised is an important topic to discuss and resolve for the following reasons:

   - It will promote consistent application of standards across line of business calculations and between companies. Without proper guidance, there may be a large range of practice among valuation actuaries.
   - It will promote consistent application of a given standard among states.
   - It will provide clearer guidance to the actuary performing the valuation.

2. The Position of the Consistency Work Group

   Risks reflected in the determination of reserves for life insurance policies and annuity contracts are limited to those that arise from actual or potential events or activities that are both:

   (a) Directly related to those policies or contracts, or their supporting assets; and

   (b) Determined capable of materially affecting the reserve.

3. Proposed SVL language

   The proposed SVL has language in Section 12 that is central to this discussion, specifically:

Section 12 Requirements of a Principle-Based Valuation

A. A company must establish reserves using a principle-based valuation that meets the following conditions for policies or contracts as specified in the valuation manual:

(1) Quantify the benefits and guarantees, and the funding, associated with the contracts and their risks at a level of conservatism that reflects conditions that include unfavorable events that have a reasonable probability of occurring during the lifetime of the contracts. For policies or contracts with significant tail risk, reflects conditions appropriately adverse to quantify the tail risk.

4. Arguments in support of the Consistency Work Group position

1. The wording of the proposed SVL supports the CWG position. Section 12 says the reserves using a principle-based valuation must be established by quantifying "the benefits and guarantees, and the funding, associated with the contracts." Risks associated with the contract should be limited to those that have a direct, material bearing on the contract. Reserve calculations should not include risks that are unrelated to insurance operations or are of a general business risk. Thus, relying solely on a different CTE level (e.g., 70 versus 90) between reserves and capital to properly capture the risks to include in reserves is not consistent with the proposed wording in Section 12 of the SVL.

   Also, in situations where the basis for the assessment of the liability amount is not CTE, the wording of Section 12 still requires the inclusion of only "conditions that …have a reasonable probability of occurring" rather than "all" risks.

2. Section 1 of the document in Appendix A explains the stated purpose of statutory reserves and the stated purpose of RBC. It indicates that there is a unique role for each that would lead to the conclusion that while they contain some similar risks they also contain some risks that differ. Also, the two calculations utilize different measures of risk.

3. The Accounting Practices and Procedures Manual requires certain risks to be classified as "other liabilities" (e.g. Guaranty Fund assessments) and the Valuation Manual should provide for the manner in which such company-focused liabilities are reconciled with policy-focused reserves.

APPENDIX A

Consistency Work Group
On the Purpose of Reserves and Risk-based Capital under a
Principles-Based Approach for Life and Annuity Products
October 2007

The purpose of this section is to clarify the manner in which PBA fits within the statutory framework for reserves and RBC as future recommendations for PBA are being developed.

1. Existing Guidance for the Current Statutory Framework

- Statutory Accounting Principles, Statement of Concepts, 9/20/94 (restated in each Accounting Practices and Procedures Manual since)

  — 'The ultimate objective of solvency regulation is to ensure that policyholder, contract holder and other legal obligations are met when they come due and that companies maintain capital and surplus at all times and in such forms as required by statute to provide an adequate margin of safety.'

  — 'An accounting model based on the concepts of conservatism, consistency and recognition is essential to useful statutory financial reporting'

- ‘In order to provide a margin of protection for policyholders, the concept of conservatism should be followed when developing estimates as well as establishing accounting principles for statutory reporting’

- ‘Statutory accounting should be reasonably conservative over the span of economic cycles and in recognition of the primary responsibility to regulate for financial solvency’

- NAIC Risk-Based Capital Instructions - Risk-Based Capital is a method of measuring the minimum amount of capital appropriate for an insurance company to support its overall business operations in consideration of its size and risk profile. It provides an elastic means of setting the capital requirement in which the degree of risk taken by the insurer is the primary determinant.

- The statutory framework prior to application of a PBA prescribes accounting procedures for both assets and liabilities, including policy reserves. Under a PBA, new methods for determining minimum reserves and RBC will replace the formulaic methods and prescribed assumptions with a PBA. However, other aspects of the current statutory framework such as book value accounting and the degree of desired conservatism are assumed to remain unchanged for purposes of this document.

2. Reserves

- Under a PBA within the current statutory framework, the purpose of policy or contract reserves is to make provision for future anticipated costs of benefits and guarantees, arising from the contracts as they fall due.

- In understanding the statement above, the SVL2 Committee believes:

  - The ‘provision for future anticipated costs of benefits and guarantees, arising from the contracts as they fall due’ should recognize the asset cash flows, expenses (excluding income taxes), future premiums and other revenues associated with the contracts.

  - Cash flow items included in the reserve calculation may be aggregated as permitted by applicable requirements.

  - The economic value or cash amount of items related to the contracts, such as commissions or revenue sharing, should be included along with the cash flows of the contracts, in the reserve calculation.

  - Reserves should be set within the range of expected outcomes and include measures of anticipated experience plus a margin for uncertainty (estimation error and adverse deviation). In addition, reserves should reflect appropriate adjustments to amounts derived from models to account for any simplifications in the model compared to reality. The resulting value shall be reasonably conservative over the span of economic cycles.

  - Reserves do not need to reflect all of the risks included in RBC.

3. Risk-Based Capital

- The purpose of RBC is to identify weakly capitalized companies. As noted above, RBC is a method of measuring the minimum amount of capital appropriate for an insurance company to support its overall business operations in consideration of its size and risk profile. Under a PBA, this is accomplished by making provision for variations in premiums, other revenues and the costs of benefits and guarantees arising from the contracts in excess of those included in reserves, and for other obligations of the company which are not directly related to the contracts.

- In understanding the statement above, the SVL2 Committee believes:

  - The RBC calculation should ensure that the required level of statutory reserve remains covered throughout the RBC calculation horizon.

  - RBC should recognize at least the same risks included in reserves.

- RBC should recognize at least the same income/revenue items as reserves. RBC should also recognize other revenue that may be associated with the company but not with a particular block of policies.

- Each component of a RBC calculation should be calibrated to a consistent risk measure to facilitate identification of weakly capitalized companies.

4. Relationship of Reserves and RBC

Under a PBA, risks included in reserves would be a subset of the risks included in the determination of RBC. The Statement of a Principles-Based Approach provides guidance as to which risks should be included in the overall Principles-Based Approach. The 'purpose' statements above provide guidance as to the role of reserves and RBC and provide insight into which risks should only be reflected in RBC versus those that should be reflected in both RBC and reserves. More detailed guidance, adopted by statute, regulation or by inclusion in the Valuation Manual, specific to reserves and RBC should be recognized. Criteria for determination of the risks include:

- Whether the risks are anticipated;
- The relationship of the risk to the policy/contract; and
- How risks affect the amounts, timing and likelihood of the underlying cash flows

APPENDIX B

Actuarial Guideline 43 Wording on the Risks Reflected in Reserves

From Section 1 – Background:

The risks reflected in the calculation of reserves under this Guideline arise from actual or potential events or activities which are both:

a) Directly related to the contracts falling under the scope of this Guideline or their supporting assets; and
b) Capable of materially affecting the reserve.

Categories and examples of risks reflected in the reserve calculations include but are not necessarily limited to:

a) Asset Risks
   (i) Separate Account fund performance;
   (ii) Credit risks (e.g., default or rating downgrades);
   (iii) Commercial mortgage loan rollover rates (roll-over of bullet loans);
   (iv) Uncertainty in the timing or duration of asset cash flows (e.g., shortening (prepayment risk) and lengthening (extension risk));
   (v) Performance of equities, real estate, and Schedule BA assets;
   (vi) Call risk on callable assets;
   (vii) Risk associated with hedge instrument (includes basis, gap, price, parameter estimation risks, and variation in assumptions); and
   (viii) Currency risk.
b) Liability Risks
   (i) Reinsurer default, impairment or rating downgrade known to have occurred before or on the valuation date;
   (ii) Mortality/longevity, persistency/lapse, partial withdrawal and premium payment risks;
   (iii) Utilization risk associated with guaranteed living benefits;
   (iv) Anticipated mortality trends based on observed patterns of mortality improvement or deterioration, where permitted;
   (v) Annuitization risks; and
   (vi) Additional premium dump-ins (high interest rate guarantees in low interest rate environments);
c) Combination Risks
   (i) Risks modeled in the company's risk assessment processes that are related to the contracts, as described above;

(ii) Disintermediation risk (including such risk related to payment of surrender or partial withdrawal benefits); and

(iii) Risks associated with Revenue Sharing Income.

The risks not necessarily reflected in the calculation of reserves under this Guideline are:

a) Those not reflected in the determination of Risk-Based Capital; and

b) Those reflected in the determination of Risk-Based Capital but arising from obligations of the company not directly related to the contracts falling under the scope of this Guideline, or their supporting assets, as described above.

Categories and examples of risks not reflected in the reserve calculations include but are not necessarily limited to:

a) Asset Risks

Liquidity risks associated with a "run on the bank."

b) Liability Risks

(i) Reinsurer default, impairment or rating downgrade occurring after the valuation date;

(ii) Catastrophic events (e.g., epidemics or terrorist events);

(iii) Major breakthroughs in life extension technology that have not yet fundamentally altered recently observed mortality experience; and

(iv) Significant future reserve increases as an unfavorable scenario is realized.

c) General Business Risks

(i) Deterioration of reputation;

(ii) Future changes in anticipated experience (reparameterization in the case of stochastic processes) which would be triggered if and when adverse modeled outcomes were to actually occur;

(iii) Poor management performance;

(iv) The expense risks associated with fluctuating amounts of new business;

(v) Risks associated with future economic viability of the company;

(vi) Moral hazards; and

(vii) Fraud and theft.

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Draft: 10/2/09

Life and Health Actuarial Task Force
Conference Call
August 11, 2009

The Life and Health Actuarial Task Force met via conference call Aug. 11, 2009. The following Task Force members participated: Sandy Praeger, Chair, represented by Larry Bruning (KS); Linda S. Hall represented by Katie Campbell (AK); Steve Poizner represented by Sheldon Summers (CA); Glenn Wilson represented by Blaine Shepherd (MN); John Huff represented by David Hippen (MO); Ann Frohman represented by John Rink (NE); Kermitt Brooks represented by William Carmello (NY); Mary Jo Hudson represented by Pete Weber (OH); Kim Holland represented by Frank Stone (OK); and Mike Geeslin represented by Mike Boerner (TX).

1. Experience Reporting Requirements

Mr. Bruning reported that the work on establishing statistical agents had not been completed. Last year, Commissioner Praeger sent a letter to all NAIC members, with a copy of the bulletin from Utah recommending that companies be exempted from the experience reporting requirements currently in the Model Regulation Permitting the Recognition of Preferred Mortality Tables for Use in Determining Minimum Reserve Liabilities (#815).

The Task Force decided that NAIC staff should prepare a similar letter (Attachment Twenty-Two-A) for the Task Force to send to the NAIC membership recommending that they give an exemption until notified otherwise.

2. Referral from the Credit Default Swaps (EX) Working Group

Mr. Bruning presented a letter, which is a reply to the referral from the Credit Default Swap (E) Working Group based on an April 17 conference call. John Bruins (American Council of Life Insurers—ACLI) suggested that Items #3 and #4 would be better suited for the Capital Adequacy (E) Task Force to address, rather than this Task Force. Mr. Bruins suggested adding a phrase "to work with other task forces, such as the Capital Adequacy Task Force" to Items #3 and #4.

The Task Force agreed to send the revised letter to the Credit Default Swap (E) Working Group (Attachment Twenty-Two-B).

3. 2010 Generally Recognized Expense Table (GRET)

Sam Gutterman (PricewaterhouseCoopers LLP) discussed the 2010 GRET analysis from the Society of Actuaries' Committee on Life Insurance Company Expenses (Attachment Nine of the Life and Health Actuarial Task Force, 2009 2nd Quarter *Proceedings*). The 2010 GRET methodology is similar to previous years, with two minor changes. First, only companies that passed all outlier tests for both 2007 and 2008 were included in the averages. Second, a limit of plus or minus 10% has been imposed on any change in GRET table factors from the prior year. This limit was applied for the Direct Marketing and Personal Producing General Agent categories.

Mr. Carmello said the process needs improvement, because the methodology is limited by the amount of data in the annual statement. He said he was concerned by the large number of companies in the "other" category, as well as putting a company in one category even though it uses multiple distribution channels.

Mr. Boerner moved and Mr. Shepherd seconded to adopt the 2010 GRET table. The motion passed unanimously.

4. Actuarial Guideline XXXIII

Jim Lamson (Actuarial Resources) presented a report of the American Academy of Actuaries' Annuity Reserve Work Group (Attachment Twenty-Two-C) regarding modifications to Actuarial Guideline XXXIII to implement an interpretation adopted by the Task Force at the Summer National Meeting to calculate reserves for a fixed annuity with a guaranteed living income benefit (GLIB). A GLIB is a guarantee to the owner of a deferred fixed annuity for a defined lifetime income. The income is defined by formula, and the benefit usually may be elected at any duration, although there may be some restrictions.

The interpretation adopted by the Task Force considers any GLIB payment stream as two benefits: 1) a stream of partial withdrawals until the accumulation value reaches zero; and 2) a stream after the accumulation value reaches zero. The first

benefit is valued using Section 4A, resulting in the use of a Type C interest rate. The second benefit is valued using Section 4B, resulting in the use of a Type A interest rate.

Section 4A of the guideline deals with surrender benefits and partial withdrawals, and states that the plan type "should be based on the withdrawal characteristics of the benefit, as stated in the contract." Section 4B deals with annuitization benefits and states, "If the underlying assumption is that the contract owner may withdraw funds only as an immediate life annuity or as installments over five years or more, this will generally result in a Plan Type A."

The first proposed modification is an insertion to the background information to make clear that benefits added by rider would be covered by the actuarial guideline. The second proposed modification is after Section 4C, and specifies that the procedure for determining the appropriate interest rate is to consider the characteristics of each payment to the insured and apply the appropriate section (4A, 4B or 4C) to that payment. There is language specifying that if the payment is part of an immediate life annuity stream or a series of installments over five years or more, but can be changed directly or indirectly by exercise of the contract owner, then Section 4B should not be used.

Tom Kilcoyne (PA) asked if the language in the first paragraph is intended to apply to a contract that is labeled a single-premium income annuity (SPIA) even if it is actually a GLIB. Mr. Lamson said the language is intended to apply to all contracts; if it is a SPIA, each payment will have the same characteristics. He further explained that if the amount can be changed directly or indirectly by the exercise of a policyholder withdrawal, then 4B could not be applied.

Mr. Carmello moved and Mr. Shepard seconded to release for comment Actuarial Guideline XXXIII with the modifications recommended by the American Academy of Actuaries, with the phrase "portion would generally result in Plan Type A, Plan Type B, or Plan Type" changed to "portion would result in Plan Type A, Plan Type B, or Plan Type." The motioned passed unanimously.

Having no further business, the Life and Health Actuarial Task Force adjourned.

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National Association of Insurance Commissioners

MEMORANDUM

TO: Insurance Commissioners, Directors, Superintendents and Administrators

FROM: Sandy Praeger, Chair, Life and Health Actuarial Task Force

DATE: August 11, 2009

SUBJECT: Submission of Data to Statistical Agents

Most states have adopted a version of the Model Regulation Permitting the Recognition of Preferred Mortality Tables for Use in Determining Minimum Reserve Liabilities. This model regulation has a provision which states:

> Unless exempted by the commissioner, every authorized insurer using the 2001 CSO Preferred Class Structure Table shall annually file with the commissioner, with the NAIC, or with a statistical agent designated by the NAIC and acceptable to the commissioner, statistical reports showing mortality and such other information as the commissioner may deem necessary or expedient for the administration of the provisions of this regulation. The form of the reports shall be established by the commissioner or the commissioner may require the use of a form established by the NAIC or by a statistical agent designated by the NAIC and acceptable to the commissioner.

The Life and Health Actuarial Task Force has a reporting form exposed for comment and continues to work on developing a proposed process for the NAIC to recognize companies as designated statistical agents. The work is not expected to be completed during 2009.

The Task Force recommends commissioners consider publishing a one-year blanket exemption to all companies through a bulletin or other appropriate mechanism. This is intended to reduce unneeded inquiries and possible undesired data submissions.

As an example of how one state has addressed this issue, we have attached a copy Bulletin 2008-3 from Commissioner Michie, Utah Insurance Department.

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Governor
Gary R. Herbert
Lieutenant Governor

State of Utah
DEPARTMENT OF INSURANCE

D. Kent Michie
Commissioner

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Bulletin 2008-3

To: Insurers and Reinsurers of Life Insurance Business.
From: D. Kent Michie, Insurance Commissioner
Date: March 5, 2008
Subject: Statistical Reports Required of Insurers Using the 2001 CSO Preferred Class Structure Table

The purpose of this Bulletin is to notify insurers of the Commissioner's decision to waive the mortality experience reporting requirements for year 2007 for all insurers using the 2001 CSO Preferred Class Structure Table.

Subsection 5(3) of R590-241, Rule to Recognize the Preferred Mortality Tables for Use in Determining Minimum Reserve Liabilities, requires every authorized insurer using the 2001 CSO Preferred Class Structure Table to annually file with the commissioner, the NAIC, or with a statistical agent acceptable to the commissioner, statistical reports showing mortality and such other information as the commissioner may deem necessary or expedient for the administration of this rule.

Subsection 5(3) also gives the commissioner the discretion to exempt any company from said reporting requirement. For reporting year 2007, the commissioner exempts all companies using the 2001 CSO Preferred Class Structure Table from filing the statistical reports required under R590-241-5(3).

DATED this 5th day of March 2008.

_____
D. Kent Michie
Insurance Commissioner

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National Association of Insurance Commissioners

TO: Thomas Sullivan (CT), Chair, Credit Default Swap (E) Working Group

FROM: Larry Bruning (KS), Chair, Life and Health Actuarial Task Force

DATE: August 11, 2009

RE: Response to Your December 2, 2008 Memorandum

The Life and Health Actuarial Task Force held a conference call on April 17, 2009, to discuss the December 2, 2008, memorandum from the Credit Default Swap (E) Working Group.

The following items were discussed:

1. Additional disclosure of the expected period in which life and annuity liabilities are expected to be paid under different scenarios. The Task Force is aware of a proposal and is willing to provide assistance.

2. Consider the need to develop a more short-term solution to reduce the redundant life and annuity reserves that are squeezing life insurers today, particularly given the current credit markets. The Task Force currently has a subgroup reviewing this item.

3. Consider the need to require insurers who have commercial products that are more likely to be accelerated (e.g. funding agreements, guaranteed investments contracts, variable annuities, living benefit/death benefit on variable annuities) to have more liquid assets and subject to more extreme stress testing of their asset/liability matching. The Task Force is willing to establish a subgroup to work with other NAIC task forces, such as the Capital Adequacy Task Force, to consider liquidity tests or specific requirements for stress testing the asset/liability analysis.

4. In light of current conditions that show an accumulation of events in a spiral caused by investment bank and other failures, consider the need to establish new requirements for stress testing of all insurers' reserves, investments, securities-lending arrangements, and reinsurance against realistic scenarios. The Task force is willing to establish a subgroup to work with other NAIC task forces, such as the Capital Adequacy Task Force, to consider this issue.

The Task Force has asked the American Academy of Actuaries for assistance in reviewing this request and the discussion items above.

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AMERICAN ACADEMY of ACTUARIES

Report of the American Academy of Actuaries'
Annuity Reserve Work Group

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

August 11, 2009, Life and Health Actuarial Task Force Conference Call

The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

Annuity Reserve Work Group

James W. Lamson, F.S.A., M.A.A.A., Chair
Michael C. Ward, F.S.A., M.A.A.A., Vice-Chair

Thomas A. Campbell, F.S.A., M.A.A.A.
Scott A. Claflin, F.S.A., M.A.A.A.
Donna R. Claire, F.S.A., M.A.A.A.
Michael S. Dossett, F.S.A., M.A.A.A.
James M. Fredericksen, A.S.A., M.A.A.A.
Bruce A. Friedland, F.S.A., M.A.A.A.
David C. Heavilin, A.S.A., M.A.A.A.
Barbara J. C. Hilligoss, F.S.A., M.A.A.A.
Angela Huang, F.S.A., M.A.A.A.
Stephen K. Neill, A.S.A., M.A.A.A.
Keith D. Osinski, F.S.A., M.A.A.A.
Richard C. Payne, F.C.I.A., F.S.A., M.A.A.A.
Peter A. Pham, F.S.A., M.A.A.A.
James F. Reiskytl, F.S.A., M.A.A.A.
Lawrence A. Seller, F.S.A., M.A.A.A.
James R. Thompson, F.S.A., M.A.A.A.
David Tovson, F.S.A., M.A.A.A.
William H. Wilton, F.S.A., M.A.A.A.

At its June 11, 2009, meeting in Minneapolis, the Life and Health Actuarial Task Force ("LHATF") discussed the report provided ("the June 2009 Report") by the Academy's Annuity Reserve Work Group ("ARWG"). This report covered possible interpretations of Actuarial Guideline XXXIII ("AG 33") as they relate to a question regarding the proper Plan Type for the valuation of Guaranteed Lifetime Income Benefits ("GLIBs") posed by Mr. Matthew Coleman. At that meeting, LHATF indicated its interest in considering language modifications to AG 33 that would implement Interpretation 4 of the June 2009 Report (please see the report for details and a description of Interpretation 4). Following that meeting, Larry Bruning, chair of LHATF, participated in a meeting of the ARWG during which a question was posed to him about whether the language modifications to AG 33 should be general in nature or specific to GLIBs. He indicated that, as long as it did not result in unintended changes to the valuation of products other than GLIBs, he felt more general wording would be the better choice.

Proposed additions to AG 33 are shown on the following pages as underlined text; there are no deletions. The numbering scheme is taken from the portions of AG 33 that would be affected by the proposed changes. Additional commentary from the ARWG is included after the proposed additions. For your convenience, we have included a copy of AG 33 as an appendix to this report.

ARWG Recommended Changes to AG 33

Background Information

1. Introduction

The Standard Valuation Law (SVL) defines the methods and assumptions which are to be used in determining minimum statutory formula reserves. This law establishes the standards for annuity contracts (which therefore includes any riders or endorsements, and any or all components of which, such as premiums, benefits, contract charges, primary or secondary accumulation values or other components, either relating to annuity benefits provided by the contract or providing separate annuity benefits) and includes the criteria for the interest and mortality assumptions to be used in determining minimum formula contract reserves. The 1980 revisions to the SVL provide for the maximum statutory formula reserve interest rate to be determined through a dynamic formula in order to incorporate changes in economic conditions, liquidity needs and the risks inherent in certain types of contracts….

Text

4. Determination of Guarantee Duration and Plan Type

Guarantee duration and Plan Type are based upon the specific characteristics of each individual benefit type that comprise the integrated benefit stream, as follows:

A. For portions of the integrated benefit stream attributable to full surrender and partial withdrawal benefits, the Plan Type should be based upon the withdrawal characteristics of the benefit, as stated in the contract. This may result in a Plan Type A, B or C under the 1980 amendments of the SVL. The guarantee duration is the number of years for which interest rates are guaranteed in excess of the calendar year statutory valuation interest rate for life insurance policies with guarantee duration in excess of twenty (20) years.

B. For portions of the integrated benefit stream attributable to full and partial annuitization benefits, the determination of the valuation interest rate involves the use of the appropriate Plan Type and weighting factor as determined by the SVL, with the guarantee duration as the number of years from the original date of issue or date of purchase, to the date the annuitization is assumed to commence. If the underlying assumption is that the contract owner may withdraw funds only as an immediate life annuity or as installments over 5 years or more, this will generally result in a Plan Type A, under the 1980 amendments of the SVL, with the valuation interest rate changing as different assumed annuitization dates determine guarantee durations which will fall into different guarantee duration bands under the SVL. An assumed annuitization option which has a non-life contingent payout period of less than five (5) years shall be considered a Plan Type C, with the valuation interest rate changing as different assumed annuitization dates determine guarantee durations which will fall into different guarantee duration bands under the SVL.

C. For portions of the integrated benefit stream attributable to non-elective benefits, since the underlying assumption is that no withdrawal is permitted, Plan Type A should generally be used, with a guarantee duration determined as the number of years from issue or purchase to the date non-elective benefits may first be paid. In most cases, the guarantee duration should be less than five years, since non-elective benefit coverage usually begins immediately after issue, with benefits payable commencing in the first contract year.

For benefit types incorporating multiple payments, paragraphs 4(A), 4(B), and 4(C) above should be applied to each separate payment according to the withdrawal, annuitization, or non-elective benefit characteristics of the contract and payment provisions at the time each payment is to be made. If a portion of the integrated benefit stream is part of an immediate life annuity or a series of installments over five (5) years or more, but can be changed directly or indirectly by exercise of contract owner withdrawal options, then it would be inappropriate to apply paragraph 4(B) to that portion of the integrated benefit stream, since the contractholder may withdraw funds other than as a life annuity or in installments of five (5) years or more.

For example, a Guaranteed Lifetime Income Benefit ("GLIB") is a guarantee to the owner of a fixed deferred annuity contract, whether traditional or indexed to an external referent such as an equity index, that the owner can have a defined income for life in an amount determined by formula, while the owner retains traditional rights (such as withdrawal) to the other values provided by the underlying deferred annuity and while such values continue to exist. Income benefits are typically deducted from one or more of the annuity's defined values to the extent such values

remain positive. Once the GLIB is elected, the contract owner may have rights to stop and restart the income benefit and may also request full or partial surrender of any remaining annuity value, though doing so may negatively impact or eliminate subsequent guaranteed income benefits. Thus, applying 4(A) and 4(B) above, the GLIB benefit stream is seen to be composed of two portions to determine the Plan Type and guarantee duration, as follows:

The first portion consists of the series of defined payments to the extent that the payments, or any fraction thereof, are withdrawals that reduce or deplete the annuity's defined values. Applying paragraph 4(A) to this portion would generally result in Plan Type A, Plan Type B, or Plan Type C, by following the definitions of such contained within the Standard Valuation Law and reflecting the specific contract provisions, especially with regard to withdrawal. Paragraph 4(A) would also apply to any residual withdrawals that can be made following election of the GLIB benefit.

The second portion is a life annuity without option to take or receive additional amounts under the contract, and consists of the payments not included in the above portion. Applying paragraph 4(B), Plan Type A would generally apply to this segment with the guarantee duration determined using the period from contract issue to commencement of payments in this second portion.

Commentary

The above wording is based on, and is a generalization of, Interpretation 4 of the June 2009 Report. Interpretation 4 reads as follows:

"Interpretation 4. Under this approach, one considers that the GLIB benefit can really be bifurcated into two benefit types. One is a temporary life annuity for "n" years, where n is the number of years before the AV goes to zero, which also has a cash surrender value equal to the Accumulation Value less any remaining surrender charge (which is very likely to be zero by this time). The other is a true n-year deferred life annuity. The payments of the first benefit type would be valued at a Plan Type C rate because it has withdrawal benefits. Payments of the second benefit type are valued at a Plan Type A rate from the valuation date onward (not just the years after the nth year as in Interpretation 2). This is consistent with an investment philosophy that calls for the insurer to buy two types of assets backing up a total reserve made up of the two benefit types – one that recognizes the withdrawal characteristics for the temporary life annuity with cash values and the second that has (perhaps) laddered maturities that anticipates the life-contingent payment stream that starts n years hence."

The suggested wording change to AG 33 is based on recognition that Interpretation 4 can be derived by applying 4(A) and 4(B) to the bifurcated benefits. The logic applied in deriving the suggested wording is that if 4(A) and 4(B) are to be applied to a GLIB, then generalizing this to other possible benefit types would logically extend to include 4(C) as well.

Application of Suggested Wording to Other GLIB Designs

For many annuities incorporating a GLIB, whether within the terms of the annuity contract or by rider, one would be tempted to conclude that annuity payments that correspond to an amount withdrawn from the annuity's values would be discounted at Plan Type B or C, and the annuity payments that are not withdrawn from the annuity's values would be discounted at Plan Type A.

However, in ARWG's deliberations over the wording modifications suggested above, the group recognized that actuaries have a long history of being innovative product developers. As a result, it considered two of the many modified GLIB designs that may be possible in order to see how well the language stands up to innovation.

Consider a pair of GLIB designs (I and II) that specify that once an income election has been made, payments will be deducted from an annuity value (e.g., accumulation value) until such time as the accumulation value is reduced to x% of its value at the time of income election. At such time, payments will continue to be made for life but without deduction from any annuity value. Under Design I, payments will cease (or be reduced) if deductions are made from this residual value or the contract is surrendered before the accumulation value hits the x% floor. Under Design II, payments are unaffected by any withdrawals from the residual value or if the contract is surrendered.

For Design I, the ARWG believes that application of the proposed AG 33 wording would result in application of Plan Types A, B or C (as specified in 4(A) in AG 33), to all payments (those deducted from the annuity's values and those made after the accumulation value is reduced to x% of its value upon income election) because each payment is made either:

i. as a withdrawal; or

ii. during a period when a withdrawal or surrender would modify or terminate the remaining payment stream and thus paragraph 4(B) would not apply.

We come to this conclusion regarding the latter period because of the wording in 4(B) that reads "If the underlying assumption is that the contract owner may withdraw funds only as an immediate life annuity or as installments over 5 years or more…" This wording implies that a Plan Type A valuation rate is only applicable if no options are provided to withdraw the funds that gave rise to the life annuity or installments. Since, due to withdrawal options, Design I can result in an unknown stream of payments, either in amount or term, we believe that 4(B) would not apply.

For Design II, the ARWG believes that proper application of the proposed AG 33 wording would result in:

- application of Plan Types A, B, or C (as specified in 4(A) in AG 33), to the GLIB payments that are deducted from the annuity's value(s), reflecting the characteristics of these payments (i.e., "for portions of the integrated benefit stream attributable to full surrender and partial withdrawal benefits"); and
- application of Plan Type A to the GLIB payments that are not deducted from the annuity's value(s), reflecting the characteristics of these payments that are of the nature of a true annuity (i.e., "for portions of the integrated benefit stream attributable to full and partial annuitization benefits").

Conclusions

Based on the above analysis and conclusions, the ARWG believes that the proposed wording changes to AG 33, if adopted, would result in a conclusion that paragraph 4(B) would apply to portions of benefit streams made under a GLIB only if no options exist to the contract holder at time of payment or if any options that may still be available to the contract holder at that time would not affect the amount or availability of those payments if those options were elected. The ARWG believes that paragraph 4(A) would apply to any other portions of benefit streams involving payments under a GLIB.

Further Assistance

Representatives of the ARWG will be available on the August 11 LHATF conference call to discuss this report. Furthermore, the ARWG stands ready to provide additional assistance as needed.

APPENDIX TO AUGUST 2009 ARWG REPORT TO LHATF

ACTUARIAL GUIDELINE XXXIII

DETERMINING CARVM RESERVES FOR ANNUITY CONTRACTS WITH ELECTIVE BENEFITS

Background Information

1. Introduction

   The Standard Valuation Law (SVL) defines the methods and assumptions which are to be used in determining minimum statutory formula reserves. This law establishes the standards for annuity contracts and includes the criteria for the interest and mortality assumptions to be used in determining minimum formula contract reserves. The 1980 revisions to the SVL provide for the maximum statutory formula reserve interest rate to be determined through a dynamic formula in order to incorporate changes in economic conditions, liquidity needs and the risks inherent in certain types of contracts.

   The SVL defined methodology for annuity contracts, the commissioners annuity reserve valuation method (CARVM), requires that reserves be the greatest of the respective excesses of the present values, at the date of valuation, of the future guaranteed benefits, including guaranteed nonforfeiture benefits, provided for by such contracts at the end of each respective contract year, over the present value, at the date of valuation, of any future valuation considerations derived from future gross considerations, required by the terms of such contracts, that become payable prior to the end of such respective contract year. Such reserves are established to adequately fund all guaranteed contract obligations, including those obligations which are optional to the contract owner and which may not have yet been elected.

   Industry practices and methods of reserving under CARVM for annuity contracts with multiple benefit streams have not been found to be consistent. These range from a low reserve equal to the cash surrender value to a reserve representing the greatest actuarial present value of the future benefit streams under all potential annuity or other nonforfeiture benefit election options using a conservative rate of interest.

The major purpose of this Actuarial Guideline is to provide clarification and consistency in applying CARVM to annuities with multiple benefit streams. Some of the areas requiring clarification include: the valuation of annuitization benefits; the application of incidence rates in CARVM; the application of the integrated benefit stream approach in CARVM; how to determine valuation interest rates and mortality tables for multiple benefit streams; and certain practical considerations regarding multiple benefit streams.

2. Annuitization Benefits

Varying forms of contracts provide that the cash value available to the contract owner is less than the amount available to purchase an annuitization option under the terms of the contract.

For purposes of this Actuarial Guideline, "accumulation fund" is defined as the policy value which is used to purchase an annuity option under the terms of the contract.

Frequently there are significant discontinuities in the reserves, both upward and downward, at the time a settlement option is elected, between the reserve held immediately prior to the settlement as compared to the reserve required for the greatest actuarial present value of the annuitization option elected.

One of the most significant reasons for discontinuities in the reserve patterns at the time of election is the difference in the SPIA valuation rate available at the time of election as compared to the valuation rate used based on the date of issue of the original SPDA contract. Another significant reason is the difference between the guaranteed purchase rate contained in the contract and used for reserve development as compared to the rate actually used to purchase the annuity option at the time of election.

3. Application of Incidence Rates in CARVM

Since CARVM was adopted, there has been an increase in the types of benefits offered under certain annuity contracts, including enhanced death benefits, nursing home benefits, and various partial withdrawal provisions. For some of these benefit types, the SVL is not explicit as to whether incidence tables prescribed under the SVL may be used to determine such benefits, versus requiring consideration of all contract owner options available under the contract, and choosing the set of incidence rates which produce the greatest present value.

4. Integrated Benefit Stream Approach

CARVM requires that reserves be based on the greatest present value of all potential future guaranteed benefits. For annuity contracts offering more than one type of potential benefit stream, the SVL is not explicit regarding whether or how blends of more than one type of benefit must be considered under CARVM.

Under the integrated benefit stream approach, any potential benefit stream must be considered, including blends reflecting the interaction of more than one type of benefit. Such potential benefit streams include all types of benefits for which the greatest present value concept is required. Additionally, adjustments must be made to all such potential benefit streams to reflect those benefit types for which prescribed incidence tables are required (e.g., death benefits).

For example, consider an annuity contract offering surrender, annuitization and death benefits. Potential benefit streams that would be considered include surrender streams, annuitization streams, and streams reflecting blends of surrender and annuitization benefits. All such streams would also be adjusted to reflect death benefits and to discount all benefits for survivorship (based on the mortality table prescribed in the SVL).

5. Valuation Interest Rates

For annuities offering more than one type of benefit, the SVL is not explicit as to how valuation interest rates should be determined. The SVL is also not explicit as to how valuation interest rates should be determined for certain types of benefits offered under annuity contracts, such as death and nursing home benefits.

Purpose

The purpose of this Actuarial Guideline is to codify the basic interpretation of CARVM and does not constitute a change of method or basis from any previously used method, by clarifying the assumptions and methodologies which will comply with the intent of the SVL. This Actuarial Guideline shall apply to all annuity contracts subject to CARVM, where any elective benefits (as defined below) are available to the contract owner under the terms of the contract. However, life or health insurance riders attached to an annuity contract, where all components of the rider (e.g., premiums, benefits, contract charges, accumulation values and other components) are separate and distinct from the components of the annuity contract, should be treated as a separate life or health insurance contract not subject to this Actuarial Guideline. While this Actuarial Guideline applies to all annuity contracts subject to CARVM, in the event an actuarial guideline or regulation dealing with reserves is developed for a specific annuity product design, the product specific actuarial guideline or regulation will take precedence over the Actuarial Guideline.

Definitions

1. Elective and Non-Elective Benefits in CARVM

   For purposes of determining reserves under CARVM, each benefit available under the annuity contract must be placed into one of the two categories defined as follows:

   Non-Elective Benefits: Benefits that are payable to contract owners or beneficiaries only after the occurrence of a contingent or scheduled event independent of a contract owner's election of an option specified in the contract, including (but not limited to) death benefits, accidental death benefits, disability benefits, nursing home benefits, and benefits payable under either a deferred or immediate annuity contract (with or without life contingencies), where no benefit options are available under the terms of the contract.

   Elective Benefits: Benefits that do not fall under the non-elective benefits category (i.e., benefit options that may be freely elected under the terms of the contract). Elective benefits include (but are not limited to) full surrenders, partial withdrawals, and full and partial annuitizations.

   In some cases it may not be clear whether some benefits are elective or non-elective. For example, some annuity contracts offer benefits which vary depending upon the age of retirement. In such cases, the Valuation Actuary should use judgment in making this determination, by considering factors such as the degree to which contract owner actions would be influenced by the availability of the benefit.

2. Elective and Non-Elective Incidence Rates in CARVM

   For non-elective benefits, incidence rates from tables prescribed by the SVL should be applied to determine the payment of non-elective benefits and to discount, for survivorship, all benefit payments included in an Integrated Benefit Stream, as defined below. If no incidence tables are prescribed by the SVL, then company or industry experience (with margins for conservatism) may be used, as appropriate. Annuity mortality tables prescribed by the SVL should be used to determine all mortality based benefits under the contract (including, but not limited to, annuitizations and death benefits) and to discount other types of benefit payments for survivorship.

   For elective benefits, incidence rates should not be based on tables reflecting past company experience, industry experience or other expectations. Instead, every potential guaranteed elective benefit stream required to be reserved by CARVM must be considered in the determination of integrated benefit streams as defined below. This is accomplished by considering trial sets of guaranteed elective benefit incidence rates, either through numerical testing or analytical means, to determine which trial set produces the "greatest present value" as described in Text paragraph 1 below. Theoretically, this means that all possible elective benefit incidence rates between 0% and 100% should be considered. However, in practice, such a greatest present value will typically occur by assuming an incidence rate of either 0% or 100%.

3. Integrated Benefit Stream

   An integrated benefit stream is one potential blend of guaranteed elective and non-elective benefits available under the contract, determined as the combination of A and B, where:

A equals one potential stream of one or more types of guaranteed elective benefits available under the terms of the contract, based upon a chosen set of elective benefit incidence rates; and

B equals the stream of all guaranteed non-elective benefits provided under the terms of the contract, recognizing the guaranteed elective benefit stream under consideration in A above, and the non-elective incidence rates defined in 2. above.

Both A and B above should be discounted for survivorship, based on the non-elective incidence rates defined in 2. above.

Text

1. Greatest Present Value

   All guaranteed benefits potentially available under the terms of the contract must be considered in the valuation process and analysis and the ultimate policy reserve held must be sufficient to fund the greatest present value of all potential integrated benefit streams, reflecting all guaranteed elective and non-elective benefits available to the contract owner. Each integrated benefit stream available under the contract must be individually valued and the ultimate reserve established must be the greatest of the present values of these values, based on valuation interest rate(s) as defined in Section 3 below.

2. Examples of Integrated Benefit Streams That Must Be Considered

   A. Cash Value Streams

      One mandatory set of integrated benefit streams for a deferred annuity with cash settlement values which must always be considered is any possible blend of future guaranteed partial withdrawals and full surrenders available under the contract, as specified in the SVL, accumulated at the guaranteed credited interest rate(s) and discounted at the valuation rate(s) of interest defined in section 3 below, with appropriate recognition of all guaranteed non-elective benefits available under the contract.

   B. Annuitization Streams

      A second mandatory set of integrated benefit streams that must be considered is any possible blend of future guaranteed full or partial annuitization elections, as specified in the SVL, available to the contract owner at each election date required by CARVM, with appropriate recognition of all guaranteed non-elective benefits available under the terms of the contract. In determining the integrated benefit streams to value the annuitization option, the guaranteed purchase rates contained in the contract, as well as any other contract provisions, excluding any current purchase rates which may be applicable, are applied to the accumulation fund.

   C. Other Elective Benefit Streams

      In addition to the cash value and annuitization streams described above, all other possible guaranteed elective benefits available under the contract, including blends of more than one type of guaranteed elective benefit, must be considered in a manner consistent with the mandatory cash value and annuitization streams, with appropriate recognition of all guaranteed non-elective benefits available under the contract.

3. Determination of Valuation Interest Rates

   Section 4b of the SVL determines valuation rates for an annuity contract based on the following Parameters:

   A. The basis of valuation (issue year or change in fund);
   B. Whether or not the annuity provides for cash settlement options;
   C. Whether interest is guaranteed on premiums received more than 12 months following issue (or the valuation date for change in fund basis);
   D. The guarantee duration; and
   E. The Plan Type.

Parameters A, B and C above should be determined at a contract level. Additional requirements regarding the change in fund basis of valuation are set forth in Section 5 below. Parameters D and E should be determined at a benefit level, as set forth in Section 4 below.

Under a contract level determination, parameters are set based on the characteristics of the contract as a whole. Under a benefit level determination, parameters are set based on the characteristics of each benefit, resulting in potentially different valuation rates for each benefit type comprising the integrated benefit stream.

4. Determination of Guarantee Duration and Plan Type

Guarantee duration and Plan Type are based upon the specific characteristics of each individual benefit type that comprise the integrated benefit stream, as follows:

A. For portions of the integrated benefit stream attributable to full surrender and partial withdrawal benefits, the Plan Type should be based upon the withdrawal characteristics of the benefit, as stated in the contract. This may result in a Plan Type A, B or C under the 1980 amendments of the SVL. The guarantee duration is the number of years for which interest rates are guaranteed in excess of the calendar year statutory valuation interest rate for life insurance policies with guarantee duration in excess of twenty (20) years.

B. For portions of the integrated benefit stream attributable to full and partial annuitization benefits, the determination of the valuation interest rate involves the use of the appropriate Plan Type and weighting factor as determined by the SVL, with the guarantee duration as the number of years from the original date of issue or date of purchase, to the date the annuitization is assumed to commence. If the underlying assumption is that the contract owner may withdraw funds only as an immediate life annuity or as installments over 5 years or more, this will generally result in a Plan Type A, under the 1980 amendments of the SVL, with the valuation interest rate changing as different assumed annuitization dates determine guarantee durations which will fall into different guarantee duration bands under the SVL. An assumed annuitization option which has a non-life contingent payout period of less than five (5) years shall be considered a Plan Type C, with the valuation interest rate changing as different assumed annuitization dates determine guarantee durations which will fall into different guarantee duration bands under the SVL.

C. For portions of the integrated benefit stream attributable to non-elective benefits, since the underlying assumption is that no withdrawal is permitted, Plan Type A should generally be used, with a guarantee duration determined as the number of years from issue or purchase to the date non-elective benefits may first be paid. In most cases, the guarantee duration should be less than five years, since non-elective benefit coverage usually begins immediately after issue, with benefits payable commencing in the first contract year.

5. Change in Fund Basis

As indicated by section 4b.C.(1)(c)(vi) of the SVL, a company may elect to value annuity contracts with cash settlement options on either an issue year basis or on a change in fund basis. Annuity contracts with no cash settlement options must be valued on an issue year basis. The issue year basis or change in fund basis should be determined for the contract as a whole, and thus must be consistently applied to all portions of all integrated benefit streams available under the annuity contract. The election of issue year or change in fund basis must be made at the issuance of the contract and must not change during the term of the contract without the prior written approval of the commissioner.

6. Purchase Rates

Contracts may provide, as contractual guarantees, the use of preferential purchase rates to those listed in the contract. As an example, a contract may provide that the company will offer, at the time of annuitization, the rates offered to new purchasers of immediate annuities if such rates will provide a higher annuity benefit than would result from the contractually guaranteed rates provided in the contract. This creates a contract guarantee which must be valued under CARVM. Ignoring this benefit in determining reserves will produce reserves less than the statutory formula reserves required under CARVM. Valuation of this benefit, however, is complicated by the fact that the company does not currently know what the exact rate will be at the time of the settlement election. In order to determine conservative statutory formula reserves, if use of future unknown rates are guaranteed, the company shall establish reserves not less than the contract's accumulation fund value, on the valuation date, reduced by an "expense allowance" not to exceed 7%

of such fund. This section does not require the calculation of a reserve for the annuitization of business based upon current purchase rates pursuant to the "annuitization streams" described in Paragraph 2.B. above.

Likewise for contracts which provide for additional amounts during the payout period over those guaranteed at the commencement of the annuity payments, the reserve during the deferred period shall not be less than the contract's accumulation fund reduced by an expense allowance not to exceed 7% of such fund.

7. Practical Considerations

The major purpose of this Actuarial Guideline is to provide clarification and consistency in applying CARVM to annuities with multiple benefit streams. However, in practice there may be other acceptable methods of applying CARVM which are substantially consistent with the methods described in this Actuarial Guideline. Such methods may also be used, with prior regulatory approval.

Additionally, in applying this Actuarial Guideline there may theoretically be an infinite number of contract owner options that are possible under the contract. However, it may not be practical, possible or even appropriate to test every conceivable combination of potential integrated benefit streams theoretically available under the contract. This Actuarial Guideline requires that the actuary consider, not necessarily test, all potential integrated benefit streams to determine to what extent each contract owner option has a material impact on the reserve**.** In practice, the actuary may be able to eliminate some potential integrated benefit streams by analytical methods. The actuary may also be able to demonstrate the reserve adequacy of certain approximations. For example, in certain situations it may be shown that a CARVM reserve ignoring non-elective benefits, plus an "add-on" reserve for non-elective benefits, is a reasonable approximation for the theoretically correct CARVM reserve.

Effective Date

This guideline shall be effective on December 31, 1998 affecting all contracts issued on or after January 1, 1981. A company may request a grade-in period for contracts issued prior to December 31, 1998 from the domiciliary commissioner upon satisfactory demonstration that the method and level of current reserves held for such contracts are adequate in the aggregate. This phase-in will require establishment of no less than 33 1/3% of the additional reserves resulting from the application of this guideline on December 31, 1998, no less than 66 2/3% on December 31, 1999, and 100% by December 31, 2000.

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