



## **PRACTICE NOTE FOR THE APPLICATION OF C-3 PHASE II AND VA CARVM**

The Life Practice Note Steering Committee has been asked to set up a working group to draft a Practice Note for Variable Annuities (VA), discussing the issues related to the new risk-based capital (“RBC”) and reserving requirements for VAs, C-3 Phase II (“VA RBC”) and Actuarial Guideline VA CARVM (“VA CARVM” or “AG VA CARVM”).

Members of the working group developing this Practice Note include:

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The Practice Note, when completed, will be intended to provide guidance to the actuaries dealing with the implementation of the new capital and reserving requirements. It is not legally binding.

The Practice Note has been organized into a “Question & Answer” format, providing answers to a variety of issues companies are expected to deal with when implementing the new regulations.

A glossary of key terms has been included. Please note the definitions provided here are those available from VA RBC and VA VARVM documentation at the time this practice note was developed. In case of any differences, those definitions provided in VA RBC and VA CARVM documentation will prevail.

## Questions & Answers

### 1) DETAILS ON PRODUCTS COVERED

Team: Jim Lamson (Lead), Jeffrey Leitz, Tim Gaule, Tom Campbell, Kory Olsen

- Q1.1 What are some examples of products that are covered by VA CARVM and the VA RBC requirements?
- Q1.2 Are there examples of individual or group, life or annuity contracts that have a GMDB and are excluded from the VA RBC or AG VA CARVM requirements?
- Q1.3 Modified Guaranteed Annuities are excluded from covered products. What constitutes a Modified Guaranteed Annuity?
- Q1.4 How do the requirements apply to a variable annuity product with a GMDB or guaranteed living benefit that has both variable and Modified Guaranteed subaccounts, given that they do not apply to Modified Guaranteed Annuities?
- Q1.5 Are group annuity products such as those funding 401k, 457, 403b, etc. plans that do not have guaranteed living or death benefits covered by VA RBC and AG VA CARVM requirements?
- Q1.6 Are group life contracts that wrap guaranteed death benefits or living benefits around mutual funds that are offered by another company covered under VA RBC and AG VA CARVM requirements?
- Q1.7 Are reserves and RBC for variable life products containing either guaranteed death benefits or guaranteed living benefits determined under AG VA CARVM and the VA RBC requirements?
- Q1.8 Covered products are defined to include "all other products that contain guarantees similar in nature to GMDBs or VAGLBs." How do some actuaries interpret the phrase "similar in nature to GMDBs or VAGLBs"?
- Q1.9 It is stated in each of the requirements that if a guaranteed benefit "similar in nature to GMDBs or VAGLBs" is offered as part of a contract that has an explicit reserve requirement other than AG VA CARVM, the GMDB or VAGLB feature for which there is no explicit reserve requirement should have capital and reserves determined under VA RBC and AG VA CARVM on a standalone basis. How are VA RBC and AG VA CARVM requirements determined on a standalone basis for such a guaranteed benefit?

Q1.10 How are inconsistencies between the proposed requirements for applicability of VA RBC and the scope requirements contained in AG VA CARVM reconciled? If there are differences, would they be applied differently to the same block of business?

Q1.11 Would a fixed annuity with a minimum guaranteed death benefit equal to the accumulation of net deposits at a stated rate of interest fall under VA RBC and AG VA CARVM requirements? What if the same benefits were provided under a group annuity?

## **2) GUIDANCE ON ACCEPTABLE PRACTICE**

Team: Larry Gorski (Lead), Dennis Lauzon, Hubert Mueller, Jim Lamson

Q2.1 Which Actuarial Standards of Practice (ASOPs) should be satisfied by the actuary when performing the tasks in conjunction with determining reserves and capital according to the requirements in Actuarial Guideline VA CARVM and C-3 Phase I RBC?

## **3) CONSISTENCY AND DIFFERENCES BETWEEN VA RBC AND VA CARVM APPROACHES**

Team: Tom Campbell (Lead), Sheldon Summers, Larry Gorski, Hubert Mueller, Bob Brown

Q3.1 What differences are there between the two models?

Q3.2 Would one use the same assumptions for both models?

Q3.3 Would one use the same stochastic scenario set for both models?

Q3.4 What are the differences in treatment of the fixed option between the two models?

Q3.5 What are the differences in treatment of taxes between the two models?

Q3.6 How would a valuation actuary integrate the work to calculate reserves and RBC under the VA RBC proposals with the requirements for the Valuation Actuary certification and memorandum?

Q3.7 Suppose the Standard Scenario reserve on my VA RBC business is larger than the reserve I derived from model projections and application of the CTE 65 measure. Might I use these reserve redundancies to offset reserve shortfalls on other blocks of business?

- Q3.8 Would insurers use the scenario testing approach for all fixed annuities including guaranteed (fixed) funds of variable annuities on a consolidated basis in one year and then use the scenario testing approach only with the guaranteed (fixed) funds in later years and use the factor approach for other fixed products?
- Q3.9 If an insurer chose to use the scenario testing approach for all fixed annuities including guaranteed (fixed) options of variable annuities on a consolidated basis, would capital needs be determined using the Conditional Tail Expectation (CTE) methodology or the methodology contained in the C-3 Phase I requirements?
- Q3.10 If an insurer chose to use the scenario testing approach for all fixed annuities including guaranteed (fixed) funds of variable annuities on a consolidated basis, would the VA RBC certification and documentation requirements contained in Appendix 11 of the AAA VA RBC Report (September 2004) apply?
- Q3.11 If an insurer chooses to use the scenario testing approach for all fixed annuities including guaranteed (fixed) funds of variable annuities on a consolidated basis, do the Principles contained in Appendix 7 of the AAA VA RBC Report (September 2004) apply?

#### **4) TYPES OF MODELS / GRANULARITY**

Team: Rich Ash (Lead), Tim Gaule, Larry Gorski

- Q4.1 Does the modeling approach call for one giant model be created that covers all products within the Scope?
- Q4.2 What granularity of models is appropriate?
- Q4.3 What is the suggested timing for projections?
- Q4.4 Is there specific software that the actuary normally would use to perform the analysis?
- Q4.5 To what extent is a decision of actual modeling vs. using the Alternative Methodology for either VA RBC or VA CARVM binding on the other model?
- Q4.6 Is it appropriate for a model developed for VA RBC purposes to be used for VA CARVM as well? Is it appropriate to use either of these models for cash flow testing purposes as well?

## **5) DETAILS ON STARTING ASSETS**

Team: Jeffrey Leitz (Lead), Richard Combs, Jim Lamson, Bill Wilton

- Q5.1 How are starting assets determined for both the separate account and the general account?
- Q5.2 How close are starting assets in most circumstances to the actual reserves ultimately calculated under AG VA CARVM?
- Q5.3 Would the same level of starting assets be used for the C3-Phase II and VA CARVM calculations?
- Q5.4 What is meant by the statement that model assets purchased during the projection should be valued on a basis consistent with the starting assets?
- Q5.5 How are the AG VA CARVM reserve and the VA RBC requirement calculated once the models are run?

## **6) DETAILS ON SCENARIOS / SCENARIO GENERATORS / ECONOMIC ASSUMPTIONS**

Team: Mark Tenney (Lead), Richard Combs, Larry Gorski, Hubert Mueller, Scott Schneider

- Q6.1 With respect to the calibration of scenarios, Section A 5.2 of the VA CARVM document provides calibration points for the S&P 500 and Section A 5.3 states in part that, "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 A 5.2." How would one go about calibrating other fund types?
- Q6.2 (1) Is it appropriate to calibrate scenarios chosen according to the standard method from the Pre-Packaged scenarios available on the Academy web site? (2) If so, what is done if the scenarios fail to calibrate?
- Q6.3 What statistical methods are used to determine if enough scenarios have been used?
- Q6.4 Are the Short Term, Medium Term, and Long Term US Treasury pre-packaged fund yields used to calculate the interest rate risk capital requirements for the Guaranteed Funds of Variable Annuities?

- Q6.5 An insurer using the modeling approach to calculate the TAR may use the pre-packaged scenarios or the fund scenarios produced by an internal model. If an insurer is using an internal model, the resulting fund scenarios normally would meet the calibration points. Strict compliance with all calibration points is not required but the actuary would normally take reasonable steps to confirm that any known differences are not material. Calibration points are provided for a Ten Year Time Horizon. What calibration requirements apply to projected fund returns for time periods in excess of 10 years?
- Q6.6 What are the likely sources of variance between different types of scenarios?
- Q6.7 If a company was not using the pre-packaged scenarios, what approaches would be used to generate integrated equity/interest rate scenarios from an internal model?
- Q6.8 What characteristics would these integrated scenarios typically have?
- Q6.9 Are the pre-packaged scenarios appropriate for the purposes of projecting the market value of future hedge instruments within a projection?
- Q6.10 How would correlations between individual funds or market indices usually be incorporated into fund scenarios produced by an internal model?
- Q6.11 What other reference materials are available to assist an actuary in determining how to generate integrated scenarios from an internal model?

## **7) DETAILS ON ACTUARIAL/MODELING ASSUMPTIONS**

Team: Tim Gaule (Lead), Fred Anderson, Rich Ash, Kory Olsen, Bob Meilander, Richard Combs

- Q7.1 What does "Prudent Best Estimate" mean?
- Q7.2 Are the margins included in "prudent best estimate" assumptions done assumption by assumption or in the aggregate?
- Q7.3 What is an appropriate risk discount rate?
- Q7.4 What assumptions might be used to calculate VA RBC or AG VA CARVM reserve requirements, and how would they be established?
- Q7.5 What process would the actuary follow in establishing the assumptions to be used to determine the VA RBC and AG VA CARVM reserve requirements for this business?

- Q7.6 What assumptions would the actuary consider making dynamic and would the addition of a dynamic element to a given assumption normally be expected to impact the actuary's determination of the Prudent Best Estimate for the underlying base assumption?
- Q7.7 What factors might the actuary choose to consider in estimating how policyholder behavior is likely impact assumptions that vary based on the underlying equity/interest rate scenario?
- Q7.8 What factors might the actuary choose to consider in determining the earned rate for the general account assets?
- Q7.9 What are special factors related to variable annuity guarantees that the actuary might choose to consider when establishing lapse assumptions?
- Q7.10 In some cases, separate account assets in combination with negative general account assets comprise the starting assets which approximate total product reserves. At what rate would negative general account assets normally be financed?

The VA RBC document provides (Section 10, page 9) that "The Risk Based Capital Requirement is the Total Asset Requirement adjusted for taxes, minus the actual statutory reserve held."

- Q7.11 What is the reason for the tax adjustment?
- Q7.12 What is included in "actual statutory reserve held"?
- Q7.13 The fourth paragraph of section 10 starts out, "This increase to TAR may be approximated as . . . ."
- Q. Are other approximation methods appropriate?
- Q. The approximation specified is based on numbers of lives. Would it be acceptable to use an approximation based on account values?
- Q. Why is averaging contracts inforce at the end of a projection on some scenarios with contracts inforce early in a projection on others believed to be appropriate?

## 8) DETAILS ON ALTERNATIVE METHODOLOGY (AM)

Team: Kory Olsen (Lead), Jim Lamson, Bob Meilander, Tony Phipps

- Q8.1 How is non-proportional reinsurance incorporated into the Alternative Methodology?
- Q8.2 Would credit be taken for hedging when using the AM?
- Q8.3 Is a single set of 16 factors used for calculating F, G and R for both RBC and reserves?
- Q8.4 What happens when the margin offset is either less than 20% of management expense ratio (MER) or greater than 60% of MER?
- Q8.5 How is  $\hat{\phi}$  calculated for purposes of determining the scaling factor, R?
- Q8.6 At what level of aggregation would the margin offset, alpha, be calculated? For example, would it usually be expressed as an aggregate percentage of the MER for the block as a whole?
- Q8.7 Is a standard scenario calculation appropriate when using the Alternative Methodology?
- Q8.8 Contracts that contain no Guaranteed Benefits have their reserves based upon Actuarial Guideline XXXIII. Would it be appropriate to use an Alternative Methodology assuming a return of premium GMDDB instead?
- Q8.9 The reserve requirements for Adjusting F and G for Product Design Variations discuss executing "product specific" cash flow projections using the documented assumptions and pre-packaged scenarios. Would all 10,000 pre-packaged scenarios typically be run?
- Q8.10 The assets backing each contract are assigned to predefined asset classes for purposes of calculating the Alternative Methodology and Standard Scenario reserve and RBC amounts. How does that assignment differ in the calculations for the GC and CA components of the Alternative Methodology and the Standard Scenario Amount?

## 9) DETAILS ON STANDARD SCENARIO

Team: Dennis Lauzon (Lead), Larry Bruning, Don Skokan

- Q9.1 What are the differences between the RBC and Reserve Standard Scenarios?
- Q9.2 How would the actuary apply the Standard Scenario for reinsurance when there is no account balance?
- Q9.3 Is the Standard Scenario calculation appropriate when using the Alternative Methodology?
- Q9.4 Assume the Reserve Standard Scenario is larger than the reserve derived from model projections and application of the Conditional Tail Expectation 65% measure. Would it be appropriate to use these reserve redundancies to offset reserve shortfalls on other blocks of business?
- Q9.5 Would the actuary normally do anything in the Standard Scenarios for death benefits based on a \$1 for \$1 reduction?
- Q9.6 Assuming the standard scenario includes a premium assumption to prevent contract lapse, would the actuary usually include premiums needed to prevent the lapse of a benefit but not the whole contract?
- Q9.7 If my company does not trigger the significant test for C3 Phase 1 testing, do I still need to do the analysis?
- Q9.8 How is the standard scenario allocated between general account and separate account reserves?
- Q9.9 The contract-holder election rate is 15% for any elective ITM benefit, but only to the extent such election does not terminate a more valuable benefit subject to election. that a contract has two guaranteed living benefits that are both ITM. Benefit A is first available at age 60 and Benefit B is first available at age 70. The contract-holder is 65. Benefit B is more ITM than Benefit A. Would the election rate at age 65 for Benefit A be zero since it would terminate the more valuable Benefit B even though B is not yet available to be exercised?
- Q9.10 What investment returns would the actuary normally use in order to project the account value to a future date for the purpose of the in-the-moneyness calculation?
- Q9.11 Are AG33 requirements based on DR or AFIR rates?

- Q9.12 Several references are made to the AFIR (applicable federal interest rate) as defined in §807. Is the intent to use the AFIR or the interest rate used to calculate tax reserves, which is the greater, or the AFIR and the prevailing State assumed interest rate?
- Q9.13 What is the meaning of the statement that all lapse rates should be applied as full contract surrenders?
- Q9.14 Give some examples of “in the money.”
- Q9.15 What guaranteed rate would usually be assumed on fixed funds when the current guarantee rate expires? Would it be a bond rate or minimum contract level guarantee?
- Q9.16 Would the standard scenario on assumed business usually be performed on data for an earlier time period aged forward?
- Q9.17 What is the basic reserve for an assuming company that only reinsures the guaranteed death or guaranteed living benefit?
- Q9.18 Would an assuming company generally use Standard Scenario reinsurance cash flows and amounts provided by the ceding company?
- Q9.19 Would an assuming company usually treat fixed accounts as bond funds?
- Q9.20 The new standard scenario requires two runs, one with the current discount rate and one with the discount rate equal to the applicable federal tax rate in the year of contract issue. Is everything in the calculations for each policy identical except for the discount rate under the two runs, e.g., the same drop and recovery rates, lapse rates, mortality, etc.?
- Q9.21 Is the comparison of the Standard Scenarios Reserve at AFIR and DR discount rates done at the aggregate level or policy level when determining the ultimate required Standard Scenario Reserve.?
- Q9.22 For an assuming company, are both premiums receivable and benefits payable included in revenue? Would revenue be negative if claims exceeded premiums?

- Q9.23 A contract is in the money (ITM) if it includes a guaranteed living benefit and at any time the portion of the projected account value required to obtain the benefit would be less than the value of the guaranteed benefit at the time of exercise of payment. Does this mean that in a period when a contract is ITM the relevant ITM lapse assumptions are used? If a contract subsequently goes out of the money (OTM), would the OTM lapse factors be used?
- Q9.24 In Section A3.2(B), there is a reference to "appropriate asset based charges, including charges for any guaranteed death benefits or guaranteed living benefits." Would appropriate asset-based charges be the contractual M&E charges only, or if asset charges are paid to an external fund manager, would such charges be netted against the M&E charges?
- Q9.25 In Section A3.3(C) the surrender charge period is used as a point of reference. For a contract which has a surrender charge schedule that runs independently from the date of each gross consideration, what is an appropriate surrender charge period?
- Q9.26 What level of precision is appropriate in computing the Standard Scenario Amount, given its dual purpose in serving as: a) a floor on the Conditional Tail Expectation Amount (CTE Amount); and b) a benchmark to validate the model office used in computing the CTE Amount?
- Q9.27 Is the hedge value determined under the Standard Scenario return assumptions?
- Q9.28 What is an example of the application of contract charges?
- Q9.29 Is a GMIB ITM based on the projected account value under the terms of the contract?
- Q9.30 Is the valuation of a designated hedge optional?
- Q9.31 Should reinsurance be eligible for credit on the valuation date?
- Q9.32 Would the actuary usually satisfy SSAP 86 before taking hedge credit?

## 10) TREATMENT OF REINSURANCE

Team: Larry Bruning (Lead), Dennis Lauzon, Sheldon Summers, Mark Evans, Tom Campbell, Scott Schneider

Q10.1 A company has 3 different variable annuity contracts. One contract type contains a Guaranteed Minimum Death Benefit (GMDB), another contract type contains a Guaranteed Minimum Income Benefit (GMIB) and the third contract type contains both a GMDB and a GMIB. The company cedes to a re-insurer 100% of the GMDBs and GMIBs contained in each contract type.

- Q. Does the company calculate reserves gross or net of reinsurance?
- Q. How does the reinsurance company calculate the reserves for the GMDBs and GMIBs?
- Q. Would it be appropriate for different answers to be obtained for reserves if both the company and the re-insurer calculate the reserves?
- Q. Would the company or re-insurer use the alternative methodology to calculate reserves for the contract type that contains only the GMDB?
- Q. Would it be appropriate for the company to use one method and the re-insurer the other method?
- Q. Does the company calculate RBC gross of reinsurance and then take a reinsurance credit?
- Q. How does the reinsurance company calculate its RBC reflecting the benefits reinsured from the company?

Q10.2 A company has 3 different variable annuity contracts. One contract type contains a GMDB, another contract type contains a GMIB and the third contract type contains both a GMDB and a GMIB. The company cedes to a re-insurer 50% of all benefits on a modified co-insurance basis where the company retains all of the assets.

- Q. Does the company calculate reserves gross or net of reinsurance?
- Q. How does the reinsurance company calculate the reserves for the GMDB and GMIBs?
- Q. Could different answers be obtained for reserves if both the company and the re-insurer calculate the reserves?

- Q. Would it be appropriate for the company or re-insurer to use the alternative methodology to calculate reserves for the contract type that contains only the GMDB?
- Q. Would it be appropriate for the company to use one method and the re-insurer the other method?
- Q. Does the company calculate RBC gross of reinsurance and then take a reinsurance credit?
- Q. How does the reinsurance company calculate its RBC reflecting the benefits reinsured from the company?
- Q10.3 How does the actuary incorporate hedging credit into the model when reinsurance is present?
- Q10.4 What is the treatment of Letter of Credit (LOC) in the modeling?

## **11) TREATMENT OF HEDGING**

Team: Mark Evans (Lead), Jeffrey Leitz, Larry Gorski, Dennis Lauzon

- Q11.1 Section A1.1.D provides in part that "To the degree the hedge position introduces basis, gap, price, or assumption risk, a suitable reduction for effectiveness of hedges shall be made." How is such a suitable reduction usually determined?
- Q11.2 If an insurer intends to reflect the effect of a hedging program in the calculation of the Total Asset Requirement, should the insurer use a "stochastic within stochastic" model?
- Q11.3 If an insurer uses the Alternative Methodology for determining the Total Asset Requirement ("TAR"), is it appropriate for the insurer to reduce the otherwise calculated TAR for the effects of a hedging program?
- Q11.4 How are unhedged greeks reflected in the calculation of credit for hedging?
- Q11.5 How are risk neutral scenarios be developed for modeling hedging costs?

Q11.6 Appendix 10 of the VA RBC Report and the corresponding material in Appendix 7 of the Actuarial Guideline VA CARVM contains the following paragraph “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 risk based capital, the actuary should review actual historical hedging effectiveness.” When reviewing the actual historical hedging effectiveness, what factors (including the frequency of measuring effectiveness) would the actuary consider when reviewing the effectiveness of the hedging program?

## **12) CONSISTENCY BETWEEN VA RBC AND C-3 PHASE I**

Team: Larry Gorski (Lead), Tim Gaule, Bob Brown, Bill Wilton

Q12.1 How will C-3 Phase I be applied in conjunction with VA RBC for the fixed option within VAs?

Q12.2 Appendix 6 of the VA RBC Report (September 2004) contains the AAA’s recommendations concerning “Methods of Calculating Capital Requirements for Interest Rate Risk on the Guaranteed Fund of Variable Annuities.” The Report describes the use of an integrated equity return – interest rate model as being desirable. The Report recognizes other methods as being acceptable. The Report states “Ideally, a fully integrated model of equity returns and interest rates, with rate volatility and expectations and frequency and duration of yield curve inversions consistent with the “Phase I” requirements, would be run to develop an estimate of the (Combined) market risks.” How would the actuary determine that the integrated model generates interest rate scenarios with rate volatility and expectations and frequency and duration of yield curve inversions consistent with the “Phase I” requirements?

Q12.3 How would the actuary combine the results of the VA RBC projections with cash flow testing projections to satisfy the requirements for asset adequacy analysis?

Q12.4 Suppose the actuary uses the VA RBC model to run cash flow projections using the same, or consistent, scenarios the actuary used for the rest of the company’s business, and combines the results to test the adequacy of reserves in the aggregate. However, it could happen that when the actuary uses those same scenarios on the VA RBC business that the reserve computed under the VA RBC requirements is inadequate under the scenarios for my other business. Would the actuary usually raise VA RBC reserve?

Q12.5 May insurers use the scenario testing approach for all fixed annuities including guaranteed (fixed) funds of variable annuities on a consolidated basis in one year and then use the scenario testing approach only with the guaranteed (fixed) funds in later years and use the factor approach for other fixed products?

Q12.6 If an insurer chooses to use the scenario testing approach for all fixed annuities including guaranteed (fixed) funds of variable annuities on a consolidated basis, would capital needs be determined using the Conditional Tail Expectation methodology or the methodology contained in the C-3 Phase I requirements?

Q12.7 If an insurer chooses to use the scenario testing approach for all fixed annuities including guaranteed (fixed) funds of variable annuities on a consolidated basis, do the VA RBC certification and documentation requirements contained in Appendix 11 of the AAA VA RBC Report (September 2004) apply?

Q12.8 If an insurer chooses to use the scenario testing approach for all fixed annuities including guaranteed (fixed) funds of variable annuities on a consolidated basis, do the Principles contained in Appendix 7 of the AAA VA RBC Report (September 2004) apply?

### **13) DETAILS ON CERTIFICATION & REQUIRED DOCUMENTATION / EXECUTION OF STRATEGY**

Team: Bill Wilton (Lead), Tim Gaule, Dennis Lauzon, Hubert Mueller, Kory Olsen

Q13.1 What are the qualification standards applicable to the certifying actuary?

Q13.2 Does the appointed actuary provide the Certification?

Q13.3 What is a suggested format of the required Certification (i.e., sample wording)?

Q13.4 How does the Certification of reserves under AG VA CARVM differ from the Statement of Actuarial Opinion?

Q13.5 What are the differences between the certification requirements for C3 Phase II and AG VA CARVM?

Q13.6 Are there any distinctions in the Certification required from a direct writer, vs. what would be required from a VA reinsurer (i.e., no actual VA assets)?

Q13.7 What additional certification is required if hedging is reflected?

Q13.8 What responsibility, if any, does the qualified actuary have at the time of filing to verify that the company is actually implementing the hedging strategy modeled?

Q13.9 What are the certification requirements if the hedging has actually been outsourced to a third party, or is conducted by another company within the reporting company's group?

**14) PEER REVIEW & WORKING WITH A PEER REVIEWER**

Team: Hubert Mueller (Lead), Dave Sandberg, Kerry Krantz, Rich Ash

Q14.1 Is peer review required as part of VA RBC and/or VA CARVM?

Q14.2 What are the advantages of a peer review and what are the different levels of scope that it could entail?

Q14.3 What is a helpful format for a peer review?

Q14.4 What other references for peer review are available?

**15) REGULATORY OVERSIGHT ISSUES**

Team: Larry Bruning (Lead), Sheldon Summers, Dennis Lauzon, Jeffrey Leitz, Fred Anderson

Q15.1 What is the role of the AAA vs. the regulator's responsibilities in this context?

Q15.2 What tools are available to the regulators to get comfortable with the model validation and process?

Q15.3 What items should be included in a checklist to be used by the regulators during the review process?

Q15.4 Under what conditions might a Domiciliary Commissioner permit the use of the alternative methodology for calculating the Conditional Tail Expectation Amount if such methodology was not used in prior valuations?

## 16) GLOSSARY OF ADDITIONAL TERMS

Team: Kory Olsen (Lead), Tim Gaule, Richard Combs

The following terms have been defined here, for easier use in reviewing this document. They can also be found in the VA RBC and VA CARVM regulations.

**Accumulated Deficiencies** – this term is defined in AG VA CARVM – Section (III) Definitions, as being the Working Reserves less projected assets. An alternative view of this is the accumulation of cash flows and changes in the Working Reserve. In theory, the two will be equal. Some actuaries believe that it may make sense to look at both as a way to make sure the model is calculating correctly. One item that might put this out of balance is the way the model handles negative assets (i.e., there is a possibility that the actuary starts the model with negative general account assets in order to have separate account assets equal to the account value and the Working Reserve is cash surrender value.

**Basic Reserve** – This is part of the Standard Scenario in Appendix 3 Section A3.2 of AG VA CARVM. The Basic Reserve uses Actuarial Guideline XXXIII and assumptions listed in the Appendix (e.g., separate account return, ignoring guaranteed death and living benefits). The Standard Scenario builds upon the Basic Reserve to determine the standard scenario reserve.

**Clearly Defined Hedging Strategy** – See Appendix 10 – “Modeling of Hedges” in the September 2004 release of the VA RBC Report.

**GC** – A part of the Alternative Methodology, providing for the cost of the excess of the Guaranteed Minimum Death Benefit (GMDB) over the account value, less available risk-based charges. References: VA CARVM A4.1.E and VA RBC Appendix 8 on page 34.

**GV** – A part of the Alternative Methodology, equal to the amount of the GMDB. References: VA CARVM A4.3.A and VA RBC Appendix 8 on page 40.

**Management Expense Ratio (MER)** – The MER is defined as the average amount (in dollars) charged against policyholder funds in a given year divided by average account value. Normally, the MER would vary by fund class and be the sum of investment management fees, mortality and expense charges, guarantee fees/risk premium, etc.

References: Alternative Methodology Version 12, Page 4

**Prudent Best Estimate** – A "prudent best estimate" assumption would normally be defined by applying a margin for estimation error to the "best estimate" assumption. "Best estimate" would typically be the actuary's most 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 for error is directly related to uncertainty in the underlying risk factor. The greater the uncertainty, the larger the margin. Each margin serves to increase the liability or provision that would otherwise be held in its absence (i.e., using only the best estimate assumption).

**Standard Scenario** – single scenario consisting of specified assumptions for interest rates, economic assumptions, lapse rates, withdrawal rates and benefit election rates. The RBC and statutory reserve requirements determined using this scenario are a minimum floor for the results determined using VA RBC or AG VA CARVM. The standard scenario is a tool used to evaluate model cell calculations, compare results from year to year and for allocating aggregate results to individual contracts.

**Total Asset Requirement (TAR)** – is the sum of the Additional Asset Requirement (AAR) for a particular scenario plus the starting assets. The AAR is the negative of the lowest present value of the statutory surplus at any year-end. The AAR may be negative (sufficient) or positive (deficient).

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