AMERICAN ACADEMY *of* ACTUARIES

Report of the American Academy of Actuaries'
Variable Annuity Reserve Work Group

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

Atlanta, GA – March 2003

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Variable Annuity Reserve Work Group

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American Academy of Actuaries
Variable Annuity Reserve Work Group

I. Background

The Variable Annuity Reserve Work Group (VARWG) was formed in January 2003 as a work group of the American Academy of Actuaries' Life Practice Council (LPC), drawing resources from the Life Capital Adequacy Subcommittee and the Life Valuation Subcommittee. Its charge is to examine issues surrounding the development of a reserve methodology for variable annuity products[1] that uses the principles of the proposed Risk-Based Capital (RBC) C-3 Phase II approach. The VARWG will examine the effectiveness of such a methodology, and identify and comment on regulatory and practicality issues. Where appropriate, the work group will work with NAIC's Life and Health Actuarial Task Force (LHATF) to develop the methodology and make recommendations on strategies to address any issues that have been identified or that may arise.

The motivation for examining this approach comes from two key sources. First, for the past several years, the LPC has held the position that a long-term model-based solution that addresses both reserve and RBC considerations is a methodology that is well suited for the risk profile of variable annuity products with guarantees and that such a solution should be pursued. Second, over the past year, LHATF has expressed broad support for developing a reserve methodology for variable annuity products with guarantees using the RBC C-3 Phase II approach. Most notably, this was discussed during the April 25, 2002 LHATF conference call when the task force rejected the prospective Variable Annuities with Guaranteed Living Benefits reserve approach originally proposed in draft Actuarial Guideline MMMM. During that call, LHATF decided to develop a simplified retrospective approach (since adopted as Actuarial Guideline XXXIX) to be used as an interim requirement until such a long-term approach could be developed.

This report summarizes the initial discussions of the work group to date and presents potential directions for future work group initiatives. The intent of this report is to stimulate discussion. No recommendations are being presented at this time.

[1] Note that throughout this report, the reference to "reserve methodology for variable annuity products" does not imply a recommendation as to the scope of this project. One of the issues the VARWG will be examining is at what level should a reserve approach using the principles of the C-3 Phase II approach be applied (e.g., should it apply to variable annuities with guaranteed living benefits, variable annuities with any guaranteed benefit, or all variable annuities). It is also important to note that at this point, the VARWG does not intend to look at issues surrounding the application of such a reserve methodology to variable life products.

II. Key Issues

The VARWG is examining issues from five key categories involving the development of a reserve methodology for variable annuity products that uses the principles of the proposed RBC C-3 Phase II methodology:

A. Potential Regulatory Form of the Requirement (Law vs. Guideline)

The form that such a reserve requirement takes is a key decision that will impact many of the other issues. From our discussions, it is clear that this requirement should take the form of either a model law (such as a revision to the model Standard Valuation Law - SVL) or an actuarial guideline. In order to help advance the discussion, Appendix A outlines many of the key advantages and disadvantages of each strategy.

Once a direction on this issue is determined, other issues may present themselves. For example, if it is determined that this requirement should take the form of a revision to the model SVL, it will need to be determined how the timing of such revisions will be impacted by the other revisions to the model SVL currently being contemplated by LHATF. The VARWG will work with LHATF to identify and address any corollary issues that emerge.

B. Reserve Methodology Issues

Unfortunately, developing a reserve methodology for variable annuity products that uses the principles of the proposed RBC C-3 Phase II approach may not be as straightforward as taking the RBC approach and changing the Conditional Tail Expectation (CTE) level. The VARWG is reviewing the current RBC C-3 Phase II proposal to determine what modifications, if any, would be needed to apply this approach to a reserve calculation. This review will include all the components of the approach including the products to which it applies (see footnote on page 1 of this report) and the technical and practical aspects of the calculation. Appendix B contains a preliminary list of issues that need to be addressed in order to implement this reserve methodology.

C. Tax Reserve Issues

The VARWG is examining how a reserve methodology for variable annuity products that uses the principles of the proposed RBC C-3 Phase II approach would interact with the current tax laws and regulations. These laws anticipate statutory reserves based on methods, tables of mortality, and interest rates set by the NAIC and the states. The VARWG intends to examine in detail possible conflicts with the current tax environment that could arise from a reserve methodology based on the RBC C-3 Phase II approach, while exploring possible solutions to resolving such conflicts.

D. Reserve Methodology Modeling

Whatever reserve methods are ultimately proposed will need to be analyzed under a broad range of interest rate, fund performance, and benefit status assumptions. This will help identify ambiguities in the guidance for any proposed reserving methodology, ensure the mechanics of the methodology work properly, help those reviewing the methodology understand the impact of the method on the resulting reserve for various benefit designs under different economic conditions, and compare resulting reserves to those currently required and assist in the development of any reserve factors that may be required.

Since currently anticipated reserve methods would closely parallel those contained within the RBC C-3 Phase II proposal, it is imperative that any analysis be consistent with that which has been done, and continues to be carried on, for the RBC C-3 Phase II proposal. In addition, the process of reserve testing can likely be accelerated by combining the efforts of the VARWG with those of the Life Capital Adequacy Subcommittee's C-3 Work Group. Therefore, the VARWG has contributed additional members to the existing C-3 Work Group's modeling subgroup, which is currently undertaking the development of RBC factors for proposed "alternative method" minimum guaranteed death benefits[2]. Once this task is completed, it is anticipated that modeling of proposals for reserve methodology will begin.

E. Professional Issues

Because a reserve methodology for variable annuity products that uses the principles of the proposed RBC C-3 Phase II approach would introduce new techniques into the reserve process, the VARWG expects that there will be a need for professional and practical guidance. Such guidance might include some combination of a new actuarial standard of practice, the establishment of new qualification standards, and new life practice notes. In addition, asset adequacy analysis requirements would need to be addressed. This would include the issue of the extent to which analysis performed as part of the reserve calculation would satisfy existing requirements for asset adequacy analysis.

Once the elements of a new reserve methodology are better established, the VARWG will work to identify the need for guidance and will work with the appropriate groups (e.g., the Life Operations Committee of the Actuarial Standards Board) to provide whatever support is needed to develop this guidance.

[2] Under the RBC C-3 Phase II proposal, a company may choose to use these factors for variable annuities with minimum guaranteed death benefits instead of using the modified CTE approach with stochastic scenarios if it hasn't yet used the stochastic scenario approach in previous years.

III. Next Steps

The following are the areas on which the VARWG expects to focus going forward:

A. Continue to work with LHATF to determine the form of the requirement (e.g., law vs. guideline).

B. Continue identification of methodology issues and begin the process of addressing the issues (including any necessary recommendations).

C. Identify any potential tax issues and begin the process of discussing possible solutions.

D. Begin modeling of reserves once resources become available.

E. When appropriate, identify the need for professional and practical guidance and begin the process to help develop the guidance.

The VARWG plans to update LHATF on its progress at the summer NAIC meeting.

Appendix A

Variable Annuity Reserving Methodology Similar to RBC Phase II C-3 Proposed Modeling

Law vs. Actuarial Guideline – Considerations

Law	Issue	Actuarial Guideline
C-3 Phase II method would introduce new actuarial modeling techniques for reserving for complex benefits. a. Neither techniques nor benefits were available in the mid 1970's when CARVM was adopted. b. A new or modified law can incorporate the use of reserve principles that will result in reserves at appropriate levels and that are general and forward thinking to anticipate future benefit designs.	**Introduction of New Reserve Concepts and Methods**	**New concepts have already been incorporated into the definition of CARVM Reserves by guideline.** a. Use of option costs in Actuarial Guideline XXXV. b. Use of incidence rates for non-elective benefits in Actuarial Guideline XXXIII. c. Use of drop and return scenarios rather than "worst case" scenarios in Actuarial Guideline XXXIV. d. It can be argued that elements of the C-3 Phase II methodology are consistent with "greatest present value".
C-3 Phase II method would be a fundamental change from the current application of CARVM to variable annuities with guarantees. a. Approach develops appropriate reserves utilizing professional judgment of the valuation actuary and based on expected benefits (rather than only on guaranteed benefits). b. Modeling reflects actual company investment philosophy including hedges (existing hedges, future hedging strategies, or both). c. Modeling may potentially include reinsurance more directly than current methodology. d. Market values as of valuation date incorporated into projection of future benefits and revenues.	**Consistency with Current Application of CARVM**	**Guidelines are "interpretations of law" and C-3 Phase II method could be considered incompatible with CARVM and AG XXXIII.** a. CTE may not be consistent with "greatest present value". b. Allows use of incidence rates for elective benefits, which is prohibited by AG XXXIII. c. Allows actual company experience, rather than adopted tables, to determine policyholder behavior assumptions. d. Discount rates may be inconsistent with "calendar year statutory valuation interest rates". e. Directly reflects company expenses.

Appendix A

Law	Issue	Actuarial Guideline
May provide more authority for new requirements. a. Eliminates potential reluctance of regulators to enforce a guideline in a uniform manner they may feel does not have foundation in law. b. Allows state legislatures to assert their legal prerogative.	**Legal Authority**	**Adequate authority may exist using a guideline.** a. Because of codification it is less likely now that guidelines can be rejected as not being authoritative.
May take many years to put into effect. a. Requires more effort to adopt at NAIC due to model law being "bigger deal" than actuarial guideline (especially if the modification applies to inforce business). b. Requires education on a state-by-state level to help legislators and staff understand the need for and the complexity of the new approach. c. May require a supporting regulation to provide details (similar to the actuarial opinion requirements), which will add time to the adoption process, but may provide needed flexibility for future changes.	**Time Needed for Effectiveness of New Requirements**	**Could become effective more quickly than a law.**
Potential lack of uniformity between states. a. Temporary period during which new law is passed in some states and not in others. b. Permanent lack of uniformity may result due to some states not adopting and/or modifications made by some states.	**Uniformity of Reserve Requirements Between States**	**Allows more uniformity between states.** a. State use and/or adoption of codification have resulted in more uniform recognition of actuarial guidelines.

Appendix A

Law	Issue	Actuarial Guideline
Model Laws generally do not apply retroactively. a. Since AG XXXIX was adopted as a temporary requirement, the issue of how to handle inforce VAGLBs would need to be addressed. b. Earning Protection Death Benefit-type business in force prior to new law would need to be addressed. c. AG XXXIV would need to be modified to apply only to MGDB benefits not covered by new law.	**Retroactivity**	**New Guidelines generally apply retroactively.** a. Could apply to inforce AG XXXIX and Earning Protection Death Benefit-type business. b. AG XXXIV would need to either be repealed or modified to apply only to inforce.
Much more difficult to modify or correct after adoption than an actuarial guideline.	**Subsequent Modification**	**Guidelines can be modified by the NAIC at any time.**
It is not yet clear that either a law or guideline approach offers any advantages or disadvantages.	**Tax Law**	**It is not yet clear that either a law or guideline approach offers any advantages or disadvantages.**
May delay the other Revisions to the SVL being contemplated by LHATF.	**Others**	**May have unintended implications for CRVM (i.e., life insurance).**

Appendix B

Using the RBC C-3 Phase II Methodology for Reserves

Preliminary List of Issues

Proposed RBC Approach	Issue	Potential Reserve Issue
Applies to all variable annuities with any guaranteed benefit. It also currently applies to variable life contracts with secondary guarantees. The proposed approach produces the RBC for the entire contract.	**Scope**	What should the scope be for reserves (e.g., variable annuities with guaranteed living benefits, variable annuities with any guaranteed benefit, or all variable annuities)? Should the approach be used to calculate reserves for the entire contract or for just the guarantee?
May allow use of factor approach as an alternative in the cases of specific benefit types identified by the NAIC or immaterial blocks of contracts.	**Safe Harbor**	Are there any instances where a factor alternative is not appropriate for reserves? Are there cases where a factor alternative is not available for RBC, but may be appropriate for reserves?
Requires 90 CTE, using a modified CTE approach.	**Confidence Level**	Should reserves use a CTE, MCTE, or percentile basis? What level should be used for reserves?
Measures accumulated after-tax statutory income and discounts the greatest accumulated loss back to the valuation date using after-tax discount rates.	**Pre-tax vs. After-tax**	Should reserves be calculated using pre-tax or after-tax income projections and discount rates?
Allows companies to use prudent best estimates based on their own experience for assumptions.	**Source of Assumptions**	Is this reasonable for reserves, or do one or more classes of assumptions need prescribed values? - Elective Benefits (e.g. persistency) - Interest Rates (earned and discount) - Mortality - Expenses

Appendix B

Proposed RBC Approach	Issue	Potential Reserve Issue
Approach uses prudent best estimate of expected benefit amounts.	**Projected Benefits**	Is it appropriate to use estimates of company experience and practice for reserves? Are projected benefit levels appropriately matched to conservatism in the assumptions?
Aggregation at the company level for all contracts falling under the scope.	**Aggregation Level for Calculation**	Should reserve be calculated at the company level, or should aggregation occur between this and the policy level (e.g. policy form or line of business)? If reserves are aggregated at a level above the policy level, is there a need to allocate the aggregated reserve back to policy level?
Allows for grouping of funds into fewer modeled categories by type (e.g., Morningstar classes). Calibration to the S&P 500 is still required for non-index funds, with appropriate adjustment for efficient frontier (risk/return) differences by fund characteristic.	**Fund Grouping and Aggregation Level**	Is it appropriate to use the same fund groupings and fund aggregation levels for reserves as for capital?
No Floor.	**Reserve Floor**	It is assumed that the approach will result in reserves that are consistent with the current Annual Statement requirement that reserves not be less than cash value. Is there a need for any additional formulaic floor?
Includes the fixed account funds. Integrated interest rate models are allowed but not required. For fixed account earned rate, the implied forward rates from the swap curve must be used in the absence of an interest rate model. Note that more discussion on the treatment of this issue for RBC is taking place.	**Fixed Account Reserve and Interest Rates**	Is a similar approach appropriate for reserves?

Appendix B

Proposed RBC Approach	Issue	Potential Reserve Issue
For accumulation of projected statutory income and discounting of the greatest accumulated loss, the use of either an integrated interest rate model or the implied forward rates from the swap curve is allowed. Guidance is provided for the creation and use of an integrated interest rate model.	**Interest Rates**	Is a similar approach appropriate for reserves? Should a minimum statutory valuation rate be required for reserves?
Approach has not yet addressed timing. Alternatives are being discussed such as using September data or using a year-end estimate with provision for an update to the result if final results differ materially.	**Timing of Producing Results Relative to Reporting Deadlines**	How should this be handled for reserves? - both for annual and for quarterly statements
Does not differentiate between separate account and general account requirements.	**Reserve in Separate vs. General Account**	Since reserves for fixed account values and all separate account guaranteed benefits are reported in the general account, a mechanism for splitting the aggregate reserves into general account and separate account components will be needed.
Allows a company to incorporate reinsurance directly into the calculation.	**Reinsurance**	Is this appropriate for reserves, or should any additional constraints be required? Should there be specific requirements for companies assuming guaranteed benefits?
Time period of projection is not explicitly defined. Discussions have taken place about the possibility of limiting the time period (e.g. 20 years).	**Time Period**	What time period is appropriate for reserves (e.g. should inforce be projected until immaterial?)
Allows a company to incorporate hedges if the insurer is following a clearly defined hedging strategy.	**Hedges**	Is incorporating hedges appropriate for a reserve approach?