



AMERICAN ACADEMY *of* ACTUARIES

**INTERIM REPORT
TO THE NAIC INNOVATIVE PRODUCTS WORKING GROUP
OF THE LIFE AND HEALTH ACTUARIAL TASK FORCE ON VARIABLE
ANNUITIES WITH GUARANTEED LIVING BENEFITS**

JUNE 1998

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This report was prepared by the Academy's Variable Annuities with Guaranteed Living Benefits (VAGLB) Work Group of the Committee on State Life Insurance Issues.

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With appreciation to the many interested parties for their participation in this process.

June 1998 - Interim Report of the VAGLB Work Group

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PART 1

Product Design Issues

I. Introduction

In response to a request from the NAIC, Life/Health Actuarial Task Force, the American Academy of Actuaries Variable Annuity Guaranteed Living Benefits (VAGLBs) Work Group agreed to address three topics at the March 1998 NAIC Meeting in Salt Lake City.

Specifically, the work group agreed to:

- (1) Develop and maintain a current Product Landscape Description. Separate descriptions will be provided for the Guaranteed Minimum Income Benefit (GMIB), the Guarantee Minimum Accumulation Benefit (GMAB), and the Guaranteed Payout Annuity Floor (GPAF). These descriptions will be constructed in a tabular format and will be updated periodically to keep the work group and regulators aware of new product innovations.
- (2) Consider the extent to which the Securities and Exchange Commission (SEC) and/or the National Association Securities Dealers (NASD) has developed specific regulatory provisions regarding VAGLBs.
- (3) Discuss the nonforfeiture implications of VAGLBs, including the applicability of current regulations, possible alternative interpretations of existing rules, and the impact of various interpretations on product design and viability.

The initial report of the work group provided a general description of VAGLBs and their mechanics. Please refer to Appendix I of this report for background. The remainder Part 1 of this report addresses the three above mentioned areas.

II. Product Landscape Description

Appendix II provides a VAGLB product landscape table. Note that separate descriptions are provided for GMIB, GMAB, and GPAF features. This table will be updated as necessary to provide a comprehensive depiction of the current marketplace. Note that thus far, VAGLBs have followed a “snowflake” design in that no two are exactly alike. It is likely that VAGLB features currently in development will continue the trend of unique product differentiation. Also, although the number of currently available VAGLBs is relatively small, research indicates that many more VAGLBs will reach the market over the next year. Therefore, while the work group attempted to make the product description as general as possible, periodic revisions will need to be made to reflect new VAGLBs as they emerge. Finally, note that the work group has excluded those product designs mentioned in our initial report in which an equity indexed subaccount is offered within a variable annuity contract.

III. Current SEC and NASD Treatment of VAGLBs

SEC and NASD oversight of variable annuities in general suggests that these regulatory bodies have already reviewed current variable annuity products which offer VAGLBs. A question raised by state regulators at the March 1998 NAIC meeting in Salt Lake City was whether the SEC or NASD has adopted specific rules relative to VAGLBs, or if interpretations of existing rules have been made which impact VAGLBs.

Based upon research conducted by the work group, including discussions with attorneys active in SEC and NASD filings, there do not appear to be any specific regulations covering VAGLBs in U.S. securities laws; however, there are several observations regarding securities law regulation which are relevant to VAGLBs.

- Following the change in SEC rules in late 1996 which addressed the level of charges applied to variable annuity contracts, the fees paid by the contract holder to the insurer for a VAGLB are not subject to a specific numerical limit, but must meet an overall requirement of being reasonable. Thus far, insurers typically assert the reasonableness of charges based on comparisons with charges on comparable products, underlying product profitability, and compliance with the former SEC numeric limits. Thus, for an insurer offering a VAGLB, a demonstration of the reasonableness of the feature's cost must be completed.
- There is an entire body of securities law related to specific structures involving the guarantee of a security by an entity. If such law is deemed applicable, significant disclosure must be provided including, among other things, detailed descriptions of the guarantor. Variable annuity insurers and their counsel have addressed these issues and have concluded that insurance company disclosure is adequately provided in existing variable forms and filings. Specifically, ample disclosure is felt to be already provided in the typical variable annuity prospectus, contract, and registration statement filing concerning the life insurance company, its general account, and its financial strength.
- General rules of disclosure outlined in the Securities Act of 1933 and the Securities Exchange Act of 1934 impact the presentations of VAGLBs. The information provided to contract holders regarding the structure, costs, and limitations of a VAGLB must be clearly and completely explained in marketing material, advertising, the prospectus, and the policy contract. New initiatives on the readability of prospectuses and other disclosure material, including simplified language, will apply to VAGLBs.

IV. VAGLB Nonforfeiture Issues

The work group began its study of VAGLB nonforfeiture issues by reviewing existing annuity (and related) model regulations and actuarial guidelines to determine if these current rules address the nonforfeiture impact of VAGLBs.

The existing rules the work group reviewed which could have some applicability to VAGLBs were the following:

- Model Variable Annuity Regulation.
- Standard Nonforfeiture Law for Individual Deferred Annuities
- Interest-Indexed Annuity Contracts Model Regulation.
- Model Annuity and Deposit Fund Disclosure Regulation.
- Two-Tier Annuity Disclosure Model Regulation.
- Modified Guaranteed Annuity Regulation.
- Actuarial Guideline III - Definition of Maturity Value.
- Actuarial Guideline X - Treatment of Excess Interest.

None of the language in the above rules explicitly address VAGLBs, nor do such rules provide guidance with respect to VAGLB's nonforfeiture issues. However, there are certain portions of these rules which raise questions in connection with the nonforfeiture impact of VAGLBs.

The issues associated with the nonforfeiture impact of VAGLBs can be grouped into three main categories:

- (1) Definition of variable annuity
- (2) Specific nonforfeiture provisions
- (3) Other related regulations

A. Definition of Variable Annuity

The Model Variable Annuity Regulation is an important starting point for consideration since this Model provides a definition of a variable annuity. The scope of other nonforfeiture-related regulations either includes or excludes variable annuities, presumably based on the definition provided by the Model Variable Annuity Regulation. The model defines a variable annuity as follows:

“The term ‘variable annuity’ when used in this regulation, shall mean any policy or contract which provides for annuity benefits which vary according to the investment experience of any separate account or accounts maintained by the insurer as to such policy or contract, as provided for in Section [insert applicable section] of the laws of this State.”

It appears that there could be multiple interpretations as to whether a VAGLB continues to meet the above definition of a variable annuity.

On the one hand, a somewhat narrow and more literal interpretation would be that a variable annuity with a VAGLB is no longer a variable annuity because at least some component of the product (i.e., its minimum floor benefit) does not vary with the investment performance of a separate account. Further, supporters of this interpretation might argue that a variable annuity with a VAGLB has similarities to an equity-indexed annuity. This position might be taken even though equity-indexed annuities tend to have a permanent floor guarantee, while VAGLBs define a periodic floor guarantee. General account equity-indexed annuity carriers have taken the position that their products are not securities.

On the other hand, a broader interpretation is that a variable annuity with a VAGLB continues to meet the definition of a variable annuity. This interpretation is based on the position that the VAGLB is a supplemental benefit to the core variable annuity contract. This core contract continues to function as a variable annuity contract in all other ways, such as the daily mark-to-market and establishment of a separate account. This position holds that the contract in total continues to function as a variable annuity since its most significant components do vary with the investment performance of a separate account(s).

In the view of this the work group believes a variable annuity with a VAGLB remains a variable annuity under the definition contained in the Model Variable Annuity Regulation. The work group takes this view in consideration of the following:

- VAGLBs are often structured as optional riders or endorsements to a base contract. It would be difficult to consider a contract form as a variable annuity if no VAGLB was selected but to consider it as something other than a variable annuity if a VAGLB was selected.
- If a contract with a VAGLB is no longer a variable annuity, it is not clear what it is and which existing rules apply.
- If contracts with VAGLBs are not considered to be variable annuities, numerous other definitional and requirement questions apply. For example:
 - S Could insurers issue such products without separate variable authority in the individual states?
 - S Are separate accounts even needed in order to issue such contracts?
 - S Must producers be specially qualified to sell such products?

It appears necessary that such issues would need to be treated in a manner consistent with variable annuities.

- VAGLBs have a significant and fundamental difference from equity-indexed annuities. EIAs define returns based on an external price level, while a VAGLB bases returns on the performance of underlying funds (including dividends).

Based on these considerations, the remainder of this document will assume that a contract which would otherwise meet the definition of a variable annuity without a GLB will still be considered as a variable annuity when a GLB is added.

B. Specific Nonforfeiture Provisions

A number of the existing rules which address nonforfeiture requirements (e.g., the Standard Nonforfeiture Law for Individual Deferred Annuities) specifically exclude variable annuities from their scope. Further, VAGLBs are not addressed explicitly in any existing nonforfeiture rules. Given our earlier interpretation that VAGLBs remain variable annuities under a regulatory definition, an immediate conclusion might be that variable annuities with VAGLBs raise no new nonforfeiture questions. However, the work group examined several issues which can be viewed as fundamental to the traditional scope of nonforfeiture rules and which may present unique questions in the context of VAGLBs.

The NAIC Model Variable Annuity Regulation contains a particular section (Section 7) which addresses nonforfeiture benefits for variable annuities. This section does not apply to immediate annuities, which appears to eliminate the impact of such language on GPAFs. This section requires the availability of paid-up annuity benefits at certain specified levels, and compliance with minimum nonforfeiture amounts that are calculated on a retrospective basis assuming actual rates of return. The latter requirement effectively imposes a maximum fee, premium load, and surrender penalty threshold on a variable annuity contract. The existence of a GMIB or a GMAB where the charge for the guarantee is an asset-based charge would typically only serve to strengthen a contract's compliance with this section.

Subsection (B) of Section 7 warrants additional analysis, however. Section 7(B) states:

- “B. To the extent that any variable annuity contract provides benefits which do not vary in accordance with the investment performance of a separate account before the annuity commencement date, such contract shall contain provisions which satisfy the requirements of [insert appropriate statutory citation to the Standard Nonforfeiture Law for Deferred Annuities] and shall not otherwise be subject to this section.”*

A conservative interpretation of Section 7(B) would be that VAGLBs are subject to the Standard Nonforfeiture Law for Deferred Annuities. Such an interpretation has two major implications:

- The first implication appears to be that any variable annuity which offers a GMIB or GMAB must provide guaranteed benefits that are no less than the minimum nonforfeiture amounts specified in the retrospective test of the Standard Nonforfeiture Law for Individual Deferred Annuities. Stated differently, the annuitization value or cash value after application of the VAGLB can be no less than the accumulation of premiums (net of withdrawals) at 3 percent of 90 percent of net considerations (for single pay products) or 3 percent of 65 percent/87.5percent of net considerations (for flexible pay products). This requirement can be interpreted as being effective from the date issued, so that VAGLBs could not have waiting periods for the benefits to be obtainable. Most VAGLBs available today could not satisfy this requirement.
- A second implication is that a variable annuity with a GMAB would be required to comply with the prospective test in the Standard Nonforfeiture Law for Individual Deferred Annuities. (The prospective test is not currently part of the Model Variable Annuity Regulation.) This would mean that any variable annuity which offers a lump sum cash value option (i.e., all deferred variable annuities) and which includes a GMAB must grade the minimum guaranteed cash value benefit to the ultimate guaranteed benefit over the specified term of the GMAB. Most GMABs available today could not satisfy this requirement. Additionally, GMIBs would be impacted by the prospective test to the extent that the guaranteed annuitization account value is much higher than the actual account value at maturity and it is believed that the product must use the higher guaranteed value as the basis for the prospective test calculations.

In considering this subsection of the NAIC Model Variable Annuity Regulation, the work group believes that Section 7(B) should not apply to VAGLBs. This interpretation seems to be consistent with the intent of the NAIC Model Variable Annuity Regulation.

Our opinion is based upon the following:

- In our opinion, the language in the model is directed toward the fixed/general account subaccount options within a combination fixed/variable contract. Historically, variable annuity insurers have typically viewed subaccount options as being subject to Standard Nonforfeiture Law requirements.

- The value of the VAGLB can be viewed as being a function of the investment performance of a separate account. For example, strong investment performance of the separate account will eliminate or reduce the value of the VAGLB (as well as the value of any underlying hedging assets purchased by the insurer).
- A VAGLB can be thought of as a contract which fundamentally offers benefits that vary with the investment performance of a separate account, but which offers a supplemental benefit which mitigates risk in separate account performance. This differs from the character of a fixed/general account option.

Further, a requirement that any VAGLB must provide guarantees at the levels specified in the Standard Nonforfeiture Law may have the effect of constraining product design and mandating an expensive benefit to manage. Also, contract holders have their individual ranges of risk profiles, with some willing to accept greater risk with less downside protection, while others want greater protection and are willing to incur greater costs for this protection. Therefore, the work group recommends that VAGLB designs should be permitted to be as flexible as possible to meet the differing needs of consumers. This design flexibility necessitates clear disclosure to the consumer of all the conditions under which a VAGLB is available.

The work group also reviewed the applicability of Actuarial Guidelines III and X to VAGLBs. The work group believes that Actuarial Guidelines III and X should not apply to VAGLBs, since the guidelines provide guidance relating to the definitions of maturity value and excess interest, respectively, in the prospective test of the Standard Nonforfeiture Law for Deferred Annuities .

Section 7(H) of the Model Variable Annuity Regulation requires that for variable annuity contracts which provide for cash surrender benefits (i.e., all variable deferred annuities), the death benefit provided under such contracts must at least equal the cash surrender benefit. This provision would likely be interpreted to mean the cash surrender value after recognition of any VAGLB. Thus, to the extent that a variable annuity offers a GMAB, the death benefit provision should be coordinated with the GMAB provision on the variable annuity to ensure that Section 7(H) is satisfied.

C. Other Related Regulations

There are other existing annuity regulations and guidelines whose provisions may be interpreted as impacting VAGLBs. Generally, these rules fall into two major categories:

- (1) Definitional - Both the Interest-Indexed Annuity (IIA) Model Regulation and the Modified Guaranteed Annuity (MGA) Model Regulation provide definitions of IIAs and MGAs, respectively, which could conceivably be construed as including VAGLBs.

For example, the IIA Model defines an interest-indexed annuity contract as any annuity contract where the interest credits are linked to an external reference. A variable annuity which offers indexed subaccounts might be viewed as subject to these rules, which include mandatory descriptions of index calculations and investment policy, submission of an asset adequacy opinion, and valuation requirements.

The MGA Model defines a modified guaranteed annuity as a deferred annuity contract in which the underlying assets are held in a separate account, and the contract values are guaranteed if the contract is held for specified periods. The contract contains nonforfeiture values based upon a market value adjustment if held for shorter periods.

In this definition, the market value adjustment formula may or may not reflect the value of assets held in the separate account. A VAGLBs might be considered as falling within the MGA Model since the product provides guarantees of values over specified periods, and is funded through a separate account.

The work group believes that it is inappropriate to consider either Model as providing guidance for VAGLBs. The IIA Model was intended to apply to products which credited interest based upon an external interest index. A VAGLB provides a return based upon actual price and dividend performance of subaccounts, not simply an external price level. Also, the IIA Model explicitly excludes variable annuities from its scope.

The MGA Model anticipates a declared interest rate product with traditional market value adjustments that follow a proxy formula, not a VAGLB. VAGLBs provide a floor for a variable annuity contract value, but the expectation is that the actual variable value will usually be higher than the floor. On the other hand, the modified guarantee product provides that the current account value will be realized if the contract persists for a specified period. It is difficult to see how the language in the MGA Model could be applied to a VAGLB, since it is written from the perspective of a traditional market value-adjusted declared rate annuity.

- (2) Disclosure - Two other model regulations provide for disclosure guidelines which should be reviewed. The Model Annuity and Deposit Fund Disclosure Model specifies disclosure (e.g., Buyer's Guide) and delivery requirements for annuities. The model specifically excludes variable annuities and immediate annuities. However, a reasonable question to ask is whether there are principles of this Model which should be applied to VAGLBs.

At the SEC/NASD level, there is already a general requirement that all benefits and charges should be fully and fairly disclosed. Although the work group believes that the emergence of VAGLBs should not lead to a new Buyer's Guide or new delivery requirements, it may be appropriate to consider parameters of disclosure that improve customers' ability to understand the nature and costs of their benefits.

Secondly, the Two-Tier Annuity Disclosure Model Regulation provides for the requirement of distributing a Two-Tier Annuity Disclosure Form prior to accepting deposits. Since the Model defines a two-tier product as one which provides different values for lump sum surrender versus annuitization benefits, one may think about the impact on GMIBs. The Model specifically excludes variable annuities, but VAGLBs do provide for a possible distinction between lump sum surrender and annuitization values. While the work group believes that the current Disclosure Form for two-tier products is probably inappropriate for VAGLBs, consideration may be given to disclosure mechanisms that inform contract holders of the differences between lump sum values and annuitization values under a GMIB.

PART 2

Valuation and Financial Reporting—Formula Reserve Issues

I. Introduction

The work group divided its work on Valuation and Financial Reporting Issues into four areas: Formula Reserve Issues, Accounting Issues, Valuation Actuary Issues, and Other Financial Reporting Issues. Although the issues in these areas interrelate, the work group decided to address the Formula Reserve Issues first, keeping in mind that conclusions drawn in this first set of issues have enormous impact on issues in the other areas.

The work group proceeded by developing objectives for a formula reserve method for VAGLBs. The group then examined existing laws, regulations and guidelines to determine their applicability. The group next developed a risk profile for VAGLBs, and, then, examined six possible reserving approaches. This report summarizes that work, and then recommends further development of one of the reserving methodologies.

Part 2 of this interim report is organized as follows:

- (1) Objectives for a VAGLB Reserving Methodology.
- (2) Risk Profile of VAGLBs.
- (3) Issues Involving Calculation of the Cost of VAGLBs.
- (4) Applicability of Current Reserve Requirements to VAGLBs.
- (5) Overview of Potential VAGLB Reserve Methodologies.
- (6) Detailed Discussion of Potential VAGLB Reserving Methodologies.
- (7) Recommendations and Next Steps.

II. Objectives for a VAGLB Reserve Methodology

The work group developed the following objectives for a Reserve Methodology for VAGLBs. These objectives should be viewed as a guide against which to measure potential methodologies. The work group believes it would be unlikely for any single methodology to meet all of the objectives, and trade offs might need to be made between objectives, to obtain the best possible reserving approach. Also, the work group does not consider the list to be exhaustive in that, for particular methodologies, there may be other criteria that make those methodologies either desirable or objectionable.

The reserve method should:

- (1) be consistent with the principles underlying existing laws, regulation, guidelines and Actuarial Standards of Practice;
- (2) be consistent with required or permitted Statutory accounting of assets;
- (3) with the associated asset valuation method, not cause unwarranted fluctuations or distortions in the income and/or surplus of the company;
- (4) be simple, auditable, understandable, not arbitrary, and practical to calculate;
- (5) be applicable for tax reserve methods;
- (6) provide a reasonably adequate level of suitable reserves over a broad range of reasonably expected benefit types, recognizing the risk characteristics of each benefit type;
- (7) recognize that reserves will be established for other benefits payable under the same contract, and, to the extent possible, not conflict with the methods used to establish reserves for these other benefits, and, neither impair the adequacy of the combined reserve, nor establish redundant reserves; and
- (8) to the extent possible, embody the principles of the American Academy of Actuaries' Valuation Law Task Force.

III. Risk Profile of VAGLBs

The work group considered the following risk characteristics VAGLBs.

A. Asset Performance

Similar to Minimum Guaranteed Death Benefit (MGDB) provisions, the risks presented by VAGLBs are largely defined by performance of the underlying Separate Account assets. This consists of two categories of risk: volatility about the expected growth of the underlying assets (typically a short term risk), and underperformance of the underlying assets (typically a longer term risk). Since most current VAGLBs contain waiting periods (i.e., the benefits are not available until the contract has been in force for a specified number of years), it is important to note that the impact of the volatility risk on VAGLBs is lessened during the waiting period.

B. Anti-selection

In addition, VAGLBs go one step further than MGDBs in that they introduce the potential for anti-selection (i.e., the contract holder is more likely to exercise contractual options when it is more costly to the Company). While it is not likely for either the annuitant or the owner of a variable annuity to elect to die because their contract's MGDB is in the money, there is clearly the potential for a contract holder to elect annuitization or delay surrender because their VAGLB is in the money.

The potential for anti-selection also arises with the ability to transfer assets between funds supporting the Variable Annuity contracts. Existence of a VAGLB could influence contract-holder fund choices, both at issue and later, as the contract holder could be more inclined to select more aggressive investments than if the VAGLB were not present. However, although the increased fund volatility of such options could increase potential costs, in some cases the greater return prospects of these riskier funds, in combination with the waiting periods for exercising VAGLBs, could actually reduce the VAGLB risk. Each case would provide a unique set of circumstances related to VAGLB anti-selection due to fund transfers. Therefore, the combination of the VAGLB design, the characteristics of the underlying funds, and any contractual limitation on fund transfers should all be examined when addressing the potential impact of this risk.

C. Utilization Assumptions

The process of assessing the risks of VAGLBs is complicated by lack of credible experience studies regarding the utilization of the various options provided for by VAGLBs (e.g., annuitizations and surrenders). For example, to date, exercise of annuitization options has been minimal; however the presence of an in-the-money VAGLB option could change this under the right market conditions. The factors impacting the utilization of options associated with VAGLBs include the price paid for the option and fund performance relative to the contract holder's expectations. These items could highlight the choices already offered by the typical annuity contract, and cause more frequent annuitization elections, or change the timing of contract withdrawals.

D. Pricing Risk

A thorough pricing analysis should incorporate the inter-related items of market performance and contract-holder behavior. While most new product pricing entails some degree of uncertainty, most parameters impacting VAGLB pricing are difficult to quantify (see section III). Thus, while products introduced to date charge a fee for the VAGLB benefit, assessing the adequacy of these fees is a complex stochastic exercise.

As with other innovative product features, there is the potential for reserve and capital

requirements to be more stringent than those embedded in pricing. Moreover, VAGLBs will present asset/liability management challenges not previously contemplated for other products, especially as new designs emerge.

IV. Issues Involving Calculation of the Cost of VAGLBs

All the reserving methodologies the work group examined face the practical problem of attempting to calculate the cost to the company of the VAGLB. Since the VAGLB is an option granted to the contract holder, one way to calculate the cost of the benefit is to use option pricing techniques. However, the unique nature of VAGLBs make the evaluation of the parameters needed in a traditional option pricing exercise difficult. Specifically:

- (1) Most of the assets backing VAGLBs are primarily invested in unique pools of assets. These funds typically do not have publicly quoted options, making the option pricing exercise one of calculation, not observation.
- (2) Although past actual volatility may be obtainable for funds that have existed for a while, what is required is “implied volatility,” which is implied from option prices. If the option prices don’t exist, volatility can not be implied. In addition, newer funds will not even have observed volatility.
- (3) For a particular pool of assets, dividend rates, if needed, might be unknown. This is especially true if the fund changes strategies.
- (4) A valuation of the charges assessed for the VAGLB may be required. If such charges are expressed in terms of a percent of fund value (as is frequently the case), this becomes an option pricing exercise as well.
- (5) Some methods implicitly assume that once the reserve is calculated, options can be purchased. In reality, this typically will not be the case for most funds backing VAGLBs, and a surrogate option may have to be purchased. This raises the issue of how to evaluate the tracking error for reserving purposes (if at all). Since asset charges received over time, may be included in the reserve calculation, it is implied that options can be purchased on an installment basis, which is difficult. This creates a timing mismatch risk which may need to be addressed.
- (6) Most contracts containing VAGLBs give the contract holder the ability to transfer assets between funds over the guarantee period. This will alter the cost of the option as contract holders transfer assets between funds with differing risk profiles. This is another potential option granted to the contract holder that may need to be evaluated.

- (7) The issue of contract holder behavior may also need to be considered, including how efficiently contract options will be exercised, and whether the presence of a VAGLB effects other contract holder behavior, such as lapse and annuity rates.
- (8) Several VAGLBs are not comparable to European or American puts or calls. The evaluation of these types of benefits will require a more sophisticated option pricing system.

Precise answers for any of the above may be difficult to obtain. However, as in the case of MGDBs, the work group believes that answers can be conservatively estimated and, given the magnitude of the risk, these conservative estimates should allow for reasonable reserve calculations.

V. Applicability of Current Reserve Requirements

In order to develop a formula reserve method for VAGLBs, the work group believes it is important to examine the applicability of current reserve requirements. This includes the general issue of the applicability of CARVM to variable annuities. The following documents were examined:

- NAIC Model Standard Valuation Law
- NAIC Model Variable Annuity Regulation
- Actuarial Guideline XXXIII (revised version)
- Actuarial Guideline XXXIV
- Actuarial Guideline ZZZ (12/5/97 document)

Below are the relevant sections of these documents and our conclusions regarding their applicability.

A. Model Standard Valuation Law

“Section 2: Reserve Valuation

The commissioner shall annually value, or cause to be valued, the reserve liabilities (hereinafter called reserves) for all outstanding life insurance policies and annuity and pure endowment contracts of every life insurance company doing business in this state, and may certify the amount of any such reserves, specifying the mortality table or tables, rate or rates of interest, and methods (net level premium method or other) used in the calculation of such reserves.

“Section 4a: Computation of Minimum Standard for Annuities

Except as provided in Section 4b, the minimum standard for the valuation of all individual annuity and pure endowment contracts issued on or after the operative date of this Section

4a, as defined herein, and for all annuities and pure endowments purchased on or after such operative date under group annuity and pure endowment contracts, shall be the commissioner's reserve valuation methods defined in Section 5 and 5a and the following tables and interest rates:

“Section 5a: Reserve Valuation Method - Annuity and Pure Endowment Benefits

This section shall apply to all annuity and pure endowment contracts other than group annuity and pure endowment contracts purchased under a retirement plan or plan of deferred compensation, established or maintained by an employer (including a partnership or sole proprietorship) or by an employee organization, or by both, other than a plan providing individual retirement accounts or individual retirement annuities under Section 408 of the Internal Revenue Code, as now or hereafter amended.

“Reserves according to the commissioners' annuity reserve method for benefits under annuity or pure endowment contracts, excluding any disability and accidental death benefits in such contracts, shall 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 contract, that become payable prior to the end of such respective contract year. The future guaranteed benefits shall be determined by using the mortality table, if any, and interest rate, or rates, specified in such contracts for determining guaranteed benefits. The valuation considerations are the portions of the respective gross considerations applied under the terms of such contracts to determine nonforfeiture values.”

Summary: The Model SVL appears to require CARVM for all annuity contracts (including variable annuities) with the exception of some group contracts. Additionally, as with MGDBs, the presence of guaranteed benefits in VAGLBs reinforces the applicability of CARVM to these products. However, how CARVM should be applied to variable annuities is not clarified.

B. Model Variable Annuity Regulation

“Section 1: Authority

Pursuant to authority given by Section (insert applicable section) of the Insurance Laws of (insert state), the Insurance Commissioner, after due notice and publication and after affording interested persons opportunity to present written data, views and arguments, does hereby make and promulgate the following rules and regulations to be applicable to insurance companies delivering or issuing for delivery in this state variable annuities as defined in Section 2B, pursuant to Section (insert applicable section) of the insurance laws of this state.

“Section 2B: Definitions

“Variable annuity,” as used in this regulation, means a policy or contract that provides for annuity benefits that vary according to the investment experience of a separate account or accounts maintained by the insurer as to the policy or contract, as provided for in Section (insert applicable section) of the laws of this state.

“Section 6E: Variable Annuity Contracts

The reserve liability for variable annuities shall be established pursuant to the requirements of Section (insert citation of Standard Valuation Law) in accordance with actuarial procedures that recognize the variable nature of the benefits provided and any mortality guarantees.”

Summary: The Model Variable Annuity Regulation clarifies the applicability of CARVM to variable annuities only to the extent that it requires the recognition of the variable nature of the benefits provided to be incorporated into the requirements of the SVL (i.e., CARVM). It does not clarify how the variable nature of the benefits should be recognized. Many companies recognize the variable nature of the benefits of a variable annuity by performing a CARVM type projection of the benefits at the valuation rate, less any guaranteed charges.

C. Actuarial Guideline XXXIII

“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. ... 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.”

Summary: This Guideline, which is effective 12/31/98, clarifies the basic intent of CARVM and provides a basic methodology to incorporate different benefits, including VAGLBs, into the CARVM calculation. The Guideline appears to give the NAIC the ability to develop an actuarial guideline or regulation for VAGLBs that would take precedence over this guideline.

D. Actuarial Guideline XXXIV

“Section I: Background

The purpose of this Actuarial Guideline is to interpret the standards for the valuation of reserves for Minimum Guaranteed Death Benefits (MGDBs) included in variable annuity contracts. This Guideline codifies the basic interpretation of the Commissioners Annuity Reserve Valuation Method (CARVM) by clarifying the assumptions and methodologies which will comply with the intent of the Standard Valuation Law (SVL).

“For many years the industry has struggled with the issue of applying a uniform reserve standard to variable annuities in general, and the MGDBs in particular. Three regulatory sources are often looked to for guidance. First, the SVL requires that CARVM be based on the greatest present value of future guaranteed benefits. Second, Actuarial Guideline XXXIII requires that “each 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.” Third, the NAIC model Variable Annuity Regulation (VAR) states that the “reserve liability for variable annuities shall be established pursuant to the requirements of the Standard Valuation Law in accordance with actuarial procedures that recognize the variable nature of the benefits provided and any mortality guarantees.

“This Guideline interprets the standards for applying CARVM to MGDBs in variable annuity contracts, employing methods that recognize the variable nature of the benefits. It clarifies standards for developing integrated benefit streams, where MGDBs are integrated with other benefits such as surrenders and annuitizations. It also clarifies standards for determining the level of reserve to be held in the General Account.”

Summary: Although this Guideline applies only to variable annuities with MGDBs, it provides a potential framework for incorporating VAGLBs into a CARVM reserve calculation. As written, Actuarial Guideline XXXIV does not apply to a VAGLB if there is no MGDB in the contract. The existence of a MGDB automatically sweeps the contract under Guideline XXXIV, regardless of whether or not the contract has a VAGLB. If a contract has both a MGDB and a VAGLB, the Guideline does not provide guidance on how to integrate the VAGLB into the reserve calculation. More discussion on this issue is contained later in this report.

E. Actuarial Guideline ZZZ

“Scope

This Actuarial Guideline applies to all equity indexed annuity contracts, regardless of the date of issue, that are subject to CARVM. Separate account variable annuities that provide a guaranteed floor for surrender, withdrawal or maturity values (distinct from the guaranteed floor provided by a “Free Look” provision, if any), are also included within the scope of this Guideline.”

Summary: Currently VAGLBs are subject to Guideline ZZZ, however, as stated in our prior report, the work group has recommended that the scope paragraph of Guideline ZZZ be amended to drop VAGLBs.

F. Summary of Applicable Laws, Regulations, and Guidelines

Based on a review of applicable laws, regulations and guidelines, the work group believes:

- Reserves for VAGLBs should be calculated using a CARVM framework.
- Actuarial Guideline 34 currently applies to VA contracts with both a MGDB and VAGLB.
- Actuarial Guideline ZZZ should be amended to drop references to VAGLBs.

VI. Overview of Potential VAGLB Reserve Methodologies

Below is the list of potential reserving methodologies reviewed by the work group. These methodologies were chosen because of their potential relevance to VAGLBs. The work group does not view this set as the full universe of possible approaches, but rather those approaches that seemed to warrant further examination. Due to the unique characteristics of VAGLBs the work group does not expect that any one of these approaches, unmodified, would be the most desirable methodology for reserving for VAGLBs. The work group does believe that a combination of these methodologies, or a modification of one of them, might be appropriate.

The methods can be categorized in the following manner. The first two approaches would develop a CARVM compliant reserve that would fully integrated VAGLBs with all other benefits in the contract. The third approach, while not CARVM compliant, could develop an integrated reserve in that it would result in a reserve backing the full contract. The fourth approach would develop a stand alone reserve for the VAGLB, and would not be CARVM compliant. The last two methods are not CARVM compliant, but could be developed either on a stand alone basis or an integrated basis. Our subsequent discussions of these last two approaches assume that they are developed on a stand alone basis since it is assumed that the calculation of the reserve for

other benefits would be CARVM compliant.

- (1) Guideline ZZZ Approach - Calculate option values for the VAGLB within all potential future benefit streams using a CARVM type calculation. The resulting reserve is the greatest present value all of these benefit streams.
- (2) Guideline XXXIV Approach - Apply drop and subsequent recovery assumptions to the underlying asset values to project future account values and VAGLB values within a CARVM type calculation. The amount of the resulting reserve, in excess of the reserve for the contract ignoring the VAGLB, is held in the general account.
- (3) Regulation 128 Approach - Determine the discounted present value of future expected guaranteed benefits. Add an additional amount, if necessary, to this based on the underlying assets.
- (4) Retrospective Approach - Accumulate charges assessed to cover the VAGLB in an accumulation type reserve. Reserve is increased by charges and interest, and decreased by amounts used to cover actual (or tabular) losses. Reserve may have a cap.
- (5) Full Market Value Approach - Calculate the market value of the VAGLB. Subtract expected fees and hold as a reserve, if greater than zero.
- (6) Valuation Actuary Approach - Reserves are set by the valuation actuary subject to asset adequacy analysis.

VII. Detailed Discussion of Potential VAGLB Reserve Methodologies

This section presents a detailed discussion of each of the Reserve Methodologies that the work group considered. In this discussion the term “VAGLB” refers to the variable annuity contract, including Guaranteed Living Benefits, while the term “GLB” will refer to the Guaranteed Living Benefit on a stand alone basis.

A. Actuarial Guideline ZZZ Approach

Actuarial Guideline ZZZ was developed to identify reserving methods for equity indexed annuities. A prerequisite for any such method is that it be "consistent with the Commissioner's Annuity Reserve Valuation Method (CARVM)." The Guideline defines a primary method (the Commissioner's Annuity Reserve Valuation Method with Updated Market Values - CARVM-UMV), an approximation to CARVM-UMV that is deemed acceptable under certain conditions (the Market Value Reserve Method - MVRM) and a

method that does not rely on option market values except for the initial reserve (the Enhanced Discounted Intrinsic Method - EDIM). EDIM is deemed acceptable if the hedging strategy meets certain requirements.

The fundamental aspect of CARVM-UMV and MVRM is the inclusion of current option market values into the standard CARVM calculation. The option market values reflect the current cost of the call options embedded in the equity indexed annuity contract.

Translating this concept to VAGLBs takes the form of including in the statutory reserve calculation a component for the current option value of the put option embedded in the product. For products with a floor guarantee at a single contract duration, the CARVM-UMV computational method and the MVRM computational method would produce the same result. For products with more complex floor guarantees, differences between the results obtained by applying CARVM-UMV and MVRM would begin to occur.

CARVM-UMV requires a determination of current option market value for each future contract duration and for each benefit type that is subject to a floor guarantee. MVRM, as defined in Actuarial Guideline ZZZ, is applicable to products with a clearly defined dominant benefit that is likely to be accessed by the contract holder at a specific point in time. In this case, MVRM requires a single current option value associated with the single dominant benefit and the specific point in time at which the benefit is most likely to be accessed by the contract holder. This option value is used to determine an "implied benefit growth rate" to determine interim benefits. In both cases, CARVM-UMV and MVRM require a "greatest present value of future guaranteed benefits" calculation.

The Enhanced Discounted Intrinsic Value Method (EDIM) sets the initial reserve equal to either the initial reserve under CARVM-UMV or MVRM. Future reserve amounts are determined as the sum of a reserve for the guaranteed portion of the contract and the discounted intrinsic value of the option embedded in the contract. The reserve for the guaranteed portion of the contract is the accumulation of the initial reserve at an interest rate such that the accumulated initial reserve at the end of the term of the product is equal to the floor of the benefits being hedged. Use of EDIM is conditioned on meeting requirements concerning the hedging program (the "Hedged as Required" Criteria) and the product design must feature a "single dominant benefit" that is most likely to be accessed by the contract holder at a specific point in time.

The use of any of the computational methods requires the valuation actuary to provide various certifications appropriate for the computational methods used by the valuation actuary.

Actuarial Guideline ZZZ was designed for products which are first and foremost, a guaranteed product subject to CARVM. The typical additional benefit in an equity indexed annuity is interest credits based on all, or a portion of, the appreciation in an equity index. The products currently being addressed in this report, VAGLBs, provide for the complete pass-through to the contract holder of the investment experience of specified pool of assets held in a separate account. The additional benefit, in this case, is a guaranteed floor on some or all of the benefits available to the contract holder. The difference between this class of products and equity indexed products makes the literal application of Actuarial Guideline ZZZ to VAGLBs impossible. Nonetheless, certain elements of Actuarial Guideline ZZZ, may make sense in a reasonable statutory reserving methodology for VAGLBs. The most obvious element is the use of current option market values in a statutory reserving formula.

Advantages of an Actuarial Guideline ZZZ Approach

- It will develop a theoretically sound reserve that would likely be adequate.
- The reserve valuation basis will be consistent with the valuation basis for assets held in the separate account, or for options purchased to back the guarantee, if they are held at market value in the general account.

Disadvantages of an Actuarial Guideline ZZZ Approach

- Actuarial Guideline ZZZ addresses reserving for general account EIAs. It does not address reserving or accounting issues unique to separate account products.
- Actuarial Guideline ZZZ does not provide guidance for products that fund the cost of hedging instruments though fees assessed against assets or otherwise.
- Actuarial Guideline ZZZ identifies three computational methods. Some computational methods may be inappropriate with certain VAGLBs.
- The structural characteristics of the three computational methods identified in Actuarial Guideline ZZZ are inconsistent with the structural characteristics of the computational methodology identified in Actuarial Guideline XXXIV which is applicable to MGDBs in variable annuities.
- An important feature of Actuarial Guideline ZZZ is the use of current option market values in the computational process. Since GLBs can be added to variable annuities funded by unique asset pools, obtaining option market values may be very difficult and subject to significant judgment (see section III).

- The existence of multiple funds within a single variable annuity with some funds providing GLBs and some not may result in reserve fluctuations if structurally different reserve methods are applicable to different funds within a variable annuity.
- The "greatest present value" concept inherent in any methodology that is based on CARVM creates concerns over the redundancy of reserves driven by ancillary benefits that are not likely to be utilized by many contract holders.

B. Actuarial Guideline XXXIV Approach

The idea underlying this Actuarial Guideline is to value guaranteed death benefits in variable contracts by assuming an immediate drop in the account value and then growth of the reduced account value at a net assumed rate of return. The immediate drop in account value and subsequent gross recovery rates of return are defined in the Actuarial Guideline.

The Guideline requires the determination of two amounts: a Separate Account Reserve for the product assuming no MGDBs and an amount known as the Integrated Reserve. The Guideline defines the computational mechanics of the Integrated Reserve. The excess of the Integrated Reserve over the Separate Account Reserve, if any, is held in the General Account. Three Benefit Streams are defined, the stream of Projected Net Amounts at Risk paid to those expected to die during the calculation period, the stream of Projected Unreduced Account Values paid to those expected to die during the calculation period and the Base Benefit Stream. A Valuation Mortality Table is specifically prescribed for the calculation of the Integrated Benefit Reserve. The Integrated Benefit Reserve applies the "greatest present value" principle of CARVM in the following way: the greatest present value occurs at the contract duration in the calculation period in which the present value of the Integrated Benefit Stream is maximized.

Applying this underlying idea to the valuation of VAGLBs would require the calculation of two amounts: the Separate Account Reserve for the product assuming no GLB and an Integrated Benefit Reserve. The Integrated Benefit Reserve would reflect the impact of the immediate drop in account value and the recovery rate of return assumption. The benefit streams could be defined in a way similar to definitions in Actuarial Guideline XXXIV and present values and the greatest present value calculated.

Since a variable product could include both MGDBs and GLBs, the issue of consistency of immediate drop and recovery rate assumptions between the benefits would have to be addressed.

Actuarial Guideline XXXIV was designed for products which are first and foremost, variable annuities. There is not universal agreement as to how CARVM should be applied to variable annuities. The products currently being addressed in this report, VAGLBs, provide for the complete pass-through to the contract holder of the investment experience of specified pool of assets held in a separate account. As such, this is the same type of base contract for which Actuarial Guideline XXXIV was designed. In this respect, Actuarial Guideline XXXIV is suitable for reserving VAGLBs.

Advantages of an Actuarial Guideline XXXIV Approach

- Actuarial Guideline XXXIV was designed specifically for variable annuities with additional guaranteed benefits. Applying this actuarial guideline to VAGLBs would promote consistency in statutory valuation requirements.
- The computational framework is CARVM compliant and recognizes the lack of consensus as to how CARVM is to be applied to variable annuities.
- Actuarial Guideline XXXIV utilizes an integrated benefit approach, which is essentially consistent with the approach outlined in revised Actuarial Guideline XXXIII.

Disadvantages of an Actuarial Guideline XXXIV Approach

- The definition of Integrated Benefit Streams and the Integrated Reserve in Actuarial Guideline XXXIV is not completely clear. More clarification may be needed before adding another guaranteed benefit.
- The variables used to value the MGDB (i.e., immediate drop and recovery rates) were chosen after analysis of the risks associated with non-elective guaranteed benefits. The variables reflect the conclusion that volatility in underlying fund returns drives the risk exposure. VAGLBs may reflect a different risk profile in which fund under performance becomes more important (see section III). This may create the need to include different assumptions in the reserving process or to change the parameters chosen for the assumptions.

C. Regulation 128 Type Approach

New York Regulation 128 (Reg 128) addresses separate accounts supporting group products with guaranteed benefits. There are two similar rules to Reg 128, namely California Bulletin 95-8 and an NAIC model regulation currently in development. Note that these requirements apply only to group contracts and generally exclude variable products.

Application of Reg 128 Type Approach

An asset maintenance requirement (AMR) is calculated by applying factors to the Separate Account assets to determine “haircuts” to the assets. These factors are generally in the order of 50% to 100% of the Asset Valuation Reserve (AVR) maximum factors for fixed income assets and real estate, and 20% to 30% for common stock assets. The Market Value (MV) of assets in the separate account minus the AMR “haircuts” must at least cover the contract reserve, otherwise, additional assets must be held for the difference.

The contract reserve is based on the MV of liabilities determined by projecting out the expected guaranteed benefits (e.g. cash surrenders, annuitizations and death benefits). Valuation mortality must be used for expected deaths, but, the company’s own estimates are used for other assumptions such as the surrender and annuitization rates, etc. The present values are determined by discounting at generally 105% of the treasury spot rates as of the valuation date (e.g. 105% of the 1-year treasury spot rate is used for benefits projected one year hence, 105% of the 2-year treasury spot rate is used for benefits projected two years hence, etc.).

The reserve is the MV of liabilities plus any additional amount needed because of the AMR calculation. There is a floor to the reserves of assets that are “beneficially client assets,” e.g. the cash surrender values. Finally, there is a requirement that reserves for the block be adequate standalone from other business of the company.

Implication of Reg 128 Type Approach for VAGLBs

The Reg 128 type approach is best suited for products that are generally fixed in nature but have some limited pass through of experience to the contract holder (i.e. where the MV of liabilities has meaning and where it makes sense for the AMR to be based on all the assets in the separate account). However, it does not fit well with variable products that generally pass most of the performance risk through to the contract holder, even those with some limited guaranteed fixed benefits.

The Reg 128 type approach is suited for group products where there are conditions and restraints on utilization of contract benefits (i.e. where it makes sense to base the reserve on expected values). It does not fit well with variable annuities where there is less restraint on utilization of elective benefits.

In summary, applying the Reg 128 approach to VAGLBs would likely result in inadequate reserves in some situations (i.e., where the MV of liabilities are based on expected guaranteed values without full regard to the VAGLBs), and overly conservative reserves in others (i.e., where the AMR applies to all assets regardless of the extent to which the investment risk is passed to the contract holder.)

Advantages of a Reg 128 Type Approach

Although a direct application of the methodology appears inappropriate (and is not actually required for variable products), there may possibly be some advantages to considering elements of the approach as follows:

- It might be beneficial to have a valuation method for VAGLBs that defaults to the Reg 128 level reserves as the product features start making the VAGLB look more like a fixed than a variable product.
- The approach promotes the valuation actuary approach. First, Reg 128 requires asset adequacy analysis. Second, it allows actuarial judgment for expected utilization assumptions, (e.g. annuitization and surrender rates).

Disadvantages of a Reg 128 Approach

- As discussed above, the approach is inappropriate for VAGLBs since neither the MV of liability nor AMR calculations fully recognize the nature of the VAGLB and the pass through of the asset performance to the contract holder.
- The approach is inconsistent with the CARVM greatest present value concept and the integrated benefits concept of Actuarial Guideline 33, as the MV of liabilities are determined using a single projected stream of benefits based on expected assumptions.

D. Retrospective Approach

A retrospective approach involves the accumulation at interest of an annual contribution, covering the expected cost of the benefit, reduced by claim amounts. Variations in retrospective reserve methods reflect differentials in these components (i.e., how the contributions are accumulated, whether one uses actual or tabular claims, and how the expected costs are determined). While retrospective reserve methods may have historically involved valuing the benefits at issue, there is nothing inherent in the retrospective approach that prohibits the periodic re-estimation of benefits or revenues. The retrospective reserve for a GLB would typically be developed on a standalone basis and added to the reserve for the underlying base variable annuity.

There are numerous ways to develop reserves for GLBs using a retrospective approach. All techniques use the general formula:

$$\text{Current reserve} = \text{Prior reserve, plus valuation net premium, interest, and change due to survivorship, minus current benefits (but not less than zero)}$$

and the valuation net premium is determined (in basis points) as

$$(\text{PVFB} - \text{Current reserve})/\text{annuity of 1 basis point of account value.}$$

The valuation actuary would typically include mortality and other non-elective decrements in the present values of both the annuity and the benefits, although in practice simplifications that ignore some decrements are often used. The above approach is sufficiently general that it could be applied in a variety of circumstances.

The specific issues that must be resolved to use the above formula include the following:

- Valuation of benefits;
- Recognition of costs;
- Matching costs with revenues; and
- Actual versus tabular claim costs.

Valuation of Benefits

Retrospective methods require determination of the value of the benefits at issue in order to determine a valuation net premium. Considerations in valuing the embedded options under the various GLB designs are discussed elsewhere in this report.

If and when to revalue the benefits is an element of the method that can be either specified in the requirements, or left to the discretion of the actuary. The choice is related to the question of whether to use actual or tabular claims, and has implications on the variability of results.

Recognition of Costs

The period over which the retrospective approach is performed should typically be at least as long as the period during which costs are incurred. The timing of costs may be straightforward, as in the case of a GMAB, where a single benefit is paid at a single point in time. Other VAGLBs may involve subjective determination. A GMIB may provide a

logical point, such as the time of annuitization, for recognition of benefit costs. However, it may also be possible to define the benefit period to include the period during which annuity payments are made. (Benefits under a GPAF can not be absolutely determined until the end of the payment period, when the annuitant dies or the benefits expire.)

Matching Costs with Revenues

Some VAGLBs may be offered in return for a specific additional fee, while for others, there may be no explicit fee. Even when a specific additional fee is involved, it may only be logically related to the actual VAGLB cost when the contract holder has the right to avoid the fee by forfeiting the benefit. In the absence of such relationship, matching the costs with a specific revenue stream may be arbitrary.

If a retrospective reserve approach is combined with a separate CARVM valuation of the other benefits in the contract, the revenue stream in the separate CARVM calculation would be the total revenue stream less revenues “assigned” to the GLB, and the separate CARVM benefit stream would exclude the GLB. As noted above, there may be many potential revenue streams that could be “assigned” to the GLB. Each of these possible revenue streams, when deducted from the total revenue stream, would result in a different pattern of revenues to be used in the separate CARVM calculation, resulting in different reserves. For that reason, it would be necessary for any method that includes a retrospective approach to give guidance on how to allocate revenues to the GLB.

Actual versus Tabular Claim Costs

Since the company must report actual benefit costs as they occur, the use of actual claims in the retrospective reserve approach will result in less variation in results than the use of tabular claims. However, if actual claims are used, further adjustments may be required to avoid the possibility of either negative reserves or an excessive reserve level.

As noted earlier, the decision to recognize changes in the value of the benefits (i.e., valuation net premium) in the reserve calculation also affects the variability of results. If the reserve method uses an initial estimate of ultimate claim costs which is fixed at issue, and also uses actual claim costs in the reserve calculation, any gains or losses with respect to expected future experience will be deferred. If this is undesirable, it may be best to revalue the cost of the benefits from time to time when using actual claim costs.

Advantages of a Retrospective Approach

- Smoothing can be a result of particular retrospective approaches, which may prevent distortions in the financial statements.

- This approach facilitates reporting of a separate reserve for the GLB..
- It allows a gradual and systematic recognition of the costs using appropriate utilization and decrement assumptions.

Disadvantages of a Retrospective Approach

- The approach is not a true CARVM type methodology.
- This is not an integrated approach.
- There is some doubt as to whether this approach, as a stand alone approach, could be used as a tax reserve methodology.
- Separate application of the retrospective approach for VAGLBs and CARVM valuation for other benefits opens the possibility of using inconsistent assumptions.

E. Full Market Value Approach

In theory a market value approach would value the Guaranteed Living Benefit at its market value. Since no market exists for GLBs, these values can not be merely observed, like other market values. However, an estimate known as a “Fair Value” can be calculated. A Fair Value calculation for GLBs would use market valuation techniques, similar to those used in Option Valuation procedures, to determine the implied market value of the GLB.

A full market value approach could be used to calculate an integrated reserve, which would incorporate GLBs and any other ancillary benefits. However, since this calculation would not be based on the principle of the greatest possible present value, it would not be CARVM compliant. Therefore, this section assumes that the full market value approach would be used to calculate a stand alone reserve for the GLB, which would equal the fair value of the GLB.

Not every option valuation technique could be used for all types of GLBs. In addition, some of the parameters needed to calculate a Fair Value would probably be unknown, or at best, good estimates of the actual values.

Whether the assets used to back the reserve are held in the general account or in a separate account, they should be valued at market to be consistent with this approach. Note that the assets held to support the GLB should probably be held in the general account since the GLB is a guaranteed benefit. However, this may cause a mismatch of the accounting basis of the assets and liabilities to the extent fixed assets are used to

support the GLB.

A Full Market Value Approach, along with an accounting mechanism that valued the assets backing the GLB at market would comprise a sound reserving methodology that would instantaneously pass good and bad information on to regulators and management through the accounting statements.

Advantages of a Full Market Value Approach

- It will develop a theoretically sound reserve, that should be adequate, and not redundant.
- The reserve valuation basis will be consistent with the valuation basis for assets held in the separate account, or for options purchased to back the guarantee, if they are held at market value in the general account.

Disadvantages of a Full Market Value Approach

- As noted in Section III, the values needed to perform the benefit cost calculations may be unavailable.
- The calculations may be complicated, time consuming, and potentially difficult to audit.
- The approach is not a true CARVM type methodology.
- There is some doubt as to whether this approach, as a stand alone approach, could be used as a tax reserve method.

F. Valuation Actuary Approach

Under this approach, the valuation actuary performs a separate asset adequacy analysis on the contracts which contain the GLB to determine an adequate amount of reserves to support that block. The analysis could be performed separately for the GLB or could be integrated with the other reserves for other contract benefits. If the reserve for the GLB is determined separately, then the valuation actuary would opine on the adequacy of the reserves backing the entire contract.

The first step in performing the asset adequacy analysis would be to determine the types of scenarios to be used in the analysis. These scenarios would need to incorporate the various risks inherent in the underlying funds. One approach would be to develop a number of deterministic scenarios, while a more involved approach would be to run a larger number of stochastic scenarios. If one or more of the deterministic scenarios

suggest that reserves are inadequate, then the actuary would need to decide the extent to which reserves would be strengthened. If the stochastic approach was used, the actuary would need to determine if results fell into some appropriate confidence interval.

When performing asset adequacy analysis, the actuary should consider and model all financial instruments which have been purchased to back the liabilities, and any future contract-holder charges which will be collected to pay for the GLB. Different mixes of interest rate movements and equity performance would have to be considered since the level and market value of any assets backing the liabilities, and the level of future contract-holder charges, would vary by scenario. In addition, the analysis would have to incorporate dynamic decrement rates (e.g., lapse or annuitization rates) which vary by scenario. Since the results of this analysis are heavily dependent on the level and dynamic nature of these decrements, it is important that sensitivity testing be performed.

Advantages of a Valuation Actuary Approach

- This approach incorporates the assets supporting the liabilities in the determination of the reserve.
- The approach incorporates expected decrements (presumably with margins for conservatism) and their variation by scenario.
- This approach is consistent with the principles of the American Academy of Actuaries' Valuation Work Law Task Force.
- By analyzing results under various scenarios, this approach does a better job of reflecting the underlying risks of the benefit than a formula reserve which could produce an inadequate or overly conservative reserve.

Disadvantages of a Valuation Actuary Approach

- The approach is not a true CARVM type of methodology.
- If this approach is used for the GLB only, the interaction with other benefits would not be considered. In addition, inconsistencies between the GLB reserve and the reserve for other contract benefits could exist.
- The approach lacks simplicity and requires complex modeling. Actuarial practice has not yet fully addressed the implications and complexities of modeling equity scenarios.

- The approach is highly subjective and could result in companies holding different reserves for similar benefits.
- There is some doubt as to whether this approach, as a stand alone approach, could be used as a tax reserve method.

VIII. Recommendations and Next Steps

A. Summary of Findings on Reserve Approaches

In evaluating the reserve approaches, the work group concluded that, in the short term, compliance with CARVM is the overriding objective for a VAGLB reserve methodology. Although the Guideline XXXIV and ZZZ approaches are the only CARVM compliant methods evaluated, the work group believes it may be possible to incorporate elements of the other approaches into the reserve methodology. In the long term, the work group believes the Valuation Actuary Approach is most consistent with direction of the Academy's Valuation Law Task Force.

Both the Guideline XXXIV and ZZZ approaches are CARVM compliant and use an integrated reserve framework. Guideline ZZZ is designed for EIAs supported by general account assets, while Guideline XXXIV is designed for variable products supported by separate account assets. It appears, therefore, that Guideline XXXIV provides a more appropriate foundation for valuing VAGLBs, although some changes will need to be made to Guideline XXXIV before it could be used for VAGLB reserves.

B. Recommendations

The work group recommends the following:

- (1) Since VAGLBs and their associated contracts are generally subject to CARVM, the reserving methodology for VAGLBs should follow a CARVM framework.
- (2) To avoid inadequate or overly conservative reserves, an integrated reserve approach should be used.
- (3) A Guideline XXXIV type of framework is best suited to the risks and benefit structure of VAGLBs.

- (4) The Guideline XXXIV type framework would need to be modified to incorporate VAGLBs. This could possibly be accomplished by using elements of either Guideline ZZZ or the Full Market Value Approach. The interaction of a MGDB and the GLB, for contracts that contain both benefits, would need to be addressed.
- (5) The scope of Actuarial Guideline ZZZ should be modified to exclude VAGLBs.

C. Next Steps

With LHATF approval, the work group will undertake an effort to determine the appropriate implementation of a Guideline XXXIV type of reserving approach for VAGLBs.

The work group will also address the other issues, namely, Accounting, Valuation Actuary, and Financial Reporting issues, raised in the initial report.

The work group will continue to provide quarterly updates of its progress to the Innovative Products Working Group of LHATF. If there are any questions or comments, please address them to either Stephen Preston or Thomas Campbell, co-chairpersons of the VAGLB Work Group.

PART 3
Appendices

I. Product Descriptions from the March 1998 Report

In the past, a concept that has provided the primary distinction between variable insurance products and fixed insurance products is the investment risk. In a fixed product, the insurer assumes the investment risk and in a variable product, the contractholder assumes the investment risk. Many customers have been willing to accept the investment risk as the price they pay for access to the greater control, flexibility, and potential returns available in a variable product. Generally, variable products make no guarantee of return of the contractholder's principal, and this is one of the reasons that variable products typically need to be registered with the Securities and Exchange Commission (SEC). This registration aims to ensure that the customer is properly informed of the investment risk in a variable product.

Deferred variable annuities have experienced explosive growth over the last few years. In recent years, many variable products have provided guaranteed minimum death benefits. Some variable products now have begun to include an element of sharing of the investment risk by offering the contractholder guaranteed living benefits, typically for an extra charge. Generally, these new variable products provide some type of guaranteed minimum return on investment, which may be conditional on specified customer behavior, for example, upon annuitization. This guarantee may be an inherent part of the variable contract, or available as an optional feature.

A variable product with guaranteed living benefits can be characterized by (1) the contract benefits on which the guarantee is provided and (2) the level of the guarantee. The contract benefits on which the guarantee can be provided can be either elective benefits or non-elective benefits. Examples of elective benefits are benefits provided as a result of contract surrenders, partial withdrawals, and contract annuitization. Examples of non-elective benefits are benefits provided as a result of disability, hospital confinement, or nursing home confinement.

The level of the guaranteed living benefit can be defined in many different ways. Some of these are an accumulation of contributions at a fixed specified rate, the maximum account value as of any previous contract anniversary, or a stepped-up account value at specified intervals.

Given the number of different benefits to which a guarantee can be attached and the number of ways to define the guarantee, there is a large universe of possible guaranteed living benefit structures. Potentially, each may have a slightly different structure than all others in the market. Furthermore, it may be possible for an insurer to offer different guarantees on different benefits within the same product.

The following paragraphs provide general descriptions, design choices, and current market availability for three types of guaranteed living benefits: Guaranteed Minimum Income Benefits, Guaranteed Minimum Accumulation Benefits, and Guaranteed Payout Annuity Floors. Although the list is not exhaustive, each of these products attempts to share investment risk by guaranteeing some return to the contractholder's. Note that there is also a brief description of Variable Universal Life Guaranteed Living Benefits. As is mentioned in the description, the VAGLB Work Group believes that these benefits should be outside the scope of our charge.

A. Garanteed Minimum Income Benefits (GMIB)

The GMIB is a benefit available with a deferred variable annuity. While a variable annuity is in the accumulation phase, the owner usually has no guarantee of periodic income that would be available in the income phase (annuitization), because the contractholder assumes the investment risk. It is true that a variable annuity typically has guaranteed settlement option purchase rates, which provide for a certain periodic income for each dollar of account value applied at annuitization. However, while the annuity is in the accumulation phase, the customer has no guarantee as to the level of account value available when they choose to annuitize. The GMIB is designed to provide such a guarantee.

The GMIB moves beyond guaranteed purchase rates to provide a guaranteed floor on the account value applied to either guaranteed or current payout rates the customer would receive if they annuitize. The insurer cannot offer this guaranteed floor without accepting some investment risk in the contract. If the actual account value has dropped below the specified guaranteed floor to fund the monthly income, then the specified guaranteed annuitization floor is applied. Otherwise, the actual account value is used. The specified guaranteed annuitization floor can be defined in many ways, such as the accumulated value of premiums credited with a specified interest rate, or the highest previous level of the actual account value on a prior anniversary, or many other conceivable designs. The GMIB is a commitment made by the insurer at contract issue, usually in exchange for assessing a higher fee to the contract during the accumulation period. The guarantee does not apply to amounts available upon lump sum surrender. The contractholder must annuitize for the benefit to have value.

Restrictions may exist on when the annuitization must begin in order for the guaranteed annuitization account value provision to apply. For example, the contract may allow for election of the GMIB only after the contract has been in force for a specified number of years, or for owners who meet certain attained age requirements. Other restrictions may allow the GMIB to only be elected during defined window periods, or may relate only to certain fund selections (either general account funds, separate account funds, or both) or to policies of specified sizes.

An insurer would typically charge additional fees for the GMIB, often in the form of asset-based charges. Such charges could be explicit charges or implicit charges reflected in the mortality and expense (or other) charges.

As life expectancies continue to increase, more people confront the real risk of outliving their assets. For people concerned with this risk, the payout phase of an annuity can be an attractive component, since it will allow them to convert certain assets to lifetime income. If the contractholder wishes to secure lifetime income now, they can buy a payout annuity. But for many people, it is more important to grow their assets for several years before applying these assets to future income. The GMIB is targeted to this group of people.

When an individual buys a deferred annuity with a GMIB, they have the advantages of the growth potential of a variable product with the assurance of a certain amount of annuitizable value in the future.

B. Guaranteed Minimum Accumulation Benefit (GMAB)

The GMAB is a benefit available with a deferred variable annuity. Because the contractholder assumes the investment risk, it could be expected that customers will experience very different results from the same annuity, based on which funds they invest in and when they invest in those funds. For most customers, short term volatility is expected, and since the annuity purchase is intended to be for the long term, volatility may only be a problem at the time they expect to receive a benefit (e.g., annuitize). However, all variable annuity customers face the risk that the variable subaccounts in which they invest may underperform for some periods of time. The GMAB is designed as a solution to both of these risks.

Like the GNIB, the GMAB is usually an option that is available to a customer at contract Issue. The GMAB provides assurance to the customer that upon remaining in force for a specified period of time, the account value (or the account value of some subset of subaccounts) will at least equal a minimum amount. Unlike the GMIB, which relates specifically to the annuitization benefit, the GMAB may not relate to any specific benefit, but rather to some or all benefits that are driven off the contract's account value. It could conceivably be available for any combination of discretionary surrenders, withdrawals, and other elective and non-elective benefits. It could also conceivably be available only for contractholders who meet certain contingency requirements (e.g., nursing home confinement). The subaccount values applicable to the GMAB may be related to stock or bond index subaccounts, although in practice any subaccounts can (and do) apply. If the account value or subaccount values are less than this minimum at the specified duration, the insurer will increase them to this minimum level. The insurer cannot make this benefit guarantee without accepting some investment risk in the contract.

For an individual near retirement age, making a decision to invest a portion of their life savings can be a major dilemma. Intellectually, they may be convinced that their investment horizon should remain at least 10 years, and they may also be convinced that they should remain invested in equities, as an inflation hedge. But they can't help but think that as soon as they purchase an annuity, the equity markets will drop. They may question the advantages of tax deferral and inflation protection when their account value has dropped significantly. The GMAB is targeted to this group of people. When the customer chooses the GMAB, they are giving up some future return (due to an increase in fees) in order to obtain a minimum return on their funds.

C. Guaranteed Payout Annuity Floor (GPAF)

The GPAF is a feature associated with a variable payout annuity. It could conceivably be offered with either a standalone immediate variable annuity or as a guarantee upon the annuitization of a variable deferred annuity. While deferred variable annuities have experienced explosive growth over the last few years, the same cannot be said for variable payout annuities. The popularity of variable payout annuities has lagged for several reasons. First, outliving one's assets has only become a risk that is seriously considered by many people in the last decade. Second, payout annuities typically offer few liquidity options. This is a barrier to many owners who know that circumstances can change. Third, a product with an income benefit that was both guaranteed and inflation-protected was unavailable. Although fixed payout annuity contracts guarantee a certain income benefit and variable payout annuities provide inflation protection, in the past neither product has generally done both well. The GPAF is designed as a possible solution.

The GPAF is a variable payout annuity feature that provides the contractholder with certain minimum guarantees on the proceeds paid by the annuity once benefit payments have begun. The guarantee may relate to the entire immediate annuity or only the payout component related to certain subaccounts (such as an equity index subaccount). Without the GPAF, an annuitant's next benefit payment could differ significantly from the current one since future benefits are dependent on the current implied account value. A contractholder can remove some of the volatility by investing partially in certain bond funds or other relatively stable investments, but this compromises the inflation protection that is the hallmark of a variable product. The GPAF is a commitment typically made by the insurer at contract issue, usually in exchange for assessing a higher asset fee during the income period. The GPAF might guarantee that no future benefit payment will be lower than a percentage of the initial benefit payment. Other guarantees are also possible (such as the current benefit payment cannot be lower than the last benefit payment), but again, these guarantees result in the insurer accepting a portion of the investment risk in the variable product.

Most people at or near retirement age today are well aware of the damaging impact of high inflation on purchasing power, since the high inflation of the late 70's and early 80's occurred within their working lives. These individuals may prefer to remain invested in equities well beyond normal retirement age to guard against high inflation. If the variable payout annuity provides no assurance of future income, the product may have less potential. The GPAF is targeted to the group of people who understand the need for inflation protection, but who would hesitate to buy a variable payout annuity because of the lack of guarantees of future income. These guarantees will encourage more people to protect themselves from the risk of outliving their assets.

II. Current Industry Product Offerings

Guaranteed Minimum Accumulation Benefit (GMAB)			
	Product A	Product B	Product C
Waiting Period	8 years	10 years or age 70, if later	20 years
Issue Ages	0-85	0-85	
Minimum Premium	\$10,000	\$1,000	
Interim Guaranteed Values	None	None	None
Fund Availability	S&P500 Index	All, except precious metals	Index 500
GMAB Formula	90% of net contribution 100% of net contributions 115% of net contributions	100% of net contributions	Net contribution accumulated at 3% per year.
Current Charge	90% - 75-100 bps 100% - 100-140 bps 115% - 150-200 bps (Applied to contract value)	Not a rider. No explicit separate charge.	Rider, 50 bps of AV. But rider also includes a GMIB starting at t=10. (See Product H)
Maximum Charge	90% - 200 bps 100% - 200 bps 115% - 200 bps Can assess up to 4% extra cancellation fee charge for GLB	N/A	N/A
Special Features	Availability of enhanced death benefit also	Customer can choose GMAB or enhanced death benefit	
GMAB Optionality	Optional at issue; once elected, cannot drop	Optional at issue	Optional at issue

II. Current Industry Product Offerings (cont.)

Guaranteed Minimum Income Benefit (GMIB)			
	Product D	Product E	Product F
Waiting Period	7 years	10 years	7 years
Annuitization Options	Life income with minimum period certain requirements (vary by age)	Minimum 10 year certain, plus life	Minimum 10 year certain, plus life
Purchase Rates	2.5% interest, '83IAM, Scale G. Use 3.0% interest if annuitize after 10 years.	Current payout rates, if more favorable than guaranteed	2.5% interest, '83IAM, Scale G. Use 3.5% interest if annuitize after 10 years.
GMIB Formula	Net contribution increased 6% per year, until age 80. 3% return credited for some funds	Maximum Anniversary Value to 85	Greater of Maximum Anniversary Value or 5% per year, both to age 80.
Interim Guaranteed Values	None	None	None
Fund Availability	All	All	All
Issue Ages	20-75	0-75	0-83
Current/Maximum Charges	Rider, 25 bps of GMIB base (30 bps guar.)	Rider, 13 bps of AV	Rider, 25 bps of AV
Special Features	Available with enhanced GMDB choice		Exact match of death benefit
Election window	30 days after each anniversary	30 days after each anniversary	30 days after each anniversary
Eligible Annuitization Ages	60-83	Maximum of 90, or 10 years after issue	60-83, or 15 years after issue.
Minimum Premium	\$5,000	\$4,000	\$5,000
GMIB Optionality	Optional at issue; once elected cannot drop	Optional at issue	Optional at issue

II. Current Industry Product Offerings (cont.)

Guaranteed Minimum Income Benefit (GMIB)		
	Product G	Product H
Waiting Period	7 years	10 years; 20 years
Annuitization Options	Minimum 10 year certain, plus life or 20 years plus life for joint	Flexible
Purchase Rates	3.0% interest 83IAM(a), Scale G	4.25% interest, '83IAM a, Scale G provided life contingent. Use 3.0% interest if certain only.
GMIB Formula	The greater of: (1) Net contribution increased 6% per year, until age 76, 4% per year from 76 to 85, 0% after age 85 or (2) Annual step-up feature.	Net contribution increased 4.25% per year. 10 year wait. Use 3% per year if certain only. 20 year wait.
Interim Guaranteed Values	None	None
Fund Availability	All	Index 500 portfolio
Issue Ages	0-85	
Current Charge	Rider, 25 bps	Rider, 50 bps of AV. But rider also includes a GMAB at time =20.
Special Features	Contains ratchet option (resets floor)	
Election window	30 days after each anniversary	Flexible
Eligible Annuitization Ages	0-85	No limit
Minimum Premium	\$5,000	
GMIB Optionality	Optional at issue	Optional at issue; once elected cannot drop

Current Industry Product Offerings (cont.)

Guaranteed Payout Annuity Floors	
	Product I
Stand-alone Contract or Annuitization Option	Stand-alone
Single or flexible premium	Flexible
Cash Value provided on contract?	Yes, over defined CV period
Payout options	Single life and joint life
Fund Selection	Index 500 Portfolio only
Assumed Investment Rate	4.5% annually
Guaranteed Minimum Payout	85% of initial payout (may be modified if subsequent premiums are paid)
Impact of CV Withdrawals on Minimum Payout	Reduce guarantee proportionately
Minimum Initial Premium	\$10,000
Mortality Basis for Payouts	1983 IAM Table a projected at Scale G to terminal age of table
Current Risk Charge for GPAF	1.25% of each premium payment
Maximum Risk Charge for GPAF	2.00% of each premium payment