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**ACTUARIAL GUIDELINE XXXIII**  
**DETERMINING CARVM RESERVES**  
**FOR ANNUITY CONTRACTS WITH ELECTIVE BENEFITS**

**Background Information**

1. Introduction

The Standard Valuation Law (SVL) defines the methods and assumptions which are to be used in determining minimum statutory formula reserves. This law establishes the standards for annuity contracts (which therefore includes any annuity riders or endorsements, and any or all components of which, such as premiums, benefits, contract charges, primary or secondary accumulation values or other components, either relating to annuity benefits provided by the contract or providing separate annuity benefits) and includes the criteria for the interest and mortality assumptions to be used in determining minimum formula contract reserves. The 1980 revisions to the SVL provide for the maximum statutory formula reserve interest rate to be determined through a dynamic formula in order to incorporate changes in economic conditions, liquidity needs and the risks inherent in certain types of contracts.

The SVL defined methodology for annuity contracts, the commissioners annuity reserve valuation method (CARVM), requires that reserves be the greatest of the respective excesses of the present values, at the date of valuation, of the future guaranteed benefits, including guaranteed nonforfeiture benefits, provided for by such contracts at the end of each respective contract year, over the present value, at the date of valuation, of any future valuation considerations derived from future gross considerations, required by the terms of such contracts, that become payable prior to the end of such respective contract year. Such reserves are established to adequately fund all guaranteed contract obligations, including those obligations which are optional to the contract owner and which may not have yet been elected.

Industry practices and methods of reserving under CARVM for annuity contracts with multiple benefit streams have not been found to be consistent. These range from a low reserve equal to the cash surrender value to a reserve representing the greatest actuarial present value of the future benefit streams under all potential annuity or other nonforfeiture benefit election options using a conservative rate of interest.

The major purpose of this Actuarial Guideline is to provide clarification and consistency in applying CARVM to annuities with multiple benefit streams. Some of the areas requiring clarification include: the valuation of annuitization benefits; the application of incidence rates in CARVM; the application of the integrated benefit stream approach in CARVM; how to determine valuation interest rates and mortality tables for multiple benefit streams; and certain practical considerations regarding multiple benefit streams.

2. Annuitization Benefits

Varying forms of contracts provide that the cash value available to the contract owner is less than the amount available to purchase an annuitization option under the terms of the contract.

For purposes of this Actuarial Guideline, “accumulation fund” is defined as the policy value which is used to purchase an annuity option under the terms of the contract.

Frequently there are significant discontinuities in the reserves, both upward and downward, at the time a settlement option is elected, between the reserve held immediately prior to the settlement as compared to the reserve required for the greatest actuarial present value of the annuitization option elected.

One of the most significant reasons for discontinuities in the reserve patterns at the time of election is the difference in the SPIA valuation rate available at the time of election as compared to the valuation rate used based on the date of issue of the original SPDA contract. Another significant reason is the difference between the guaranteed purchase rate

contained in the contract and used for reserve development as compared to the rate actually used to purchase the annuity option at the time of election.

### 3. Application of Incidence Rates in CARVM

Since CARVM was adopted, there has been an increase in the types of benefits offered under certain annuity contracts, including enhanced death benefits, nursing home benefits, and various partial withdrawal provisions. For some of these benefit types, the SVL is not explicit as to whether incidence tables prescribed under the SVL may be used to determine such benefits, versus requiring consideration of all contract owner options available under the contract, and choosing the set of incidence rates which produce the greatest present value.

### 4. Integrated Benefit Stream Approach

CARVM requires that reserves be based on the greatest present value of all potential future guaranteed benefits. For annuity contracts offering more than one type of potential benefit stream, the SVL is not explicit regarding whether or how blends of more than one type of benefit must be considered under CARVM.

Under the integrated benefit stream approach, any potential benefit stream must be considered, including blends reflecting the interaction of more than one type of benefit. Such potential benefit streams include all types of benefits for which the greatest present value concept is required. Additionally, adjustments must be made to all such potential benefit streams to reflect those benefit types for which prescribed incidence tables are required (e.g., death benefits).

For example, consider an annuity contract offering surrender, annuitization and death benefits. Potential benefit streams that would be considered include surrender streams, annuitization streams, and streams reflecting blends of surrender and annuitization benefits. All such streams would also be adjusted to reflect death benefits and to discount all benefits for survivorship (based on the mortality table prescribed in the SVL).

### 5. Valuation Interest Rates

For annuities offering more than one type of benefit, the SVL is not explicit as to how valuation interest rates should be determined. The SVL is also not explicit as to how valuation interest rates should be determined for certain types of benefits offered under annuity contracts, such as death and nursing home benefits.

## **Purpose**

The purpose of this Actuarial Guideline is to codify the basic interpretation of CARVM and does not constitute a change of method or basis from any previously used method, by clarifying the assumptions and methodologies which will comply with the intent of the SVL. This Actuarial Guideline shall apply to all annuity contracts subject to CARVM, where any elective benefits (as defined below) are available to the contract owner under the terms of the contract. However, life or health insurance riders attached to an annuity contract, where all components of the rider (e.g., premiums, benefits, contract charges, accumulation values and other components) are separate and distinct from the components of the annuity contract, should be treated as a separate life or health insurance contract not subject to this Actuarial Guideline. While this Actuarial Guideline applies to all annuity contracts subject to CARVM, in the event an actuarial guideline or regulation dealing with reserves is developed for a specific annuity product design, the product specific actuarial guideline or regulation will take precedence over the Actuarial Guideline.

## **Definitions**

### 1. Elective and Non-Elective Benefits in CARVM

For purposes of determining reserves under CARVM, each benefit available under the annuity contract must be placed into one of the two categories defined as follows:

**Non-Elective Benefits:** Benefits that are payable to contract owners or beneficiaries only after the occurrence of a contingent or scheduled event independent of a contract owner's election of an option specified in the contract, including (but not limited to) death benefits, accidental death benefits, disability benefits, nursing home benefits, and benefits

payable under either a deferred or immediate annuity contract (with or without life contingencies), where no benefit options are available under the terms of the contract.

**Elective Benefits:** Benefits that do not fall under the non-elective benefits category (i.e., benefit options that may be freely elected under the terms of the contract). Elective benefits include (but are not limited to) full surrenders, partial withdrawals, and full and partial annuitizations.

In some cases it may not be clear whether some benefits are elective or non-elective. For example, some annuity contracts offer benefits which vary depending upon the age of retirement. In such cases, the Valuation Actuary should use judgment in making this determination, by considering factors such as the degree to which contract owner actions would be influenced by the availability of the benefit.

## 2. Elective and Non-Elective Incidence Rates in CARVM

For non-elective benefits, incidence rates from tables prescribed by the SVL should be applied to determine the payment of non-elective benefits and to discount, for survivorship, all benefit payments included in an Integrated Benefit Stream, as defined below. If no incidence tables are prescribed by the SVL, then company or industry experience (with margins for conservatism) may be used, as appropriate. Annuity mortality tables prescribed by the SVL should be used to determine all mortality based benefits under the contract (including, but not limited to, annuitizations and death benefits) and to discount other types of benefit payments for survivorship.

For elective benefits, incidence rates should not be based on tables reflecting past company experience, industry experience or other expectations. Instead, every potential guaranteed elective benefit stream required to be reserved by CARVM must be considered in the determination of integrated benefit streams as defined below. This is accomplished by considering trial sets of guaranteed elective benefit incidence rates, either through numerical testing or analytical means, to determine which trial set produces the “greatest present value” as described in Text paragraph 1 below. Theoretically, this means that all possible elective benefit incidence rates between 0% and 100% should be considered. However, in practice, such a greatest present value will typically occur by assuming an incidence rate of either 0% or 100%.

## 3. Integrated Benefit Stream

An integrated benefit stream is one potential blend of guaranteed elective and non-elective benefits available under the contract, determined as the combination of A and B, where:

A equals one potential stream of one or more types of guaranteed elective benefits available under the terms of the contract, based upon a chosen set of elective benefit incidence rates; and

B equals the stream of all guaranteed non-elective benefits provided under the terms of the contract, recognizing the guaranteed elective benefit stream under consideration in A above, and the non-elective incidence rates defined in 2. above.

Both A and B above should be discounted for survivorship, based on the non-elective incidence rates defined in 2. above.

### **Text**

#### 1. Greatest Present Value

All guaranteed benefits potentially available under the terms of the contract must be considered in the valuation process and analysis and the ultimate policy reserve held must be sufficient to fund the greatest present value of all potential integrated benefit streams, reflecting all guaranteed elective and non-elective benefits available to the contract owner. Each integrated benefit stream available under the contract must be individually valued and the ultimate reserve established must be the greatest of the present values of these values, based on valuation interest rate(s) as defined in Section 3 below.

#### 2. Examples of Integrated Benefit Streams That Must Be Considered

A. Cash Value Streams

One mandatory set of integrated benefit streams for a deferred annuity with cash settlement values which must always be considered is any possible blend of future guaranteed partial withdrawals and full surrenders available under the contract, as specified in the SVL, accumulated at the guaranteed credited interest rate(s) and discounted at the valuation rate(s) of interest defined in section 3 below, with appropriate recognition of all guaranteed non-elective benefits available under the contract.

B. Annuitization Streams

A second mandatory set of integrated benefit streams that must be considered is any possible blend of future guaranteed full or partial annuitization elections, as specified in the SVL, available to the contract owner at each election date required by CARVM, with appropriate recognition of all guaranteed non-elective benefits available under the terms of the contract. In determining the integrated benefit streams to value the annuitization option, the guaranteed purchase rates contained in the contract, as well as any other contract provisions, excluding any current purchase rates which may be applicable, are applied to the accumulation fund.

C. Other Elective Benefit Streams

In addition to the cash value and annuitization streams described above, all other possible guaranteed elective benefits available under the contract, including blends of more than one type of guaranteed elective benefit, must be considered in a manner consistent with the mandatory cash value and annuitization streams, with appropriate recognition of all guaranteed non-elective benefits available under the contract.

3. Determination of Valuation Interest Rates

Section 4b of the SVL determines valuation rates for an annuity contract based on the following Parameters:

- A. The basis of valuation (issue year or change in fund);
- B. Whether or not the annuity provides for cash settlement options;
- C. Whether interest is guaranteed on premiums received more than 12 months following issue (or the valuation date for change in fund basis);
- D. The guarantee duration; and
- E. The Plan Type.

Parameters A, B and C above should be determined at a contract level. Additional requirements regarding the change in fund basis of valuation are set forth in Section 5 below. Parameters D and E should be determined at a benefit level, as set forth in Section 4 below.

Under a contract level determination, parameters are set based on the characteristics of the contract as a whole. Under a benefit level determination, parameters are set based on the characteristics of each benefit, resulting in potentially different valuation rates for each benefit type comprising the integrated benefit stream.

4. Determination of Guarantee Duration and Plan Type

Guarantee duration and Plan Type are based upon the specific characteristics of each individual benefit type that comprise the integrated benefit stream, as follows:

- A. For portions of the integrated benefit stream attributable to full surrender and partial withdrawal benefits, the Plan Type should be based upon the withdrawal characteristics of the benefit, as stated in the contract. This may result in a Plan Type A, B or C under the 1980 amendments of the SVL. The guarantee duration is the number of years for which interest rates are guaranteed in excess of the calendar year statutory valuation interest rate for life insurance policies with guarantee duration in excess of twenty (20) years.
- B. For portions of the integrated benefit stream attributable to full and partial annuitization benefits, the determination of the valuation interest rate involves the use of the appropriate Plan Type and weighting factor as determined by the SVL, with the guarantee duration as the number of years from the original date of issue or date of purchase, to the

date the annuitization is assumed to commence. If the underlying assumption is that the contract owner may withdraw funds only as an immediate life annuity or as installments over 5 years or more, this will generally result in a Plan Type A, under the 1980 amendments of the SVL, with the valuation interest rate changing as different assumed annuitization dates determine guarantee durations which will fall into different guarantee duration bands under the SVL. An assumed annuitization option which has a non-life contingent payout period of less than five (5) years shall be considered a Plan Type C, with the valuation interest rate changing as different assumed annuitization dates determine guarantee durations which will fall into different guarantee duration bands under the SVL.

- C. For portions of the integrated benefit stream attributable to non-elective benefits, since the underlying assumption is that no withdrawal is permitted, Plan Type A should generally be used, with a guarantee duration determined as the number of years from issue or purchase to the date non-elective benefits may first be paid. In most cases, the guarantee duration should be less than five years, since non-elective benefit coverage usually begins immediately after issue, with benefits payable commencing in the first contract year.

For benefit types incorporating multiple payments, paragraphs 4(A), 4(B), and 4(C) above should be applied to each separate payment according to the withdrawal, annuitization, or non-elective benefit characteristics of the contract and payment provisions at the time each payment is to be made. If a portion of the integrated benefit stream is part of an immediate life annuity or a series of installments over five (5) years or more, but can be changed directly or indirectly by exercise of contract owner withdrawal options, then it would be inappropriate to apply paragraph 4(B) to that portion of the integrated benefit stream, since the contractholder may withdraw funds other than as a life annuity or in installments of five (5) years or more.

For example, a Guaranteed Lifetime Income Benefit (GLIB) is a guarantee to the owner of a fixed deferred annuity contract, whether traditional or indexed to an external referent such as an equity index, that the owner can have a defined income for life in an amount determined by formula, while the owner retains traditional rights (such as withdrawal) to the other values provided by the underlying deferred annuity and while such values continue to exist. Income benefits are typically deducted from one or more of the annuity's defined values to the extent such values remain positive. Once the GLIB is elected, the contract owner may have rights to stop and restart the income benefit and may also request full or partial surrender of any remaining annuity value, though doing so may negatively impact or eliminate subsequent guaranteed income benefits. Thus, applying 4(A) and 4(B) above, the GLIB benefit stream is seen to be composed of two portions to determine the Plan Type and guarantee duration, as follows:

The first portion consists of the series of defined payments to the extent that the payments, or any fraction thereof, are withdrawals that reduce or deplete the annuity's defined values. Applying paragraph 4(A) to this portion would result in Plan Type A, Plan Type B, or Plan Type C, by following the definitions of such contained within the Standard Valuation Law and reflecting the specific contract provisions, especially with regard to withdrawal. Paragraph 4(A) would also apply to any residual withdrawals that can be made following election of the GLIB benefit.

The second portion is a life annuity without option to take or receive additional amounts under the contract, and consists of the payments not included in the above portion. Applying paragraph 4(B), Plan Type A would generally apply to this segment with the guarantee duration determined using the period from contract issue to commencement of payments in this second portion.

## 5. Change in Fund Basis

As indicated by section 4b.C.(1)(c)(vi) of the SVL, a company may elect to value annuity contracts with cash settlement options on either an issue year basis or on a change in fund basis. Annuity contracts with no cash settlement options must be valued on an issue year basis. The issue year basis or change in fund basis should be determined for the contract as a whole, and thus must be consistently applied to all portions of all integrated benefit streams available under the annuity contract. The election of issue year or change in fund basis must be made at the issuance of the contract and must not change during the term of the contract without the prior written approval of the commissioner.

## 6. Purchase Rates

Contracts may provide, as contractual guarantees, the use of preferential purchase rates to those listed in the contract. As an example, a contract may provide that the company will offer, at the time of annuitization, the rates offered to new

purchasers of immediate annuities if such rates will provide a higher annuity benefit than would result from the contractually guaranteed rates provided in the contract. This creates a contract guarantee which must be valued under CARVM. Ignoring this benefit in determining reserves will produce reserves less than the statutory formula reserves required under CARVM. Valuation of this benefit, however, is complicated by the fact that the company does not currently know what the exact rate will be at the time of the settlement election. In order to determine conservative statutory formula reserves, if use of future unknown rates are guaranteed, the company shall establish reserves not less than the contract's accumulation fund value, on the valuation date, reduced by an "expense allowance" not to exceed 7% of such fund. This section does not require the calculation of a reserve for the annuitization of business based upon current purchase rates pursuant to the "annuitization streams" described in Paragraph 2.B. above.

Likewise for contracts which provide for additional amounts during the payout period over those guaranteed at the commencement of the annuity payments, the reserve during the deferred period shall not be less than the contract's accumulation fund reduced by an expense allowance not to exceed 7% of such fund.

#### 7. Practical Considerations

The major purpose of this Actuarial Guideline is to provide clarification and consistency in applying CARVM to annuities with multiple benefit streams. However, in practice there may be other acceptable methods of applying CARVM which are substantially consistent with the methods described in this Actuarial Guideline. Such methods may also be used, with prior regulatory approval.

Additionally, in applying this Actuarial Guideline there may theoretically be an infinite number of contract owner options that are possible under the contract. However, it may not be practical, possible or even appropriate to test every conceivable combination of potential integrated benefit streams theoretically available under the contract. This Actuarial Guideline requires that the actuary consider, not necessarily test, all potential integrated benefit streams to determine to what extent each contract owner option has a material impact on the reserve. In practice, the actuary may be able to eliminate some potential integrated benefit streams by analytical methods. The actuary may also be able to demonstrate the reserve adequacy of certain approximations. For example, in certain situations it may be shown that a CARVM reserve ignoring non-elective benefits, plus an "add-on" reserve for non-elective benefits, is a reasonable approximation for the theoretically correct CARVM reserve.

#### **Effective Date**

This guideline shall be effective on December 31, 1998 affecting all contracts issued on or after January 1, 1981. A company may request a grade-in period for contracts issued prior to December 31, 1998 from the domiciliary commissioner upon satisfactory demonstration that the method and level of current reserves held for such contracts are adequate in the aggregate. This phase-in will require establishment of no less than 33 1/3% of the additional reserves resulting from the application of this guideline on December 31, 1998, no less than 66 2/3% on December 31, 1999, and 100% by December 31, 2000.

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