

**ASSET VALUATION RESERVES  
AND  
INTEREST MAINTENANCE RESERVES**

**BLUE BOOK  
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**REPORT TO THE NATIONAL ASSOCIATION  
OF INSURANCE COMMISSIONERS (NAIC)**

**FINANCIAL CONDITION  
(E COMMITTEE)**

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## I. ASSET VALUATION PROCESS - PRIMARY FUNCTIONS

- A. Assure that all assets and liabilities are reported on as consistent a financial basis as is practical.
- B. Minimize the impact that capital gains and losses arising from movements in interest rates have upon provisions for credit related losses. That is, distinguish capital gains/losses arising from changes in interest rates from capital gains/losses arising from changes in the assets credit worthiness.
- C. Provide a reserve consistent with valuation actuary standards that adequately provides for future volatile increasing incidence of asset losses.
- D. Provide appropriate recognition of long-term expected returns for equity type investments.

## II. OBJECTIVES

- A. To develop an asset valuation reserve, which recognizes current actual default or credit experience, and also potential future adverse (and favorable) experience in the value of assets.
- B. The basis for this reserve should be consistent with that used to determine the value of liabilities for statutory purposes, and
- C. Be consistent with the accounting basis used to determine the statutory balance sheet value of assets.
- D. Capital gains and losses arising from changes in interest rates should be reserved in a manner consistent with cash flow testing done by a valuation actuary. Gains or losses should be gradually released over time as no economic changes have occurred as measured on an ongoing valuation basis.

## III. DESCRIPTION OF INTEREST MAINTENANCE RESERVE

The Interest Maintenance Reserve (IMR) - captures for all types of fixed income investments, all of the realized capital gains and losses which result from changes in the overall level of interest rates as they occur. Once captured, these capital gains or losses are amortized into income over the remaining life (period to maturity) of the investments sold. Realized gains and losses on derivative investments, which alter the interest rate characteristics of assets/liabilities, also are allocated to the IMR and are to be amortized into income over the life of the associated assets/liabilities.

Note: certain significant unusual transactions may require immediate recognition of any realized capital gains or losses, as described in a later section.

This reserve is not subject to any maximum.

## IV. DESCRIPTION OF ASSET VALUATION RESERVE

The Asset Valuation Reserve (AVR) - consists of two major components and a number of sub-components each designed to address specific asset risk areas:

- a) The Default Component - provides for future credit-related losses on fixed income investments. The default component has two sub-components:

- i) The Bond and Preferred Stock Sub-component - contains the default provisions for corporate debt securities, preferred stock, mortgage backed securities, and counter-party exposure arising from derivatives transactions.
  - ii) The Mortgage Sub-component - contains the default provisions for farm, commercial, and residential mortgages.
- b) The Equity Component - provides for all types of equity investments. The size of the provisions depends to some extent on the market value for those investments. For real estate the market value is determined by using appraisals net of selling expense. The equity component has two sub-components:
- i) The Common Stock Sub-component - contains provision for both affiliated and unaffiliated common stock and other investments in the nature of common stock.
  - ii) The Real Estate and Other Invested Asset Sub-component - contains provision for real estate.

Note: The provision for Schedule BA assets is established in accordance with the true nature of the particular assets to the greatest extent possible, by allocating these assets to the appropriate sub-component.

The Asset Valuation Reserve captures all recognized credit-related capital gains and losses in the appropriate sub-component. In addition, a basic contribution and an annual contribution are made to each sub-component.

Credit gains and losses captured in the Asset Valuation Reserve include realized gains or losses, net of capital gains taxes, any other recognized capital gains and losses net of deferred taxes. Unrealized gains and losses on hedging instruments not related to interest rate changes should be included with the hedged asset. Gains or losses, net of capital gains tax, on specific hedges should be included only if the hedged asset is sold or disposed.

Voluntary contributions and limited transfers between sub-components are permitted.

## V. ASSET VALUATION RESERVE COMPONENTS/FORMULA

A. The AVR is determined separately for each sub-component as (1) the Accumulated Balance + (2) the Additional Contribution, but not less than zero nor more than the maximum, where:

- (1) the Accumulated Balance = Beginning Balance
  - + Capital Gains, net of taxes
  - Capital Losses, net of taxes
  - + Basic Contribution
- (2) the Additional Contribution = 20% (Reserve Objective - Accumulated Balance)

The Additional Contribution amortizes the difference between the Reserve Objective and the Accumulated Balance.

If a sub-component is at a maximum, then transfers are made to the other sub-component within a major component. If both sub-components are at a maximum, transfers to the other major component are not required.

The book adjusted carrying value is used for all AVR calculations.

## B. Quarterly Calculations

The AVR calculations are done in accordance with the Annual Statement Instructions, quarterly, with full recognition of credit losses to the end of that quarter. However, only a proportionate part (25%, 50%, 75%) of:

- (1) the Basic Contribution, and
- (2) 20% of the Reserve objective less the Accumulated Balance is used on 3/31, 6/30 and 9/30.

## C. Determination of Reserve Objectives, Contributions and Maximums

The Reserve Objective, the Basic Contribution, and the AVR Maximums are determined by applying specifically defined factors for each asset type to the corresponding statement values for that asset.

## VI. AVR BASIC CONTRIBUTIONS, RESERVE OBJECTIVES AND MAXIMUMS

### A. Basic Contributions

1. Fixed Income Investments: Basic contributions are set equal to expected net capital losses arising from default or credit events. They were refined as part of codification in 2002.
2. Equity Investments: Basic contributions are set equal to zero.  
Note: no changes were made to the equity component. Possibly under some future consideration is a draft proposal to bring them into line with the fixed income components structure.

### B. Reserve Objectives

1. Fixed Income: developed factors to provide the same level of conservatism as that of all valuation reserves (about 85%).
2. Equity Investments: set equal to maximums prior to 1997, adjusted where necessary for deferred taxes. Real Estate factors were already fully tax adjusted.

Common Stock            20% with an adjustment for the volatility of the portfolio.

Real Estate             7.5%

### C. Maximums

1. Fixed Income: maximums are set equal to the post-tax Risk Based Capital factors for each asset type.
2. Equity Investments: 20% for Common Stock and 7.5% for Real Estate maximums selected to keep reserves close to objectives. Risk Based Capital factor maximums would have created excessive AVR reserves.

## VII. IMR MINIMUMS/MAXIMUMS

- A. Minimums: The IMR can be negative for any line of business as long as the aggregate IMR for the Company is not less than zero.

Any otherwise negative IMR value is carried over to subsequent years.

B. Maximums: There is no maximum of the IMR.

## VIII. BACKGROUND/PERSPECTIVE

To insure solvency of a company, its assets should be invested so that the company has a very high probability of paying its contractual liabilities when they become due. In order to assess whether a company is able to fulfill its obligations, it must present its liabilities and assets on a financially integrated basis. Since the accounting practices prescribed for the life insurance annual statement are an important element in this discipline, it is imperative that the accounting practices be consistent for assets and liabilities. If they are inconsistent, then the annual statement will not reveal whether assets exceed liabilities; more importantly, neither regulators nor management can determine the risk of insolvency for the company.

The Valuation Actuary's Opinion includes a statement that the assets backing the liabilities make adequate provision for the company's liabilities. That is, the Actuary must look beyond the statutory valuation formulas and satisfy himself that the cash flows generated by the assets will probably be sufficient to discharge the liabilities.

Prior to the AVR and IMR, there were many circumstances under which the statutory formula valuation methods gave rise to inappropriate results. Some examples were:

- Changes in values due to interest rate swings were recognized inconsistently on the asset and liability sides of the balance sheet. Liabilities are valued using interest rates fixed at issue while some assets may be valued using current interest rates through trading activity.
  
- When the assets are poorly matched to the liabilities, a significant adverse swing in the interest rates will reduce financial strength and could lead to insolvency even though the balance sheet value of the assets exceeds the balance sheet value of the liabilities. Using long term assets to back demand liabilities is dangerous if there is a significant upswing in interest rates. In addition, individual insurance premiums are received and invested for many years after the issue date on which the reserve interest rate is determined, creating a potential for inadequate yields that is not reflected in standard accounting procedures.
  
- The potential for future asset losses was not well reflected in the balance sheet or earnings statement.

It is desirable that the valuation of the assets and liabilities be made as consistent as possible to (1) minimize the instances where, in order to render a clean opinion, the actuary must establish extra reserves due to interest rate gains or potential for defaults and (2) increase the likelihood that assets supporting liabilities are sufficient even in the absence of an Actuarial Opinion. The development of an AVR and IMR will correct many of these deficiencies in consistency.

## IX. ACTUARIAL RESPONSIBILITIES

It is clear that the responsibilities of the actuary were an important part in establishing both the AVR and the IMR. Valuation Actuaries must not only know valuation standards and the appropriate mortality and other tables to use when determining the liabilities of their company, but must also recognize and calculate the impacts of changing interest rate environments and potential asset defaults as they establish reserves. The "asset Adequacy test" undertakes to show that the assets, which fund the reserves, are adequate to carry out the promises of the company.

The appointed actuary may use and must disclose reliance upon any portion of the assets supporting the Asset Valuation Reserve (AVR), Interest Maintenance Reserve (IMR) or other mandatory or voluntary statement of reserves for asset adequacy analysis. The Actuary can either reflect default losses directly in the asset adequacy testing or the actuary can use the Default Component Reserve Objective amount of the AVR directly as the appropriate (present value) measure of credit losses. This measure becomes part of the obligations to be met in the cash flow testing of the reserves.

## X. KEY ASSUMPTIONS

### A. Insurance Policy and Contract Valuations Will Not Be Changed.

Recognizing the importance of consistent treatment of assets and liabilities, it is very important to determine the value of assets consistent with that used to determine the value of the liabilities. The development of the AVR and IMR assume that the present methods for valuing policy reserves for statutory purposes remains substantially unchanged.

Any material change in insurance valuation methodology will require reexamining the appropriateness of the AVR and IMR.

### B. The Primary Focus Of The Statutory Statements Is Solvency.

The most important and fundamental purpose of the Statutory Statements is to provide basic financial information focusing on solvency. Other accounting objectives, such as accurate measures of earnings, are considered to be less important. Development of the AVR and the IMR is consistent with this objective.

### C. AVR and IMR Only Apply To Life Insurers.

The AVR and IMR resolve issues associated with life insurer and fraternal insurer asset and liability valuations. These issues may not exist or the AVR and IMR methods may be inappropriate for other types of insurers or financial service organizations due to different reserve structures, length of obligations, no direct tie of assets to liabilities, etc.

### D. Going Concern Basis of Valuation

The valuation of assets and liabilities proceeds on the assumption that the insurer is a going concern. Valuation is not done on a liquidation basis.

## XI. LEVEL OF CONSERVATISM

The level of conservatism for statutory reserves and, therefore, the AVR and IMR has not changed over the years.

### A. Pre-Codification (Prior to 2001)

The N.A.I.C. Accounting Practices and Procedures Manual described statutory accounting practices as follows:

"Statutory accounting practices may be conservative in some respect, but they are not unreasonably conservative over the span of economic cycles and in recognition of the primary responsibility to regulate for financial solvency. They attempt to determine the company's ability to satisfy its obligations

to its policyholders and creditors at all time. Because of the conservatism generally associated with these accounting principles, the statutory balance sheet is sometimes viewed as being presented on a solvency basis inasmuch as some assets are either valued conservatively or given no value at all. Many liabilities are valued on an equally conservative basis." (Introduction, page ii)

As currently required to meet the solvency objective, policy reserves should be sufficient to cover reasonable deviations from expected experience, including the ups and downs of economic cycles. The objective of the NAIC Model Standard Valuation Law is to meet this criterion. In the environment of such standards, technical insolvency (where assets are less than liabilities) is not necessarily an indicator of policyholder loss. An insolvent company may still meet all of their obligations in an orderly and complete manner. Also, the standards take no account of a company's ability to take corrective action when solvency is threatened (for example, by reducing new business volume or lowering interest-crediting rates).

In addition, companies hold capital and surplus in order to be able to absorb more extreme events not anticipated in this reserve criterion. In assessing financial condition, considerable emphasis is placed on the size of a company's surplus relative to its risks, as well as the adequacy of the underlying reserves.

One of the objectives of the Asset Valuation Reserve is that it should have the same strength as all other components or types of statutory reserves; that is, it should have the same level of confidence that it will survive over reasonably adverse economic cycles.

#### B. Post-Codification 2001

Statutory accounting practice (SAP) is conservative in some respects but not unreasonably conservative over the span of economic cycles or in recognition of the primary statutory responsibility to regulate for financial solvency. SAP attempts to determine at the financial statement date an insurer's ability to satisfy its obligations to its policyholders and creditors." (Preamble par. 9)

Nothing of substance in the level of conservatism was changed with codification.

## XII. AVR AND IMR BUILT ON AND COMPLEMENT EXISTING VALUATION PRACTICES

The existing framework of asset and liability valuation practices, as augmented by the NAIC Model Standard Valuation Law, played a key role in designing the AVR and IMR, including:

- (a) Reserve valuation standards should contain a provision for future losses. Although it is well understood that in cash flow testing provision must be made for future asset losses, it may not be as well understood that historically the minimum valuation standards implicitly contained such a provision.
- (b) Interest assumptions in reserve valuation generally recognize the potential for mismatch. Dynamic valuation rates are lower for ordinary life than for guaranteed investment contracts, for example, because the mismatch is almost inevitable on the former. In addition, it is required in other regulations, and in the NAIC Model Standard Valuation Law, that cash flow testing should be used and may result in the adoption of lower than the dynamic valuation rates if mismatch exists. Hence, with the one exception noted in section (c), there is no need for the IMR reserves to make provision for the risk of mismatch.
- (c) Asset valuations for fixed interest securities usually reflect the outlook at the time of purchase of an asset. In particular, bond amortization tends to reflect the yields available at time of purchase and the

expected cash flow. Liabilities are established at the same time, and the interest rate assumptions on them are those appropriate to the outlook at that time. But if securities are traded, a new amortization schedule is established that may be based on an entirely different yield environment, which may not be consistent with the liabilities that have been established.

Using the IMR to absorb trading gains is desirable and appropriate to eliminate this subsequently created mismatch.

- (d) Equities present special valuation problems. Common stocks are valued at market rather than amortized value; hence they require different treatment. Real estate and similar investments, although usually valued at depreciated value, require special consideration because of the great likelihood of major changes in yield and yield expectation after purchase.

### ROLE AND PURPOSE OF THE INTEREST MAINTENANCE RESERVES

#### XIII. SUMMARY

Trading gains on fixed-income assets (i.e., capital gains or losses due primarily to the sale of an asset before maturity in an interest rate environment different from that at the time of purchase) should be treated differently from all other gains and losses. Although it would have been less complicated to treat trading gains within the framework of the AVR that handles other gains and losses, such treatment would not have achieved the desired consistency between the reporting basis for assets and the reporting basis for liabilities. To accomplish this objective most effectively, a separate reserve had to be established - the Interest Maintenance Reserve.

### INTEREST MAINTENANCE RESERVES

#### XIV. INTEREST-RELATED VS. CREDIT RELATED CAPITAL GAINS AND LOSSES

It is important to distinguish between capital gains and losses which arise because of changes in the general level of interest rates, and capital gains and losses which are a result of the changing circumstances of the issuer. Those which arise because of changes in the general level of interest rates (interest-related gains and losses), although defined as capital gains and losses for financial reporting purposes of Capital Gain and Loss Exhibit, are in reality purely transitory gains and losses without any true economic substance on an ongoing basis.

That this is so is demonstrated by the fact that in virtually all cases an insurer who realizes interest-related gains and losses arising from the disposition of securities, will necessarily want to reinvest the proceeds in order to maintain a viable operation that meets its obligation. Such reinvestment will take place in the current interest environment and produce yields consistent with that current environment. The difference in the value of future earnings arising from the reinvestment is roughly equal in magnitude, and opposite in sign, to the Exhibit 4 gains and losses occurring at the time of the transactions; in other words, if an interest-related gain occurs, the insurer is likely to have to reinvest at lower yields; and if an interest-related loss occurs, the insurer will generally be able to reinvest at higher yields. Thus, if the gain or loss is truly interest-related, and not in any way related to a change in circumstances of the issuing entity, no significant change in the ability to meet its obligations or its solvency position of the insurer has occurred.

Hence, the Interest Maintenance Reserve is designed to set aside such gains and losses and prevent them from having an immediate impact on surplus, and to amortize these gains into the Gain from Operations in a manner which reflects the runoff in future yields as closely as possible.

In practical application of these concepts, certain modifications occurred. An effort was made to keep compromises and exceptions to a minimum in order to maintain the objectives of the IMR. Among such modifications were the following:

- (a) Although it might be claimed that the theory should encompass unrealized as well as realized gains, the more straightforward applications of the intent of the reserve are to realized gains. Hence the use of the reserve is limited to realized gains (occurring at time of sale, maturity, call, etc.)
- (b) Interest-related gains occur on equities, as well as on fixed interest securities, but such gains are much harder to distinguish and analyze. For this reason, equity gains were excluded.
- (c) Within the category of fixed interest gains, practical methods were developed to distinguish between interest-related and credit-related gains and losses (see section on "How To Distinguish Gains").
- (d) Special provision is made for liabilities with Market Value Adjustments (see section on "Market Value Adjustments").
- (e) There are certain circumstances where the sale of securities is not accompanied by a reinvestment because of a significant reduction in liabilities. Special rules to handle these situations are described in the sections on "Reinsurance Transactions" and "Excessive Withdrawals."

Serious consideration was given during the development of the IMR to exempting the assets supporting certain lines of business, such as Ordinary Life, and/or the assets supporting surplus. The argument was that such assets do not have a close correspondence to a set of liabilities with characteristics similar to the assets. However, it was felt that despite the more obvious case that can be made for an IMR in "matched" accounts, the same basic motivations apply to those other accounts; gains tend to be transitory and spurious, and such a telescoping of future yields into the current balance sheet should not be permitted. In addition, the concern was expressed that "gains trading" would occur if certain portions of operations were exempted. For example, the company could choose to trade assets that were in an exempt or a non-exempt account, depending on the balance sheet effect, and thus would be able to manipulate results.

## XV. IMR STRUCTURE

All realized capital gains and losses on fixed income investments are to be distinguished as to whether they are identified as arising from changes in the level of interest rates. If they are, they should be treated as contributions to the Interest Maintenance Reserve, and amortized into surplus over a period of time.

### A. Quarterly Calculations

The IMR should be computed in accordance with the Annual Statement Worksheets except that only a proportionate part (25% in March, 50% in June, and 75% in September) of the current years amortization is released to the gain from operations.

## XVI. FIXED INTEREST INVESTMENTS APPLICATIONS

The categories of assets to which the Interest Maintenance Reserve applies (fixed interest investments) are described below.

- corporate debt securities,
- preferred stock,
- government obligations (direct and guaranteed),
- obligations of states, territories, and possessions (direct and guaranteed),
- Obligations of political subdivisions of states, territories, and possessions (direct and guaranteed),
- special revenue and special assessment obligations and all non-guaranteed obligations of agencies and authorities of governments and their political subdivisions,
- mortgages,
- mortgage backed securities,
- money market funds,
- other investments in the nature of debt instruments, and
- derivative instruments hedging these assets
- 
- some realized foreign exchange related capital gains/losses.

## XVII. DISTINGUISHING INTEREST RELATED GAINS FROM CREDIT-RELATED GAINS

Although one could theoretically determine an interest rate portion and a credit or default risk portion for each capital gain or loss, for administrative simplicity the following rules were adopted to distinguish the two types of gains. These definitions are used since they are easily implemented with the information that is currently available. Gains or losses that do not occur on the disposition of an asset are automatically classified as credit related.

- A. Realized capital gains or losses (net of capital gains tax) on corporate debt securities, preferred stock, mortgage backed securities and derivatives transactions hedging those assets are to be classified as interest rate gains or losses provided such gains or losses were on issues which have not changed by more than one SVO rating classifications between the purchase date, (or December 31, 1990 if purchased prior to that date), and the date of sale, or has not been rated "6" during that period. Capital gains or losses relating to changes in foreign exchange rates should follow this same guidance. All other gains or losses on corporate debt securities, preferred stocks, and mortgage backed securities, including realized capital gains or losses (net of capital gains tax) on derivatives transactions hedging those assets are to be classified as credit gains or losses.
- B. Capital gains or losses (net of taxes) on the disposition of mortgage loans which are not in process of foreclosure or in course of voluntary conveyance, where interest is not more than 90 days past due, and

where such loans have not had restructured terms over the prior two years, are to be classified as interest rate gains or losses. All other gains or losses on mortgage loans would be classified as credit related gains or losses.

Note: Slight variations in the treatment of preferred stock and convertible assets are described in subsequent sections.

### XVIII. IMR AMORTIZATION

The amortization procedures used in the Interest Maintenance Reserve assume that the gains or losses arise from sale and repurchase of the same asset. In practice of course, the repurchase may be of different duration or quality than the original asset. But it is neither practical nor theoretically correct to let the disposition of the proceeds affect the reserve calculation.

Procedure - Each realized capital gain or loss, net of capital gains tax, due to changes in the level of interest rates should be amortized by establishing a liability (in case of gain) or asset (in case of loss) that is equal to the excess of the value of the original asset (as if it had not been sold) over the value of the same asset as if it had been repurchased at the sale date. This includes derivative transactions entered into solely for the purpose of altering the interest rate characteristics of the company's assets and/or liabilities (hedging transactions). Capital gains or losses on these transactions should be credited or charged to the Interest Maintenance Reserve and amortized using the amortization method elected by the company.

In other words, a specific amortization schedule is established for each asset on which an interest rate gain or loss is recognized, with such schedule being individually designed to reflect the characteristics of that asset. Since this requirement may impose an administrative burden on some companies, companies are allowed to use alternative methods that reasonably approximate this amortization method. This includes reasonable approximations of the described method as approved by the domiciliary state insurance department. A "simplified method" that will be deemed to satisfy this criteria will group all capital gains and losses according to the number of calendar years to expected maturity. The groupings will be in bands of 5 calendar years. The assumptions used to develop the amortization schedule for these groupings are set forth in the Appendix to this section.

The groupings are as follows:

- 0 calendar years to expected maturity,
- 1 calendar year to expected maturity,
- 2 to 5 calendar years to expected maturity,
- 6 to 10 calendar years to expected maturity,
- 11 to 15 calendar years to expected maturity,
- 16 to 20 calendar years to expected maturity,
- 21 to 25 calendar years to expected maturity,
- 26 to 30 calendar years to expected maturity, and
- over 30 calendar years to expected maturity.

Where "Calendar years to expected maturity" means the calendar year of expected maturity minus the calendar year of disposition, so that a bond sold in 2002 that would have matured in 2007 has five calendar years to expected maturity.

### Simplified Method

Under the simplified method, the capital gains and losses due to interest rate changes on fixed income investments should be amortized according to the amortization schedules derived from the formulas in the Appendix to this section, using the current Reference Interest Rate (R) specified in the Standard Valuation Law for single premium immediate annuities rounded to the nearest one percent. The accompanying table displays the rates, which are being used for year-end 2002.

The presence of sinking fund payments, principal repayment schedules, expected prepayments, and adjustable interest rates, complicate the determination of the number of calendar years to expected maturity. The simplifying rules designed for these cases are:

In the case of convertible bonds, convertible preferred stocks, and callable bonds purchased at a premium, the expected maturity date is defined as the contractual retirement date that produced the lowest amortization value for annual statement purposes. Potential retirement dates include all possible call dates, and the contractual maturity date. When the instrument's contractual terms include scheduled sinking fund payments of fixed amounts, an additional calculation of yield to average life should be included in the analysis where average life is defined as the date at which the instrument is 50% repaid. For puttable instruments, expected maturity is the put date. For perpetual instruments, the expected maturity is 30 years from the current date. However, where a callable bond purchased at a premium is called or sold after the expected maturity date, there should be no amortization of the call premium or interest related gain or loss. Similarly, there should be no amortization of any interest-related gain or loss arising if a convertible bond or preferred stock is disposed of after the expected maturity date.

For residential mortgages and residential mortgage pass-through other than Real Estate Mortgage Investment Conduits (REMICs), the number of calendar years to expected maturity is defined to be one-half the number of calendar year to final maturity (Note that in the table for the simplified method, the parenthetical references to number of years provide for residential mortgages.)

For REMICs and other asset-backed investments purchased at the time of original issuance, the calendar year of expected maturity is the calendar year of issue plus the "weighted average life" (rounded to the nearest whole number) as stated in the Offering circular, using the prepayment assumption stated in the Circular to be used for Federal Income Taxation. For REMICs and other asset backed investments purchased after the original issuance, it is permissible for the company to recompute the weighted average life of the investment based on the same prepayment assumptions used to compute the purchase price, provided that this re-computation is done in a consistent manner for all similar asset backed investments.

For bonds and preferred stock without a maturity date, and for which an expected maturity date is not determinable by the above rules, a maturity date 30 years from the year of disposition should be used.

### For loan-backed bonds and structured securities that are valued using currently anticipated prepayments

- a) Under the Seriatim or General Method, use an amortization schedule developed using the anticipated future cash flows of the security sold consistent with the prepayment assumptions that would have been used to value the security had the security been purchased at its sales price.

- b) Under the Grouped Alternative Method, use the remaining weighted average life of principal and interest payments consistent with the prepayment assumptions that would have been used to value the security had the securities been repurchased at its sale price.

#### Prior to 1994

In 1994, only loan-backed and structured securities that met the following definition were required to be valued using currently anticipated prepayments:

Loan-backed and structured securities that have potential for loss of a significant portion of the original investment due to changes in interest rates or the prepayment rate of the underlying loans supporting the security. These securities should include, but are not limited to, interest-only structured securities and structured securities purchased at a significant premium over par value.

#### For loan-backed bonds and other structured securities that are **not** valued using currently anticipated prepayments (pre 1995 only):

- a) Under the Seriatim or General Method, the amount amortized in a given year is the excess of the amount of income which would have been reported in that year, had the asset not been disposed of, over the amount of income which would have been reported had the asset been repurchased at its sale price.
- b) Under the Grouped Alternative Method, use the weighted average life of the investment based on the same prepayment assumptions used to compute the purchase price to determine the amount to be amortized in any given year.

Beginning in 1995, all loan-backed and other structured securities are valued using currently anticipated prepayments.

#### XIX. NEGATIVE YIELD ADJUSTMENTS:

Losses recognized on loan-backed bonds and other structured securities that have a negative effective yield at the date of valuation should be treated as realized losses and included in the reserve as if the security had been sold and the loss considered an interest rate loss. If the security is valued using the prospective adjustment methodology, a negative effective yield occurs when the net undiscounted sum of anticipated future cash flows of the security is less than the current book value of the security at the date of valuation. If the security is valued using the retrospective adjustment methodology, a negative effective yield occurs when the net undiscounted sum of actual and anticipated cash flows is less than the original cost of the investment.

#### XX. EXPECTED MATURITY DATE

For a convertible bond or preferred stock purchased while its conversion value exceeds its par value, any gain or loss realized from its sale before conversion must be excluded from the IMR and included in the AVR. Conversion value is defined to mean the number of shares available currently or at next conversion date, multiplied by the stock's current market price.

Grouped Amortization Schedules  
Interest Maintenance Reserve for 2002 Gains and Losses  
Interest Rate = 7.00%

Calendar Years to Maturity  
(Residential Mortgages)

<u>Year end</u>	<u>26-30</u>	<u>21-25</u>	<u>16-20</u>	<u>11-15</u> (21-30)	<u>6-10</u> (11-20)	<u>2-5</u> (3-10)	<u>1</u> (1-2)	<u>0</u> (0)
2002	0.6 %	0.9%	1.4%	2.4 %	4.8%	13.0%	49.1%	100.0%
2003	1.3%	1.9%	3.1%	5.2%	10.2%	27.5%	50.9%	
2004	1.3%	2.1%	3.2%	5.5%	10.9%	25.3%		
2005	1.5%	2.2%	3.5%	5.9%	11.6%	18.6%		
2006	1.5%	2.3%	3.7%	6.3%	12.5%	11.6%		
2007	1.7%	2.6%	4.0%	6.8%	13.4%	4.0%		
2008	1.8%	2.7%	4.3%	7.2%	12.7%			
2009	1.9%	2.9%	4.5%	7.8%	10.1%			
2010	2.0%	3.1%	5.0%	8.3%	7.5%			
2011	2.2%	3.3%	5.2%	8.9%	4.7%			
2012	2.4%	3.6%	5.6%	9.6%	1.6%			
2013	2.5%	3.8%	6.1%	9.0%				
2014	2.7%	4.1%	6.4%	7.3%				
2015	2.9%	4.4%	6.9%	5.3%				
2016	3.1%	4.6%	7.4%	3.4%				
2017	3.3%	5.1%	8.0%	1.1%				
2018	3.5%	5.4%	7.5%					
2019	3.8%	5.7%	6.0%					
2020	4.1%	6.2%	4.5%					
2021	4.3%	6.6%	2.8%					
2022	4.7%	7.1%	0.9%					
2023	5.0%	6.7%						
2024	5.4%	5.4%						
2025	5.7%	4.0%						
2026	6.2%	2.5%						
2027	6.6%	0.8%						
2028	6.2%							
2029	5.0%							
2030	3.7%							
2031	2.3%							
2032	0.8%							

NOTE: “Calendar Years to Expected Maturity” is defined in the preceding text. In the case of residential mortgages, where one-half the number of years to final maturity should be used, the parenthetical headings apply.

XXI. CAPITAL GAINS TAXES

The capital gains taxes incurred or recognized as the result of capital gains or losses due to interest rate changes, should be charged or credited to the Interest Maintenance Reserve and amortized in proportion to the before-tax amortization.

This amortization achieves the desired parity between holding and selling the bond except in the case of certain bonds for which the tax basis differs substantially from the statement basis.

Capital gains tax is determined using the documented company’s method of allocating taxes for statutory financial reporting.

## XXII. RESERVE MAXIMUM AND MINIMUM LEVELS

No maximum is placed on the Interest Maintenance Reserve. The aggregate minimum value for the IMR for the Company is zero. The IMR may be negative for any Line of Business as long as the aggregate for all lines equals zero. Provision is made in the accounting rules that if an aggregate negative IMR is developed in the absence of the zero minimum, that negative value is carried over to subsequent years.

The basic rationale for the IMR would conclude that neither a maximum nor a minimum is appropriate. If the liability values are based on the assumption that the assets were purchased at about the same time as the liabilities were established, then there should be no bounds to the reserve which corrects for departures from that assumption; if a company has to set up a large reserve because of trading gains, it is in no worse position than if it had held the original assets. As for negative values of the IMR, the same rationale applies. However, the concept of a negative reserve in the aggregate has not been adopted.

## IMR CALCULATED QUARTERLY

The IMR calculations are done quarterly. Only a proportionate part of the reserve is released to the operating gain each quarter (25%, 50%, 75% on 3/31, 6/30, and 9/30 respectively).

## XXIII. INITIALIZATION IN 1992

The initial value of the IMR at the beginning of 1992 was set equal to zero.

## XXIV. TREATMENT OF MARKET VALUE ADJUSTMENTS

Certain policies and contracts issued by insurance companies provide for a market value adjustment should the policyholder or contractholder surrender the policy or contract before its maturity. The adjustments are distinguished by the fact that they are keyed to the current level of interest rates. Current accounting reports the excess of the liability released over the payment to the contractholder as a gain or loss in the year of surrender. This gain or loss should not be booked immediately since, if the underlying asset is sold, the interest-related gain or loss goes into the IMR; and if it is retained, the book earnings on it are no longer consistent with current market yields (a condition for which the MVA is intended to provide over the life of the asset).

Material gains or losses resulting from market value adjustments on policies and contracts backed by assets that are valued at book, including the associated marginal tax impact, should be captured by the IMR and amortized in the same manner as capital gains and losses on fixed income investments. The amortization schedules should be determined in a manner consistent with the determination of the associated market value adjustment.

The materiality minimum is the greater of \$1,000,000 or .01% of liabilities.

## XXV. EQUITY LINKED PRODUCTS, PARTICIPATING BUSINESS

All capital gains/losses used to fund benefits, dividends or increase benefit reserves are excluded from the IMR to avoid utilizing these gains or losses twice in the financial statements.

## XXVI. REINSURANCE OF A BLOCK OF BUSINESS

Whenever a block of business is sold and all the liabilities associated with the block are off the company's books, the IMR attributable to that block of business should be reduced to zero. The interest-related gains and losses on the assets are no longer needed to support the block.

It is inappropriate to eliminate the IMR associated with a block of business unless the associated assets are sold at the same time. If these assets continue to be held they will in effect be used to back other lines of business. The IMR procedure makes the appropriate adjustment to allow the assets to be so used.

## XXVII. SALE, TRANSFER OR REINSURANCE OF LIABILITIES

The interest related gain or loss (net of taxes) associated with the sale, transfer, or reinsurance of a block of liabilities representing more than 1% of a company's General Account liabilities should be credited or charged to the IMR and then amortized into income. The company may elect a lower standard but once elected it can not be changed without Insurance Department approval. The transaction should be irrevocable and to a non-affiliate to qualify for the following treatment. The amount of the gain or loss that is interest related and the IMR amortization should be determined using the following three step procedure:

- (1) Identify the IMR balance and future amortizations arising from the past and present dispositions of the assets associated with the block of liabilities.
- (2) Identify the IMR balance and future amortizations that would result if the remaining assets associated with the block of liabilities were to be sold.
- (3) Define the interest-related gain or loss (net of taxes) to be the negative of the sum of the IMR balances determined in steps 1) and 2). The future amortizations of this gain or loss are the negative of the sum of the amortizations determined in steps 1) and 2).

The associated assets are the assets allocable to the reinsured block of business for the purposes of investment income allocation. If the company has not been tracking the investment income of the block, it should retrospectively identify the assets using procedures consistent with its usual investment income allocation procedures. The associated assets are not necessarily the same as the assets transferred as part of the transaction.

In certain circumstances, e.g., non-economic transactions between affiliates, assets are transferred at book value. In this case, step 1 applies for past and present realized gains/losses, but step 2 unrealized gains/losses is zero.

For modified coinsurance and coinsurance with funds withheld, the assets reside with the ceding company, and the following rules apply:

If the ceding company passes through to the reinsurer the gains/losses net of the change in the IMR, no IMR adjustment is made. Otherwise if all gains including IMR are passed through, follow Step 3. The assuming company must set up the IMR in the same amount as that released by the ceding company, subject to certain requirements.

The before tax amount of gain that would be realized were the associated assets to be sold is the excess of the current market value over the book value. Thus the interest related portion of the gain or loss on the liability side should be

equal to the excess of the book value of the associated assets over the sum of the current market value of these assets plus the current amount of the IMR associated with the block of business.

The book value of the associated assets less the allocable portion of the IMR is an approximation to the book value that the assets would have carried had there been no sales between the time of the original issue and the sale date. Thus the amount added to the IMR on account of the liabilities is approximately the mirror image of the amount which would be added had the original assets been held to the sale date and then sold coincident with the reinsurance transaction. For this reason this method is sometimes known as the "asset proxy method."

This procedure requires more extensive calculations. It presupposes that the company can identify:

- the assets that are presently associated with the liability, and
- the IMR arising from past dispositions of assets associated with the liability.

The assets allocable to the block would be the same as those used for investment income allocation purposes. This assures consistency and minimizes the administrative burden.

## XXVIII. EXCESSIVE WITHDRAWALS

### A. Background

Major book-value withdrawals or increases in policy loans can occur at a time of elevated interest rates. If these withdrawals or increases are far in excess of the withdrawals provided for in the company's reserving and cash flow testing, and if asset sales at this point are, in effect, forced sales to fund liabilities that are no longer on the books, the allocation of a negative amount to the IMR is not correct.

A company may also experience a "run on the bank" due to adverse publicity. This could occur even during a period of low interest rates, and the sale of assets to meet a run would conceivably produce gains. It is appropriate to register the gains immediately.

If the withdrawals were scheduled payments under a GIC, then there is a presumption that any gains or losses that might occur at the time of withdrawal should be added to the IMR since the gains or losses would be spurious if the company has followed a policy of matching its assets to its liabilities.

Note that many of the situations where an upsurge in withdrawal activity generates real losses arise when a company has a severe mismatch between its assets and its liabilities. Such losses can be present even in the absence of any realized gains or losses. The primary protection as to the adequacy of reserves in these circumstances is the requirement for an actuary's opinion.

### B. IMR Exclusions

All realized interest-related gains or losses which arise from the sale of investments required to meet "Excess Withdrawal Activity" as defined below will be excluded from the IMR and will be reflected in net income.

## XXIX. RECAPTURE OF REINSURANCE CEDED (10/99)

Upon recapture or commutation of a reinsurance arrangement, the reinsurer must follow the rules for reinsurance ceded and the original issuer must follow the rules for reinsurance assumed.

If the recapture is from an alien reinsurer not subject to IMR, an IMR liability adjustment is required, if the assuming company or any of its affiliates ever held the business, equal to the unamortized IMR liability adjustment of the business it originally held in the parent or a subsidiary.

### XXX. WITHDRAWABLE RESERVES

Withdrawable reserves is the reserve or liability net of policy loans associated with any policy or contract that might be subject to a withdrawal or surrender without market value adjustment, either by the contractholder or plan participant.

Withdrawable reserves include the reserves associated with such things as

- Ordinary and Industrial Life,
- SPDA's, and
- Benefit sensitive GIC's where the associated plan allows participant withdrawals or transfers

To the extent that separate account assets are included in the IMR, the associated withdrawable reserves should be included with other withdrawable reserves.

### XXXI. EFFECTIVE WITHDRAWALS

Effective withdrawals include withdrawals and surrenders that are unscheduled and calculated without market value adjustment plus the net increase in policy loans. Also included are transfers to separate accounts, other than transfers that are merely passing deposits or other considerations to the separate accounts or transfers that have been computed with market value adjustment.

- a. Withdrawal Rate is the ratio of the Effective Withdrawals to the Withdrawable Reserve at the beginning of the year.
- b. Threshold Withdrawal Level is 150% of the product of the lower of the Withdrawal Rate in the preceding and in the next preceding calendar year times the Withdrawable Reserves at the beginning of the year.
- c. Excess Withdrawal Activity is the amount by which Effective Withdrawals for the year exceed the Threshold Withdrawal Level.

The 150% threshold is somewhat arbitrary. IF the threshold were set lower, there would be a significant likelihood that the normal year to year fluctuations might generate excess withdrawals. On the other hand setting the threshold at a higher level might exclude a large fraction of the withdrawals even in the case of a run on the company. The factor should be re-examined periodically to assure that an appropriate balance is maintained between these two competing goals.

Only those investments required to provide cash flow to meet excess withdrawal conditions are to be excluded from the IMR. If the company can identify the specific sales that are associated with the excess withdrawal activity, these sales would be excluded from the IMR. Alternatively a pro rata portion of all sales during the year equal to the amount of excess withdrawal activity should be excluded from the IMR.

#### d. Example

Example - Suppose a company has the following Withdrawable Reserves and Effective Withdrawals.

<u>Year</u>	<u>Withdrawable Reserve Beginning Of Year</u>	<u>Effective Withdrawals</u>
t-2	1,000	100
t-1	1,200	108
t	1,300	195

Then the Withdrawal Rate is 10% for year t-2 and 9% for year t-1. The Threshold Withdrawal Level for year t is 150% of 1,300 times 9% or 175.5, and the Excess Withdrawal Activity is 19.5. Thus if the company had asset sales in excess of 19.5, a portion of those sales would have to be identified as associated within the withdrawal activity and the associated capital gains and losses should be excluded from the IMR. If the company had asset sales of less than 19.5, all of the associated gains or losses should be excluded.

### XXXII. PREFERRD STOCK

Preferred stock should be treated in a manner similar to bonds since they are rated. That is, gains or losses will be considered interest-related if ratings have not changed by more than one category in the period since purchase (or December 31, 1992, if later) and the rating has not been RP 4 to RP6, or P 4 to P6, during that period.

### XXXIII. REPLICATIONS (Synthetic Assets)

Realized capital gains/losses, other than those due to counterparty default, on the derivative component of the replication, that is not a swap of prospectively determined interest rates should be reported as interest related or credit related to the AVR sub-component, as if they were gains /losses on the replicated assets.

Capital gains/losses on the cash components of the replication should be categorized and reported as if there was no replication transaction.

Interested related gains/losses associated with the cash component should be amortized in the same way as if there were no replication. Interest related gains/losses associated with the derivative component of the replication that is not a swap as previously described, should be amortized as if that arose from the replicated asset.

Realized capital gains/losses arising from a swap of prospectively determined interest rates constituting a component of a replication transaction should be reported in the IMR maturity bucket corresponding to the side of the transaction with the longest guarantee period.

Capital gains/losses arising from counterparty default should be separately identified and reported in the AVR bond or preferred stock sub-component.

### XXXIV CAPITAL AND SURPLUS NOTES (1998)

Interest related gains and losses realized on directly held Capital and Surplus Notes are included in the IMR as their fundamentals are consistent with those of other fixed income investments. The gain/loss is classified as interest related if the note is eligible for amortized value accounting both at issue and at time of sale.

XXXV. APPENDIX: GROUPED AMORTIZATION SCHEDULES

In order to determine an amortization schedule that is appropriate for the calendar year groupings for the simplified method, the following assumptions were made:

- . The Company owns only bonds purchased at par;
- . Within any five year interval, the par amount of the bonds sold is evenly distributed by duration to maturity;
- . The sales are evenly distributed throughout the year; and
- . There is no correlation between the sale date, the duration to maturity, and the coupon rate.

Under these assumptions the ratio of the unamortized gain remaining at the end of a year t years following the year of the gain to the total original gains on bonds with between 5n+1 and 5n+5 calendar years to maturity at the time of sale is given by:

Numerator/Denominator

Where

$$\text{Numerator} = \left\{ \begin{array}{ll} 5 \cdot v^{5n-t} \left( \frac{1-v^5}{\delta} \right) & \text{if } t < 5 \cdot n \\ 5 \cdot (n+1) - t - \left( \frac{1-v^{5(n+1)-t}}{\delta} \right) & \text{if } 5 \cdot n \leq t \leq 5 \cdot (n+1) \\ 0 & \text{if } 5 \cdot (n+1) \leq t \end{array} \right\}$$

$$\text{Denominator} = 5 - v^{5n} \cdot \left( \frac{1-v^5}{\delta} \right) \cdot \left( \frac{1-v}{\delta} \right)$$

R = Reference Interest Rate for SPIA's to nearest 1%

$$v = \left( 1 + \frac{R}{2} \right)^{-2}$$

δ = The force of interest

$$= 2 \cdot \ln \left( 1 + \frac{R}{2} \right)$$

## ROLE AND PURPOSE OF THE ASSET VALUATION RESERVES

### XXXVI. PURPOSE

Develop a better measurement and communication of the overall risks of asset credit or default losses faced by a company - through the development of an asset valuation reserve and Risk Based Capital. The Asset Valuation Reserve is designed to provide for fixed income asset credit or default risks with the same probability or level of confidence as that of all other statutory valuations reserves held and developed for book value based asset values for life insurance products. This reserve accumulates the risk portion of each investment yield payment to provide for future credit losses as they occur and builds toward a desired reserve objective. This AVR requirement reduces minimum Risk Based Capital requirements significantly. The AVR is also added to Total Adjusted Capital in the Risk Based Capital requirements comparison.

### XXXVII. SUMMARY

When a company purchases an asset, there is a risk that the promised cash flow from the asset will not be achieved, and it is proper accounting to require the company to reserve against such risks. Without such reserving, financial income is overstated from time to time. In fact, in doing cash flow testing, the actuary is required to deduct an appropriate amount from the promised cash flow to provide for the possibility that some interest will not be paid, or that there will be a loss of some of the principal. This can either be done directly in the calculation or indirectly by using the AVR Default Component Reserve Objective as the measure of these possible future losses, as noted earlier. The AVR's objective is to provide for these asset credit or default risks with the same likelihood or probability as that of other statutory reserves held. These risks are an integral portion of the valuation risks that are to be considered by the Company and the Valuation Actuary in doing asset adequacy testing.

The actuary also has to comply with minimum valuation standards, which assume that future obligations will be discounted at a low rate of return. When a more risky asset is purchased, the promised yield is usually higher than the low valuation rate by considerably more than the average expectation of loss. Thus the probability that the asset will be sufficient to mature the obligation is at least 50%.

However, an additional asset valuation reserve (AVR), is appropriate under statutory accounting because there will be variation from expected results. This reserve should be available to absorb default losses in excess of expected. Although this additional reserve could be established immediately upon the acquisition of a risky asset, such a practice is inconsistent with the present system of statutory reserve standards and asset book values. Also, as a practical matter, it would deter insurers from making investments in risky assets. Instead, the Asset Valuation Reserve is built up gradually toward the desired reserve objective. Such buildup is funded annually by a portion of the extra yield on the asset (to the extent not needed to pay for current asset losses). This is consistent with the concept that potential losses will occur sporadically over a period of time.

In this way, the asset valuation reserve works very well in an environment of formula statutory minimum reserves and book value accounting of assets. It also works effectively in a cash flow testing environment, and to this end the reserve should be treated the same as any other actuarial reserves for cash flow testing purposes. When the asset valuation reserve is low, the actuary doing cash flow testing may need to set up additional reserves and vice versa.

The Asset Valuation Reserve concept emphasizes the "reasonably conservative" approach and is analogous to the level of conservatism in policy reserves. As such, the AVR is an important measure of some of the asset risks of the company, just as reserves measure some of the other risks.

The remainder of the asset risk (the provision for catastrophic risks) should be covered by unallocated surplus according to standards set in a consistent manner. RBC was developed to cover the minimum surplus requirements. Hence, there is a continued need to coordinate this work with the work on life risk-based capital.

The Life RBC and AVR and IMR Committees coordinate their efforts to ensure consistent treatment and coordination of their respective requirements.

#### XXXVIII. DETERMINATION OF NUMERICAL VALUES FOR AVR FACTORS

The Bond and Preferred Stock factors assume a 10 year horizon, a 40% recovery in event of default, a 26.25% tax rate, a discount rate of 5.9%, and appropriate basic default data covering extended economic cycles.

In many respects the work to develop factors is never finished. Although the current AVR factors are reasonable, there will always be the need for further work. The factors should continue to undergo periodic updating and refinement to achieve consistency with the philosophy and rationale that underlies them. Questions of risk, probability and uncertainty are always difficult to translate into numerical terms, and this is as true for the valuation of assets as for any other aspect of life insurance. Relevant experience studies are needed and also careful analytic work. Future work must continue to be given the full support of the insurance industry and its regulators.

#### XXXIX. CRITERIA/TIMING FOR FUTURE CHANGE OF FACTORS

Factors may be changed as a result of emerging data, significant changes in experience, a request by the regulators or by interested parties. Any change will be coordinated with similar changes in RBC factors. See Appendix G for a complete description of this process.

The AVR factors will generally be changed one to two years later than those of RBC due to codification process.

### THE DEFAULT COMPONENT OF THE ASSET VALUATION RESERVE

#### XL. GENERAL DESCRIPTION

The Asset Valuation Reserve is split into four subcomponents by major type of asset, not for the purpose of limiting the application of each component, but in order (i) to track separately the level of each subcomponent to see that it is performing as intended, and (ii) to permit the possible use of a different structure by type of asset. The two subcomponents having to do with fixed-interest securities are grouped in the Default Component, and the two equity subcomponents are grouped in the Equity Component.

The Default Component within the Asset Valuation Reserve consists of the following subcomponents:

- Bond and Preferred Stock Subcomponent (which includes mortgage backed securities)
- Mortgage Subcomponent

This component is designed to provide for all credit-related risks for fixed income investments.

## XLI. THE BOND AND PREFERRED STOCK SUB-COMPONENT

### A. Sub-component Balance

The Sub-component Balance at the end of the year is

the Accumulated Balance, plus

an Additional Contribution, plus

any transfers from other sub-components, plus

any voluntary contributions, less

any transfers to other sub-components

The Ending Balance cannot be less than zero nor greater than the maximum.

### B. Maximums

Within each sub-component, a maximum factor is established for each constituent category of fixed income investment. The Maximum Balance for that sub-component is the sum of the statement value in each category times the corresponding maximum factor. Maximums are defined in a subsequent section.

The maximum factor for each asset class is set equal to the RBC factor for that class. This is logical since the AVR reserve objective is about 85% vs. a 98% objective for RBC. The AVR should not logically exceed the RBC amount.

The AVR maximum is equal to the RBC factor times the amount of assets in that asset sub-component.

### C. Accumulated Balance

The Accumulated Balance in each sub-component of the Default Component is equal to:

the Reserve or Balance in the sub-component at the beginning of the year, plus,

the credit-related recognized capital gains net of taxes, including deferred taxes, on assets for (1) the General Account and (2) the Separate Accounts corresponding to the sub-component, less,

the credit-related recognized capital losses net of taxes, including deferred taxes, on assets for (1) the General Account and (2) the Separate Account(s) corresponding to the sub-component, less

the capital gains credited/(losses charged) to contract benefits, payments or reserves, plus

the capital gains plus taxes are determined based on the documented company's allocation method for taxes in their financial statements and unrealized gains/losses are adjusted for deferred taxes consistent with the NAIC Accounting Practices and Procedures Manual for Income Taxes I

the Basic Contribution.

Note: The credit-related gains referred to above can occur as the result of the reversal of previous credit-related losses.

Since only recognized credit-related capital gains and losses are charged to the Default Component, it is important that the factors used for the Maximum Reserves, Basic Contributions, and the Reserve Objective be consistent with the rules used to recognize losses. At present, neither a foregone interest payment nor the true economic loss at the time of a restructure is recognized as a capital loss. This is particularly important for mortgages, since missed interest payments, and restructures are more common in the mortgage market than in the bond market. If the accounting rules were to recognize the losses at the time they occur, the rules governing the AVR should be modified to be consistent with the accounting rules.

#### D. Exclusions

Capital gains or losses that are directly credited to policyholders as benefits, reserves, or payments are deducted since to do otherwise would duplicate the utilization of such gains or losses.

### XLII. BASIC CONTRIBUTION

The required Basic Contribution factor for each sub-component of the Default Component is calculated to be equal to the expected net long-term annual capital losses after taxes per thousand dollars for each asset class.

The Basic Contribution for each asset class is then determined by multiplying the appropriate factor times the amount of assets in that asset class.

### XLIII. ADDITIONAL CONTRIBUTIONS

Gradual funding of the reserve objective will be achieved by making additional annual contributions to the sub-components. This contribution amortizes the difference between the Reserve Objective and the Accumulated Balance. The Additional Contribution is equal to:

$$20\% (\text{Reserve Objective} - \text{Accumulated Balance})$$

Where the Reserve Objective is determined by multiplying the Reserve Objective Factor times the amount of assets in that asset sub-component class. The reserve objective factors were developed to provide the appropriate level of conservation, or confidence levels, comparable to that of other statutory reserves.

Extensive historical studies and simulations were prepared for each class of fixed income investments to calibrate each of the factors.

As a result over time, the AVR balance for each sub-component should average about the reserve objective as this additional contribution will always amortize any differences toward that result. Theoretically the annual contribution (basic plus additional) will tend towards a weighted average of past losses (if the maximum is stable due to a constant level of credit exposure and larger than average if the maximum is increasing due to increasing total company credit exposure).

If a large value for the Amortization Factor were to be chosen, very large reserves would have to be built up in a very short time, and a greatly increased reserve would be required of rapidly growing companies. If the value of the Amortization Factor were to be set very low, the reserve would never build up to any significant amount. It seems logical that the choice of an amortization factor should reflect the amount available to fund the reserve. For fixed income investments, this is the yield spread between the security in question and a risk-free security. As an approximation, this yield spread appears to be roughly 20% of the maximum factors that are described in the next section. An Amortization Factor of 20% is not greatly different from the system in effect prior to the current version of the AVR. Furthermore, since mortgages and real estate are included in the AVR and were not in the prior system the amount of annual contribution that is required was greatly increased in 1992. Hence, an initial phased-in transition was provided in 1992.

#### XLIV. TRANSFER RULES FOR SUB-COMPONENTS

If the ending balance (Accumulated Balance plus Additional Contribution) in a sub-component is greater than the maximum, then the excess should be transferred to the other sub-component of the Default Component. Only if both sub-components are at or above their maximums should excess amounts be released to surplus. Consideration was given to requiring transfers to the Equity Component when the Default Component is full, but this was rejected because of the significant differences in the nature of the two components.

A company may voluntarily make such a transfer.

#### XLV. NEGATIVE SUB-COMPONENTS AFTER ADDITIONAL CONTRIBUTION

If a sub-component is negative after the Additional Contribution, and the "sister" sub-component, within the same component, has a positive balance, a transfer should be made but only to the extent it does not reduce the balance in the "sister" to less than 50% of the balance prior to transfer.

The objective is to treat the components of the Asset Valuation Reserve as providing for all types of credit-related loss, regardless of the sources of the reserve. The 50% limit is a practical constraint within this general objective.

#### XLVI. VOLUNTARY CONTRIBUTIONS

Voluntary contributions may be made by the Company if a sub-component is not at its maximum. Once a voluntary contribution is made it cannot be voluntarily withdrawn.

#### XLVII. MORTGAGE SUB-COMPONENT

Mortgages have many of the same characteristics as bonds, such as fixed yields that are higher than risk-free rates of return reflecting the higher risk of loss. The basic objective is to establish a structure very similar to that of bonds, yet reflecting some of the special features of mortgages in the sub-component structure. Available loss data is not as reliable as that of bonds.

Most importantly, there are no generally accepted quality ratings for mortgages. Companies often do internal ratings but these do not necessarily accord with any standardized system. Quality ratings sometimes do exist for individual mortgages, and ratings have sometimes been assigned to securitized mortgage pools but these ratings depend as much on financing features as on underlying risk. In short, it is not possible to establish a structure that reflects a mortgage portfolio's quality according to objective external standards.

Mortgage loans are reported in four categories to reflect significant differences in loss experience. These are:

- A. Government Insured or Guaranteed
- B. Other Residential (1 to 4 family units)
- C. Farm/Agricultural
- D. Other commercial.

Any loss on an asset which occurs as an asset is reclassified from mortgage to real estate is assigned to the Mortgage Sub-component.

Clearly there are major differences among companies in the quality of mortgage portfolios for its farm/agricultural loans and for all other commercial loans. In order to give effect to a company's mix of these loans and of their geographic concentration, the basic contribution, the reserve objective and the maximums are adjusted to its own experienced delinquency, foreclosure and restructured rate in relation to the average industry experience. The Experience Adjustment Factor is the moving average (over two years) of the company's quarterly delinquency, foreclosure and restructured rates divided by the comparable two-year moving average for the industry. The industry experience is obtained through annual surveys by the NAIC. The initial survey period was done for 1990 and 1991 for use in December 1992.

Because of timing problems the industry and company experience is based on a two-year period ending in the third quarter of the current statement year.

#### XLVIII. EXPERIENCE ADJUSTMENT FACTOR (EAF)

The Experience Adjustment Factor is calculated by dividing the Company's Experience Factor (CEF) by the Industry's Experience Factor (IEF). The Company's Experience Factor is the average of the ratios calculated for each of the preceding eight quarters, with the eighth quarter being as of September 30 of the current statement year.

The company will calculate each quarterly ratio (CEFQy) by taking: the sum of (1) .02 x the amount (mean value) of Farm and Commercial Mortgage loans overdue by more than 90 days, (2) .025 x the amount of loans in the process of foreclosure, (3) .12 x the amount of Commercial Mortgage loans foreclosed during the time period and (4) .01 x the amount of restructured and in good standing Commercial mortgages Loans divided by the sum of (1) the mean book value of Farm and Commercial mortgage Loans held, (2) .5 times the amount of loans foreclosed during the quarter, . Where the mean is the average of the values at the beginning and end of the quarter.

A reasonability range has been set for the Experience Adjustment Factor; namely that it should not be less than .5 nor greater than 3.5. This range will prevent values that could arise from unusual or spurious data.

**In immature portfolios**, where a company has not had five years of applicable mortgage experience, the Experience Adjustment Factor should not be less than 1.

The EAF is calculated as the average of the CEFQy for the same eight quarters experience divided by the average of the IEFQy for the eight quarters.

As a result the AVR for mortgages depends on the company experience relative to industry experience. If a rating system is developed for mortgages, then individual factors should be developed for each class just as there are for bonds.

Companies not required to file a quarterly statement will calculate the Experience Adjustment Factor as if a quarterly statement had been prepared. The maximum reserve factor resulting from Experience Adjustment calculation may not be less than 1.75%, and may not exceed 12.25%, except that for companies with less than five years mortgage experience, the minimum factor is 3.5%. Actual results depend on the column reporting in the AVR instructions

The factor recognizes restructured mortgages since restructured mortgages often are a signal of deteriorating quality. However, the schedule shows existing mortgages that have been restructured at any time in the past, and therefore represents an inventory of restructures rather than the amount of activity in the most recent quarter. Hence to simply add this amount into the denominator of the ratio would overweight the restructures in comparison to the foreclosures and delinquencies (which reflect recent activity only). To correct for this, restructured mortgages are included in the Experience Ratio for year t using t-2 and t-1 years experience, giving a 50% weight to restructures in each year. For example, for 2004 use the 2002 and the 2003 restructure experience.

#### XLIX. APPLICATION OF EAF TO FARM AND OTHER THAN GUARANTEED/INSURED COMMERCIAL MORTGAGES

The Basic Contribution Factor, the reserve objective factor and the maximum factor for (1) farm/agricultural and (2) other commercial mortgage loans are each multiplied by the Experience Adjustment Factor to adjust for the company experience for losses relative to the industry average.

#### L. MORTGAGE LOAN FACTORS

The mortgage loan default component factors for each of the four categories defined earlier based on a 1994-1995 study were developed for the basic contribution, the reserve objective and the maximums for:

1. Mortgage loans in good standing (original terms)
2. Mortgage loans in default - not in process
3. Mortgage loans in process of foreclosure

The AVR committee sponsored this study of the risk of loss on commercial mortgages with the Society of Actuaries data, using modeling technologies not previously available. The modeling technology is based on loan-to-value ratios, similar to those used in pricing models for residential secondary mortgage markets. After a series of model input quality questions were answered, interested parties concluded that the model confirmed that realistic risk of loss experience warranted a lower factor for commercial performing mortgages of 2.0%. Subsequently, the AVR committee and the Life Risk Based Capital Working Group agreed on a 2.25% factor for commercial performing mortgages.

#### LI. OTHER MORTGAGE CATEGORY'S FACTORS

The factors for the other categories were developed consistent with the commercial mortgage factor. The Committees were also guided by the general conclusion that the mortgage risks were about midway between the risks of Class 2 and Class 3 bonds. The available loss data is not as reliable as that of bonds. Furthermore, troubled mortgages are often restructured in a way that no accounting loss is recognized at the time of restructure, but rather the economic loss is taken as a reduction in future interest earnings or a deferral of repayment.

### LII. U.S. GOVERNMENT SECURITIES

Securities backed by the full faith and credit of the U.S. Government, or required by state or federal law to be treated by insurers in a manner similar to full faith and credit instruments of the U.S. Government, are exempt from AVR treatment. The loan-backed securities of such agencies and structured securities, as defined in the NAIC Annual Statement Instructions for Schedule D, Part 1A, Section 2, regardless of issuer, are not exempt.

The SVO Manual instructions define which securities are classified as exempt or included in the AVR.

### LIII. FEDERAL AGRICULTURAL MORTGAGE CORPORATIONS (3/99)

The Federal Agricultural Mortgage Corporations are exempt from the AVR. This includes their bonds, notes, etc.

### LIV. MUTUAL FUNDS

There is a distinction between money market funds and other mutual funds. Securities backed by the full faith and credit of the U.S. government, or similar securities, including money market funds invested in such securities, are exempt from the AVR. Thus, if the money market fund invests exclusively in full faith and credit U.S. Treasury bills, notes, and bonds, and collateralized repurchase agreements comprised of these obligations, then the fund is exempt from the AVR requirements. These investments are reported on Schedule DA, Part 1.

The reserve factor for other money market funds (other than those qualifying under the criteria in the final paragraph) should correspond to the rating by S & P or Moody's Investor Services. These funds would be reserved according to a matrix which would use the Standard and Poor's/Moody's ratings as a starting point, with appropriate additional factors. Money market funds would accumulate reserves in a manner similar to other fixed income components.

Other mutual funds, which are not Money Market funds, should continue to be reserved as equity securities. However, the reserving treatment for certain proscribed classes of bond mutual funds parallels the treatment they would receive were the investments of the mutual fund held directly. To qualify for NAIC 1 equivalent treatment, these bond funds must submit documentation to the NAIC's SVO. The qualifications include: maintaining the highest credit quality rating given by an SVO-approved rating agency to a fund that invests in class one bonds issues or guaranteed as to principal and interest by agencies and instrumentalities of the U.S. government; including loan-backed bonds, and collateralized mortgage obligations, and collateralized repurchase agreements comprised of those obligations; cannot invest in derivative instruments; and, cannot invest in a number of leveraged or deleveraged notes which pay a multiple or fraction of an index or indices; and various other securities. The complete requirements are outlined in the SVO Purposes and Procedures Manual.

## THE EQUITY COMPONENT OF THE ASSET VALUATION RESERVE

### Background

The task of achieving consistency between the valuation of equity investments and insurance liabilities is much more difficult than the corresponding task for fixed income investments. The difficulty is further compounded by the disparity between the accounting methods used for real estate and Schedule BA assets and the accounting methods used for common stock.

Current accounting practices also create mismatches and possible distortions in financial statement operating income when capital gains/(losses) realized or unrealized, are part of the product design or pricing and, therefore, the reserves (e.g., equity indexed products or Universal Life policies) or policyowner dividends. Consideration has been given to further refine the AVR Equity Component to minimize these distortions but they have not been agreed to or implemented.

It might be natural to want to treat equity investments in a manner that is entirely parallel to other investments, but that proved not entirely possible. For example, it is appropriate in theory to carry an interest maintenance reserve for equity investments since the value of those investments do respond to changes in the interest rate environment. However, the problems in constructing an IMR for equity investments was seen to be too great; therefore, this aspect of the reserve was dropped. Furthermore, it is necessary to recognize the movement of market values more explicitly in the treatment of equity investments since market appreciation is part of the expected long run return on equities. Common stocks are indeed valued at market, but real estate and some other equities are carried at depreciated value or amortized value. In order to recognize significant increases in the underlying value of real estate assets, a variation from the basic AVR approach was selected.

#### LV. AVR EQUITY COMPONENT

##### A. Roles

The AVR equity component serves two roles. First it acts primarily as a buffer to unassigned surplus to protect it from the changing market values of common stock. This enables the company to demonstrate its ability to manage unassigned surplus independent largely of market changes to common stock values that are beyond its control.

The equity component also provides for credit or default losses on equities. As noted earlier, it is very difficult to measure or distinguish these separately as was done for fixed income investments.

##### B. Level of Aggregation

There is no theoretical reason to separate the common stock AVR from that of other equity investments; but the desire to track separately the results on common stocks and possibly to separate assets valued at market from those valued at book, as well as to be sure that the factors chosen do indeed lead to a sufficiently strong reserve, led to separate sub-components, in a more or less parallel manner to the two sub-components in the Default Component.

##### C. Components-Rules

The Equity Component of the Asset Valuation Reserve is divided into two separate sub-components, one for common stock and one for real estate and any other invested assets. The structure of an Accumulated Balance, including a basic contribution, plus an additional contribution, reserve objectives and maximums should be the same as those for the Default Component (although the definitions will differ to ensure meeting desired objectives) and the rules for transfers between sub-components established for the Default Component should also apply to the Equity Component.

#### LVI. BASIC CONTRIBUTION, RESERVE OBJECTIVES, MAXIMUMS

##### A. Basic Considerations

The factors for the basic contribution were set equal to zero for common stock and real estate. Theoretically, they should be negative to reflect average expected gains that are typically expected of these investments. The basic contributions for other invested assets (Schedule BA) are the same as those of the underlying investments. That is bonds are like bonds, mortgages like mortgages, etc. All others are zero.

#### B. Reserve Objectives/Maximums

The maximums are set equal to the reserve objectives since this component will tend toward the maximum as it captures all capital gains, none of which are released to surplus until the equity component is at maximum. These definitions were driven by practicality and are consistent with the overall AVR objectives.

### LVII. VOLUNTARY CONTRIBUTIONS/NEGATIVES

Voluntary contributions may be made. Negative balances shall be adjusted to zero.

### LVIII. REPLICATIONS (6/98)

For replicated (synthetic assets) the basic contribution, the reserve objective and the maximum reserve are determined using the appropriate asset class of the replicated asset times the asset class factor. For the cash component that qualify for a credit, use the factors for the asset class of the cash component but not higher than the result for the replicated asset.

### LIX. DERIVATIVE INSTRUMENTS

#### A. Hedging Transactions

Capital gains/losses are allocated to the IMR or the AVR based on the treatment of the underlying asset. Realized gains/losses on portfolio or general hedges are included with the hedged asset. Gains/losses on specific hedges are only recognized if the specific hedged asset is sold.

#### B. Income Generation

Report in the same sub-component where the gains/losses of the underlying interest for a put or covering asset for a call, cap or floor is reported. See the NAIC Accounting Practices and Procedures Manual for detailed accounting guidance about Derivatives.

## THE COMMON STOCK SUBCOMPONENT

The need to fund a reserve that produces a net carrying value (statement value minus associated AVR) strong enough to survive fairly adverse market circumstances has led to a 13% maximum reserve after tax factor for the typical portfolio of publicly traded common stocks. This factor covers 85% of the biggest drops in the S&P 500 Index values during a two-year period. See the appendix titled "Justification for the AVR Factor for Stocks", for a description of the statistical rationale underlying this factor and showing that this structure produces extremely strong reserve and net carrying value. This factor must be adjusted by Beta to reflect the risks in portfolios that contain publicly traded stocks of greater or lesser riskiness than the typical portfolio.

See the Appendix for a description of Beta and how it is to be calculated. A company shall use an appropriate foreign index (e.g., TSE 300 for Canadian Stocks) to calculate Beta if it has identified common stock supporting liabilities both of which are in the same foreign currency (1998).

Consistent maximums were also established for subsidiaries, controlled or affiliated company common stock, and non-public stock. In the case of life subsidiaries that hold their own AVR or its equivalent, there need be no additional AVR at the parent level. A look through to the asset risks and AVR requirements of the underlying assets is used for Investment Subsidiaries. This ensures that assets do not get transferred from the parent to the subsidiary merely to avoid AVR; although not entirely satisfactory this does provide a practical solution (note that operating profits or losses do flow to the parent company's surplus once divided up or covered by infusion). For all other subsidiaries and privately held stocks, the reserve objective and maximum is 16% after taxes.

#### LX. CONVERTIBLE BONDS OR PREFERRED STOCK

Any gain or loss realized from the sale of any convertible bond or preferred stock before conversion, purchased while its conversion value exceeds its par value, and whose NAIC/SVO classification did not change by more than one NAIC/SVO rating classification during the holding period, is included in the equity component of the AVR. Conversion value is defined to mean the number of shares available currently or at the next conversion date, multiplied by the stock's current market price (including capital SHLB).

The Federal Home Loan Bank stock will have the same factors as those of preferred stock.

#### LXI. SUMMARY—RESERVE OBJECTIVES AND MAXIMUM

For publicly traded stocks, the reserve objective and maximum is 13% of statement value, adjusted by a Beta factor, but no less than 10% nor more than 20%. A "safe harbor" 20% factor may be used to avoid the Beta calculation. The 20% factor is also used for publicly traded common stocks issued within the past five years, or where no Beta is available.

For subsidiaries, the factors are 0% and 13% where appropriate.

For all other common stock, 16%

For common stock holdings of the Federal Home Loan Banks, the basic contribution is 0.0018, the reserve objective is 0.0050 and the maximum is 0.0080.

#### LXII. REAL ESTATE SUBCOMPONENT

##### A. Contributions, Reserve Objectives, and Maximums

1. Real estate is reported in four categories:

- a) Company occupied;
- b) Investment properties;
- c) Acquired by foreclosure and
- d) Held on Schedule BA

Based on internal company records. These classifications have been used in the statutory state until codifications. The new classifications are not useful for risk measurement purposes for both the AVR and the RBC.

##### B. Basic contribution, Reserve Objective, Maximum Reserve

The basic contribution and the additional contributions are set equal to zero. As with common stock, the basic contribution should be negative as one expects appreciation of real estate to be an integral part of its total return and it should in almost all cases exceed any defaults or credit losses.

The Reserve Objective is set equal to the Maximum Reserve. The factors for both are 7.5% of the statement value plus any encumbrances, for company occupied and investment real estate and 11% for foreclosed properties reflecting their higher risk.

### C. Determination of Factors

If real estate were always carried in the annual statement at market value, the reserve objective and maximum could be expressed directly as a function of the statement value. The maximum factor should be related to the volatility of market values. One unpublished study of a large pool of commercial real estate properties has a standard deviation of 9%. Another study (Ibbotson) reported a standard deviation of 5% using appraised values. Since research has shown that the appraisal process reduces volatility by almost half, this is also equivalent to about a 9% standard deviation of "actual" market valued property. It appears that the volatility of real estate is less than half of the pre-tax factors for common stocks, and thus a reserve objective and maximum of 15% is appropriate, or 10% after taxes. An exception might be for unimproved real estate, for which, once reporting mechanisms are established, a higher maximum might be appropriate.

However, where the market value of real estate exceeds the book value, the difference is an "unrecognized gain" that is not reported on the statement. The reserve maximum should be reduced by the unrecognized gain. But rather than express the maximum as 10% of market value, less any unrecognized gain, a better approach is to express it as 10% of statement value, less 90% of unrecognized gain. The purpose of doing it this way is to provide a formula that can be used by those companies that choose to forego the determination of unrecognized gains.

In estimating risk for real estate, it must be understood that for encumbered real estate the risk is proportional to the gross investment, not the net after the deduction of encumbrance.

The Maximum for real estate conceptually should be 10% of the statement value plus any encumbrances. However, real estate subject to a non-recourse mortgage should not be assigned an AVR Maximum higher than the insurer's carrying value. The Maximum may be reduced, for those companies that choose to use a satisfactory appraisal process, by 90% of the unrecognized gain. In no case, however, may the maximum be less than 2% of the statement value plus encumbrances.

The use of appraisals would be necessary if market values of real estate are to form the basis of calculations, since the determination of value is not determined by an active and homogenous market as is the case for common stocks. The determination of appraised value is always somewhat subjective, and therefore standards and procedures must be set to ensure that discipline is maintained. Furthermore, since appraisals do not normally recognize selling costs, these must be deducted to achieve the proper basis for calculation of the reserve.

### D. Appraisals

Two basic premises or guidelines for appraisals are: First, the appraisal must be credible. Second, the appraisals and the ongoing appraisal process should be cost efficient. Possibilities that meet these criteria are:

1. Annual appraisals are proposed for property of a book value of .5% or more of general account assets and for property whose book value exceeds 5% of an insurer's surplus.
2. Properties having book values less than those stipulated in paragraph 1, above, would have appraisals performed every other year.
3. The appraisers utilized by the insurers should have demonstrated professional competence and independent accountability. Appraisers may be either employees of the insurer or consultants retained by the insurer.
  - a. Internal Appraisers. Appraisers who are employees of the insurer should be appointed by the insurer's board of directors to perform the appraisal procedures. In making its appointment, the board of directors should determine that the individual(s) appointed have sufficient training and experience to perform appraisals of the type of real estate owned by the insurer. The appraisal records should be kept by the insurer and should be made available to the [superintendent] upon request.
  - b. Consultant Appraisers. An insurer may retain consultant appraisers to perform the real estate appraisals; provided, that any such consultant appraiser shall either: (a) be licensed as an appraiser by the regulatory authority of the state in which the property exists; or (b) have a professional designation which, in the judgement of the insurer, is indicative of the required professional competence.

Given the difficulties of implementing all the rules for determining excess of market values over book for real estate, the objectives and maximum for real estate were based on statement value plus any encumbrances, unadjusted for the excess of market value over book. The 10% factor was reduced to 7.5% to reflect the lack of specific provision for reducing the requirements when market value is above book. However, real estate subject to a non-recourse mortgage should not be assigned a Maximum higher than the insurer's carrying values.

### LXIII. SCHEDULE BA ASSETS

It is difficult to make a numerical judgement of the risk involved for BA assets without knowing the nature of the assets on a particular company's Schedule BA. The best approach is to split the assets between categories according to their true nature and include them in the appropriate sub-components with their factors for each asset. For example:

Transportation equipment should be treated as fixed income assets with AVR treatment depending on the bond rating of the senior debt of the lessee.

Collateralized loans, mortgage participation certificates, and similar holdings should be classified as fixed income assets with an AVR treatment based on an SVO bond rating.

Timber and mineral rights have potential variability of return and should be categorized as equity securities in the AVR.

Partnership investments should be classified as fixed or equity securities or as equity real estate, depending on the purpose of the partnership. The AVR treatment and factors should be appropriate for that asset classification and consistent adjustments for encumbrances should be made.

·A "look through" approach should be taken for any Schedule BA assets not specifically listed, so as to reflect in the AVR calculation the essential nature of the investment.

Where it is not possible to classify an asset in accordance with one of the AVR sub-components, a 13% maximum factor and reserve objective should be used.

Collateral loans from Schedule BA are eliminated from the AVR since prior to 1998 they were reported in Schedule C and no AVR factor was applied. Transferring them to Schedule BA should not subject them to a 20% factor.

## SEPARATE ACCOUNTS

### LXIV. IMR FOR BOOK VALUE SEPARATE ACCOUNTS

Where assets and liabilities of a Separate Account are valued on a market value basis, no IMR is needed as assets and liabilities are already consistently valued. Assets and liabilities of a Separate Account may, however, be on a book value basis as, for example, for modified guaranteed annuities or modified guaranteed life where the book value Separate Account option has been elected under New York Regulations 127 or 136 respectively. In such a case, an IMR is required as it is for any other General Account product; it is not required for market value Separate Accounts.

#### A. Requirements for Asset Defaults Borne by the Company

Where asset defaults are passed directly on to policyholders, for example variable annuities and variable life insurance, clearly no AVR is needed. There are, however, Separate Accounts where asset defaults are essentially borne by the company. Examples would be modified guaranteed annuities and modified guaranteed life where the company passes on some of the interest rate risk but generally retains the asset default risk (note that this is equally true whether the market value or book value Separate Account option has been chosen). In such cases, an AVR is required as it is for any other General Account product.

#### B. AVR Treatment if AVR Equivalent is Required

On the other hand, there are certain Separate Accounts where asset defaults are borne by the company but where the equivalent of an AVR is required by the reserving. An example would be Separate Account group annuities valued under New York Regulation 128. Under Reg. 128, additional amounts must be held based on various asset categories and qualities, which are intended to provide for the asset default risk. Reg. 128 explicitly stipulates that no AVR is to be calculated for such products (otherwise there would be double counting). In such a case, no AVR need be held.

#### C. Financial Statement Requirements

An AVR is required for Separate Accounts where some or all of the asset default risk is borne by the company, except where regulations require the equivalent of an AVR be included in other reserves.

An IMR supporting a Separate Account's assets is established in that Separate Account. A Separate Account AVR is combined with the General Account's AVR.

An IMR is established in the Separate Accounts, when it is appropriate under the direction provided above. The AVR for Separate Accounts, if required, must be combined with the AVR for the General Account in order to calculate the maximum reserve correctly. It should be noted that Reg. 128 permits that any additional assets held in lieu of the AVR may be apportioned between the General and Separate Accounts.

#### D. AVR Separate Account Bases

For Separate Accounts, the AVR's Contributions and Maximum Values should be based on statement value.

Where assets are valued at book, it is understood that the identical rules would apply for the Separate Account AVR as for the General Account AVR. Where assets are valued at market, however, the AVR should appropriately be based on market values as book values are not always maintained for these Separate Accounts.

A further consideration arises for the Default Component of the AVR where assets are valued at market and losses related to asset quality are automatically reflected in the market values. It would be appropriate then to permit some early recognition in the AVR of the quality related losses prior to actual default or sale of an asset. As this would involve additional record keeping which some companies may prefer to avoid, it should be an option rather than a requirement.

#### LXV. DETERMINATION OF CAPITAL GAINS (LOSSES)

Where the AVR Default Component supports assets valued at market, gains or losses net of incurred tax charged to the AVR should be determined using one of the following two methods (applied consistently by Separate Account):

- A. A gain or loss is charged as for the General Account rules. For example, upon sale of a bond which has changed more than one rating category or upon asset default. Once an asset is in default, all subsequent market value changes are reflected in the AVR.
- B. A similar procedure to Method 1 above is followed but, additionally, a gain or loss is charged whenever a bond held changes by more than one rating category. As there might be more than one change in asset quality for a particular asset, e.g., a two rating downgrade followed by subsequent sale of the asset, the amount charged the AVR is net of any such prior amounts charged for that asset.

## FEDERAL INCOME TAXATION ASSUMPTIONS

### LXVI. GENERAL

Federal Income taxes are reflected in the IMR and AVR calculations and in the development of the AVR factors either when actually incurred or when recognized as deferred according to current statutory accounting rules. Taxes are levied on realized capital gains. Tax savings arising from realized capital losses are only available if they offset realized capital gains within the specified time period. Most asset writedowns are recognized for deferred tax purposes. Tax regulations allow banks to write down mortgage loans for tax purposes when they are required by regulatory authorities to write them down for book purposes. If these regulations were extended to life insurance companies, additional book writedowns may become deductible (those currently not admitted).

### LXVII. IMR-FIXED INCOME RELATED CAPITAL GAINS

#### A. Federal Income Tax Allocations:

1. Taxes (credits) on realized fixed income gains should be allocated to these gains according to current company annual statement practices.
2. These taxes once determined are to be amortized in proportion to the amortization of the pretax gains.

Companies currently allocate taxes to these gains or losses in various ways. Some allocate the tax to each investment directly and then add just the total to those actually paid. Others use marginal, pro rata, or some other method. Companies are given reasonable latitude in determining their tax allocation. Once determined, they should be amortized in proportion to the gains consistent with the underlying theory without introducing any significant additional calculation difficulty.

#### B. Alternate Re-investment Rates for Tax Allocations

When a realized gain occurs and the proceeds are reinvested at a different interest rate, the resulting income stream will have different taxes than if the gain hadn't occurred. Generally these differences in taxes will have approximately the same pattern as the amortization of the capital gains taxes (and of the opposite sign) so no further adjustments are required.

Note: The IMR is a true actuarial reserve and as such, should be recognized for tax purposes for reasons discussed earlier.

### LXVIII. ASSET VALUATION RESERVE

#### A. Annual Contributions

The annual contributions that build the AVR reserve are charges against surplus and thus have already been subject to tax, if the company is a taxpayer

## B. Asset Writedowns

- 1) For bonds, any writedowns due to credit related losses are partially recognized for tax purposes. If the written down asset is subsequently sold, the tax loss will reduce taxes to the extent it exceeds the deferred taxes assumed if timely gains are available.
- 2) For mortgages, writedowns may be tax deductible or may be recognized in the deferred tax calculations. Where they are, and offsetting gains are available, the tax credits should be reflected in the AVR calculation.
- 3) For stocks, tax credits are generally available since deferred taxes are recognized on the "writedown."

## C. Investment Earnings on AVR

The investment earnings on amounts in the AVR are subject to tax.

## LXIX. AVR TAX RECOGNITION ASSUMPTIONS

The AVR fixed income factors assumed that 75% of the writedowns or credit losses are tax deductible. If deferred taxes were fully reflected as they are in a GAAP statement, 100% of the losses would be tax deductible. Before recognition of deferred taxes, it was assumed that half were deductible with a one-year delay in recognition to reflect the assumption that some were immediately realized and others were deferred. Seventy-five percent reflects the change due to a restricted recognition of deferred taxes.

The AVR equity factors assume 100% of the "writedowns" are tax deductible. This assumption is consistent with the expectations for common stock or real estate where assumed future capital gains or increases in investment value are an integral part of the pricing. Capital gains are an essential part of the total expected return. Results will vary from year to year. Nevertheless, unrealized losses are more than likely to be fully recognized as an offset to current unrealized capital gains that will occur over the years the investment is held.

One Additional Note: If the statutory reserves include some provision for credit related losses, the loss provision is tax deductible to the extent reserves are deductible. This is independent of the AVR .

STANDARDS FOR ACTUARIAL RESERVES  
WITH AN IMR AND AN AVR

LXX. IMR RESERVE STANDARD

The Interest Maintenance Reserve is a true actuarial reserve, and actuaries should use the assets supporting the Interest Maintenance Reserve when opining that the assets supporting the company's reserves make adequate provision for the company's obligations. In the case of a negative IMR, the actuarial opinion should include an explicit statement that the impact of the negative IMR on reserve adequacy has been considered and that the reserves after deduction of the negative IMR still make adequate provision for the liabilities.

LXXI. GENERAL EXPLANATION

The IMR is designed to work with minimum statutory reserves based on formulas contained in laws or regulations. Where, for example, the valuation rate is based on the interest rate conditions prevailing in the year of deposit, the assets supporting the liabilities will be consistent with the liability assumptions. Disposal of the assets during a period of declining interest rates will produce interest-related gains, but these gains will be needed to support the liabilities that are still valued at the interest rate levels prevailing at time of deposit. Thus, it is appropriate in the case of positive IMR to treat the IMR as an additional reserve requirement above and beyond formula minimums.

In cash-flow-testing actuaries take future cash flows into account from existing assets. In an example such as described above, existing assets may well have been purchased at rates below those prevailing at the time reserves were established. The positive IMR that has been built up has captured the gains and not allowed them to be available for distribution. The IMR is recognized as part of the reserves available to meet future obligation cash flows.

Thus from either point of view a positive IMR is treated as a true actuarial reserve. The same arguments should apply equally well in the case of a negative IMR, but some concern has been expressed that in this case the net reserves are in effect lower than statutory formulas minimums, and therefore special considerations are required.

LXXII. AVR RESERVE STANDARDS

The Asset Valuation Reserve should be considered as a reserve for the purposes of cash flow testing, and the assets supporting it should be a part of the assets available to meet the company's obligations, to the extent that the AVR is not larger than the present value of the losses assumed by the actuaries in their projection of asset cash flows.

The AVR should be recognized in doing cash flow testing work. In doing cash flow testing, it is necessary to estimate on a somewhat conservative basis the default losses on fixed income securities and deduct these from the yield, either directly or indirectly via the AVR. The AVR default component reserve objective is available to meet these credit losses and therefore should be treated by actuaries as an addition to the reserves being tested. In view of concerns that have been expressed about the AVR possibly being larger than the losses that have been assumed by the actuaries, it is reasonable to limit the application of the AVR to these losses.

The Actuary may use the AVR default component reserve objective in cash flow testing directly as the assumed default losses for reserve adequacy testing, some states by regulation allow percentages of the AVR maximum reserves as assumed average charges or may make their own assumptions as to default/credit losses. Presumably the results are comparable under either of the two options. Using the AVR default components reserve objective amounts may be easier to implement with less additional work required

## ACCOUNTING TREATMENT

### LXXIII. INTEREST MAINTENANCE RESERVE

#### A. Annual Statement

This reserve should be shown among the policy and contract liabilities in the upper part of page 3, the Liabilities page of the Annual Statement; it is actually shown in the lower portion. In the Summary of Operations the amortization of this reserve is shown in the gross income area, on a line close to investment income. These accounting treatments reflect that this reserve has a close relationship to actuarial liabilities and to the level of investment income of the company.

#### B. Schedules

A schedule page shows the details and calculation of this reserve. It exhibits the amortization for each future year of this year's gains as well as prior year's gains.

#### C. Reporting of Realized Capital Gains/Losses

Realized gains are shown as part of "net income" on page 4, the Summary of Operations. Realized gains that are to be transferred to the IMR are reported separately from other realized gains.

### LXXIV. AVR TREATMENT OF CAPITAL GAINS

The change in the AVR is reported in the surplus account on page 4. Although there is some opinion that the nature of the reserve makes it appropriate to include the reserve change in "net income", the consensus is that, for the present, this should not be done, in light of the long-standing accounting concept that unrealized gains should not impact net income. The AVR does reflect both unrealized gains and a portion of realized gains.

### LXXV. ASSET VALUATION RESERVE

A page for the Schedules section of the Annual Statement includes a form for the calculation of the AVR. Once calculated, the AVR is to be shown as a liability. In addition, the change in the AVR is reported as part of the surplus account.

### LXXVI. ALTERNATE TREATMENTS CONSIDERED

#### A. Contra Asset

Some accountants believe that the AVR should reduce the value of the reported assets since it "corrects" the book value for assumed credit or default losses that are likely to occur

#### B. Actuarial Reserve

Some actuaries believe the AVR should be included in the actuarial reserves since it reflects one of the key risks that isn't properly reflected in the formulaic reserves and is part of the asset adequacy testing for reserves.

#### C. Conclusions

Although both views have merit, the current conclusion was to continue to treat the AVR as a separate stand alone liability for financial statement purposes.

**TRANSITION FROM MSVR TO AVR IN 1992**

It was necessary to define how the then current MSVR would be apportioned among the various sub-components of the AVR. Of the many possible ways of doing this, two were selected. In addition it is desirable to provide for the optional folding in of the various voluntary asset reserves that may exist.

The initial amount of the AVR was based on the amount of the MSVR as of that point, using one of the following two methods:

- (A) Specific: The bond component of the MSVR is transferred to the bond sub-component of the AVR, and the common stock component of the MSVR is transferred to the common stock sub-component of the AVR.
- (B) Pro rate: The MSVR is to be allocated to the four sub-components of the AVR in proportion to the 1992 year-end maxima for those sub-components.

Any voluntary asset reserve may be transferred to the MSVR in accordance with either one of the above rules, or continue to be independently maintained or eliminated.

In no event is the initial value of the AVR at the beginning of 1992 to be less than the 1991 year end MSVR bond and preferred stock component and common stock component.

## APPENDIX B

### FUTURE DIRECTIONS

In late 2002, the Interested Persons (as its name had become) considered refinements of the AVR/IMR for the next several years, from that vantage point, some of the major areas of effort appear to be as follows:

1. There should be recognition of negative values of the IMR. The group had long recognized that the philosophical basis for the IMR supports negative values of the reserve as well as positive. There is a need to have investment return match the liabilities associated with the investment; and a need to remove the incentive for a company to make investment decisions based on the short-term balance sheet effect; and these needs exist also on the negative side of the IMR.

No doubt there are concerns that a negative reserve of this type could somehow lead to an unsound condition, so there has been appended to this report a discussion entitled "Why Are Negative Values For the IMR Necessary?" It also seems as though there should be additional safeguards in the case of a negative IMR. Rather than put arbitrary limits on the amount of the negative reserve, however, consideration is being given to an actuary's statement that an asset adequacy analysis has been carried out that demonstrates the soundness of the reserves.

2. Updated factors and changes in the AVR contribution formula will be considered from time to time so as to reflect more accurately the risk of loss in the various categories of assets. As future experience develops, there will likely have to be changes in the basic contribution, the reserve objective and the maximums. The updated factors should be closely related to the statistical analysis of the risk, the needed reserve and coordinated with the risk-based-capital factors. In logic, the AVR maximums should be and are currently equal to (or lower) than the RBC factors. Criteria for future changes are shown in the Appendix.
3. A number of other issues have been considered, such as an alternative formula for the AVR for real estate, based on periodic real estate appraisals. This alternative may be better able to reflect the risks involved.

Also on the future agenda are the questions of the appropriate AVR treatment of uncollectible interest and foregone interest on restructured loans as well as other issues.

4. All codification approved SSAP'S are reviewed for possible impact on the AVR and the IMR.
5. With the passage of time, new studies, and increased understanding, the AVR and/or the IMR may have to be refined and clarified to reflect current thinking.
6. Should separate accounts supporting annuity products with guaranteed death benefits and or guaranteed living benefits require an AVR?
7. At an appropriate time, the Interested Persons draft proposal submitted in September 2000 that would replace the Real Estate RBC factors for the various categories with one factor for the entire portfolio based on cash flow structure might be resubmitted for consideration.
8. Reconsider treatment of restructures ( see NAIC Accounting Practices and Procedures Manual) after experience with this Standard develops.

9. Consider refining Bond Class 1; possibly splitting it into Class AAA, Class AA, Class A.
10. Consider AVR implications of portfolio hedges of risks.

PRIOR CHANGES APPROVED/IMPLEMENTED

**Changes approved for 12/31/95**

1. Convertible Bonds:

For a convertible bond or preferred stock purchased while its conversion value exceeds its par value, any gain or loss realized from its sale before conversion must be excluded from the IMR and included in the AVR. Conversion value is defined to mean the number of shares available currently or at next conversion date, multiplied by the stock's current market price.

For any convertible bond or preferred stock purchased while its conversion value exceeds its par value, and whose NAIC/SVO classification did not change by more than one NAIC/SVO rating classification during the holding period, any gain or loss realized from its sale before conversion must be included in the equity component of the AVR. Conversion value is defined to mean the number of shares available currently or at next conversion date, multiplied by the stock's current market price.

2. Groupings for amortizing interest-related gains included in the Interest Maintenance Reserve:

the grouping of "1 to 5 calendar years to expected maturity" will be replaced by groupings of "1-2 calendar years to expected maturity" and "2-5 years to expected maturity".

the column headed "1-5" will be replaced by columns headed "1-2" and "2-5".

3. Structured securities not exempt from AVR:

Effective 12/31/95, structured securities as defined in the Life Annual Statement instructions for Schedule D, Part 1A, Section 2, regardless of issuer, are not to be considered exempt.

4. Experience Adjustment Factor - AVR requirement for Mortgages:

Effective 12/31/95, the Industry's and Company's Experience Factors will be based upon the average of eight quarterly ratios for the 8 preceding quarters (7 quarters for 1995).

## Changes approved for 12/31/96

### 1. Question and Answer Material:

(various pages) Modify instructions to incorporate language that previously has been published separately as question and answer material.

### 2. Threshold for Reinsurance Transactions:

(Page 9.9) Modify IMR top provide flexibility for insurers to make a one-time election regarding the materiality threshold for reinsurance transactions appropriate for their business.

### 3. Class One Bond Mutual Funds:

(Page 10.6) Reports certain high-quality bond mutual funds with restricted investment practices on Schedule D, part 1 at market value, and adjusts AVR charge to make them subject to bond NAIC 1 factors in default component.

JUSTIFICATION FOR THE AVR COMMON STOCK FACTOR

1. Background

Following the November 1, 1991 meeting with Terry Lennon's MSVR Study Group, we were asked to justify the AVR factor, which had been recommended for publicly, traded stocks. It was also observed that a higher factor seemed to be appropriate for a portfolio, which was either small and undiversified, or simply more risky than the norm. For these cases, we were asked to consider the merit of applying a portfolio's factor to the recommended AVR factor.

2. Our Sub-Group's Conclusions and Recommendations

Following considerable analysis, we have concluded that a 20% AVR is a strong AVR for a typical portfolio of publicly traded stocks, and we recommend that this be established as the maximum AVR for 1992 (instead of the current 33 1/3%). A 20% AVR corresponds to a confidence level of approximately 85%.

We have also concluded that there is merit in the -modifying approach for portfolios of publicly traded stocks, which are more risky than would typically be the case.

We recommend that for a portfolio of publicly traded stocks, the maximum AVR be set equal to the portfolio factor (calculated as described below) multiplied by 0.2, subject to an upper limit of 0.3 (the risk based capital requirement) and a lower limit of 0.15.

However, for companies which do not want the extra administrative complexity of calculating the factor, we recommend a "safe harbor" AVR pretax maximum of 30%.

The method which we have in mind for calculating the portfolio factor is described below.

3. Calculation of the Portfolio Factor

We believe that companies with portfolios of publicly traded stocks of any significant size would likely recalculate the portfolio monthly (or possibly more frequently), but at least quarterly. There is an obvious need to have a prescribed method for this calculation if the results are to be used for AVR purposes. We believe that a method along the following lines is suitable.

Let us assume that the portfolio is recalculated quarterly.

Because of trading strategy, it is quite possible for the value of  $\beta$  to change by a few percent from quarter to quarter, so an average value of  $\beta$  is assumed to usually be a better guide to a portfolio's risk characteristics than a single point estimate.

Let  $\beta$  denote the current year. Let  $\beta_0$  denote the portfolio  $\beta$  coefficient at the end of December, year ( $\beta-1$ ). Let  $\beta_i$ , denote the portfolio  $\beta$  coefficient at the end of the first quarter, year  $\beta$ ,  $\beta_2$  the portfolio coefficient at the end of the second quarter, year  $\beta$ , and so on.

Define the Average  $\beta$ , measured as at the end of year  $\beta$ , to be:

$$\text{Average } \beta = \left( \sum_0^3 \beta_i MV_i \right) / \left( \sum_0^3 MV_i \right)$$

where  $MV_i$  denotes the market value of the portfolio.

We recommend that an insurer be able to use one of two alternative methods for calculating the values of  $\beta$  which are needed.

The first method would determine  $\beta$  through simple linear regression using 52 weeks of time weighted rates of return for the portfolio and for the S&P 500 index, or other appropriate index for non U.S. stock portfolios.\* Referring back to the formula for calculating the average  $\beta$  for the portfolio, it will be seen that employing this first method utilizes 2 years of experience data.

The second method would be a mechanically simplified method of calculation, using the  $\beta$  coefficients of individual stocks provided by service organizations. Weighting these coefficients by the proportion of the portfolio invested in each stock (by market value) would give the portfolio  $\beta$ . For uniformity, the service organizations would need to calculate the  $\beta$  coefficients the same way, which we propose to be through simple linear regression using 5 years of monthly time weighted rates of return.

#### 4. More on the Portfolio $\beta$ Factor

A large company might well have, say, a portfolio of U.S. stocks, a portfolio of Canadian stocks, a portfolio of U.K. stocks, etc. In this case, there would be a  $\beta$  factor for the U.S. portfolio, another one for the Canadian portfolio, etc. Clearly the overall  $\beta$  factor would be the various  $\beta$  factors weighted by the corresponding average market values.

Where one or more of these portfolios is not material, we recommend that the 30% safe harbor be available.

#### 6. Justification of the 20% AVR Common Stock Factor. This is given in the Appendix. (E))

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\*TSE 300 index for Canadian stock portfolios, FT All Shares index for U.K. stock portfolios, the TOPIX index for Japanese stock portfolios.

JUSTIFICATION OF THE 29% COMMON STOCK FACTOR

A Use of Historical data

1. Intuitively it seemed to us reasonable to consider the amount by which the market value of a common stock portfolio might drop over a 12-month period. We could expect approximately an 85% probability that such a drop would be less than one standard deviation of the 12-month rates of change in the market value.

Over the last 30 or 40 years one standard deviation has been about 14% to 16% of market values. Thus an AVR set at about 15% of market value would be indicated.

One reason for thinking in terms of 12-month drops in market value is that in practice there might be some elasticity in the market -- some upward bounce following a significant drop (and vice versa).

2. A more conservative approach is to consider a two-year period instead of a 12-month period, and the drop from the beginning of the period to the lowest point during the two-year period (which we refer to as the biggest drop throughout).

Using monthly S&P 500 Index values for 1960 through 1991, the biggest drops during a running two-year period were determined.\*

These biggest drops were then ranked according to size, and the most relevant results are shown in Table 1. From these results we can conclude that an AVR sufficient to have covered 75% of the biggest drops in market value would have been about 14% of market value. An AVR sufficient to cover 80% or 85% of the biggest drops would have been about 16% and 20% of market values, respectively.

Note that had the full post World War II period been used an AVR sufficient to cover 85% of the biggest drops would only have been close to 16%.

Note also that based on a running 12-month period for 1960 through 1991, instead of a running two-year period, the 85% confidence AVR would have been close to 15%. (This result, based on historical data, is also very interesting in relation to the expectations described in section 1, above.)

3. We therefore conclude that for a portfolio which behaves similarly to the S&P 500 Index (and most companies' portfolios would), a 20% AVR is a good, 85% confidence level AVR.

\*Actually, the present values of these biggest drops were determined. For example, six months discount if the lowest point occurred six months from the beginning of the two-year period

4. Table 1 also shows results based on the biggest drops during a running five-year period, during the years 1960 through 1991.

We believe that moving to a five-year period is stretching things, but the results do not alter our conclusion concerning the strength of a 20% AVR

#### B. Use of Simulations to Test Types of AVR

The proposed method for determining the stock component of the AVR is to amortize the AVR towards its maximum using a 20% amortization factor.

Having concluded that a 20% AVR is a good, solid 85% confident AVR, it was appropriate to test the proposed method to see what the average AVR might be compared with 15%\*, whether the resulting AVR would likely be at the 20% level in most years, how volatile the AVR might be, and how frequently it might drop to zero. The tests were done on three scenarios as to future market performance, using the well-known lognormal mathematical model for simulating the performance:\*\*

	<u>I</u>	<u>II</u>	<u>III</u>
Expected annual compound rate of market appreciation:	0%	4.6%	6.7%
Standard deviation of annual rate of market appreciation:	15%	15.0%	16.2%

If expectations were in accordance with scenario I, nobody would invest in stocks; i.e., scenario I is a bleak outlook, with high relative volatility, for illustrative purposes. Scenario III corresponds to reasonable expectations based on the last 30 years' history, and scenario II is meant to be a conservative version of scenario III; i.e., the expected rate of capital appreciation is lower and relative volatility (ratio of standard deviation to expected appreciation) higher.

\* A level of AVR which seems appropriate for covering drops in market values over a 12 month period.

\*\* The lognormal parameters for the three scenarios were (0, .14), (.045, .14) and (.065, .15).

In these simulations, it was assumed that there was no trading, which means that (a) all gains and losses that were credited to the AVR were unrealized gains and losses, and (b) there were no income tax impacts. To the extent that capital gains tax might be paid, the amount credited to the AVR would be reduced, and the AVR would not spend quite as time at its maximum as the results would indicate. Similarly, to the extent that negative capital gains tax on losses can be recovered, the AVR would not spend quite as much time at the lower levels.

Typical results were as follows:

	<u>I</u>	<u>II</u>	<u>III</u>
Average AVR:	12%	16%	17%
Proportion of years AVR at the maximum:	32%	50%	58%
Proportion of years AVR at zero:	10%	4%	4%
Volatility (standard deviation) of AVR:	6.9%	5.5%	5.0%

In these simulations, the starting value of the AVR was picked at random from the range zero to 20%.

#### C. Further Use of Historical Data

The tests based on simulations crystallized our viewpoint. However, having satisfied ourselves that the proposed method with a 20% maximum AVR and 20% amortization rate should be quite good, it was applied to historical S&P 500 capital appreciation data for the years 1960 through 1991, and passed with flying colors. Starting with a conservative zero value of the AVR at the beginning of 1961, it was found that the calendar year end AVR would have had an average value of 16.6%, have been at its maximum 19 out of 31 years, and at zero only once.

(Again, this was on the basis where all gains and losses were unrealized).

#### D. Common Stocks backing Actuarial Reserves

We have explored another way of looking at this problem, viz. by how much would you have to reduce the current value of the stocks so that with 85% confidence the resulting rate of return is likely to exceed the average, investment grade, long term bond rate of return. Of course the reduction in current value represents the target AVR.

Years 1960 through 1991.

In this instance the rate of return on stocks includes dividends as well as capital appreciation, so that the parameters of the mathematical model used to study the problem are different from those underlying scenario III, in section B. Based on the experience of 1960 through 1990, the expected compound rate of return of a typical stock portfolio would be about 9.9%, with a standard deviation of about 16.0%\*, versus an average long term bond yield of about 7.3%.

Using this model and setting the AVR at the 20% level, the confidence with which we would expect the return on stocks to exceed the return on bonds was calculated to be as follows:

<u>Holding Period (years)</u>	<u>Confidence Level</u>
1	95%
3	87
5	85
10	84
15	84

Thus these results also support the thesis that a 20% AVR is adequate.

\* The lognormal parameters being (.094, .148).

#### TABLE I

The results are based on the maximum drop in the market value during a running 2-year period and also a running 5-year period. The S&P 500 data base for each month October 15, 1960 through December 15, 1991 was used. Capital appreciation only.

<u>Confidence Level</u>	<u>Present Value of Maximum Drop During</u>	
	<u>2-Year Period</u>	<u>5-Year Period</u>
75%	14.1%	19.4%
80	16.4	21.0
85	19.9	24.4
90	22.6	27.9

HISTORICAL PERSPECTIVES

I The Asset Valuation Reserve - captures all credit-related recognized capital gains and losses in the appropriate sub-component. In addition, basic contribution and an annual contribution are made to each sub-component.

Realized gains or losses, net of capital gains taxes, and any other recognized capital gains and losses net of deferred taxes and unrealized gains and losses on hedging instruments not related to interest rate changes should be included with the hedged asset. Gains or losses, net of capital gains tax, on specific hedges should be included only if the hedged asset is sold or disposed.

Voluntary contributions and limited transfers between sub-components are permitted.

II AVR CONTRIBUTION

Prior to 1997 the AVR contribution was calculated using a four-step process.

1. The maximum for each of the four sub-components was determined by applying a factor for each asset type constituting the sub-component to the corresponding statement value.
2. The accumulated balance for each sub-component was determined as follows:  
Accumulated Balance = Beginning Balance  
                                  + Capital Gains  
                                  - Capital Losses
3. The AVR contribution to each sub-component was determined as follows:  
Contribution = 20% of (Maximum – Accumulated Balance)
4. The AVR was then (2) + (3) but not less than 0 or more than the maximum  
Accumulated Balance + Contribution = Ending AVR Balance  
Ending balance not less than zero nor more than the maximum  
Maximums defined below.

III ASSET VALUATION RESERVE MAXIMUMS

A Prior to 1997

1 Default Component

2 Bond and Preferred Stock: Same as in 1991 under the MSVR.

3 Mortgages: 3.5% of statement value, multiplied by an experience adjustment factor which reflects each company's recent experience in delinquencies and foreclosures relative to the industry average. In 1993 the adjustment was refined include loan restructuring as well as delinquency and foreclosure activity). In any case, however, the maximum factor will not be less than 1.75% (3.5% for companies with less than 5 years mortgage experience) nor greater than 10.5%. Separate balances will be reported for farm, residential - insured or guaranteed, residential - all other, commercial - insured or guaranteed, and commercial - all other mortgage loan categories.

#### IV EQUITY COMPONENT

A Common Stocks: For publicly traded stocks, 20% (with an adjustment that reflects the volatility of the portfolio).

B Real Estate: 7.5% of statement value

C Schedule BA Assets: Included in the real estate *AVR* sub-component, but a maximum reflecting the true nature of the assets.

#### V ANNUAL CONTRIBUTIONS

##### A Prior to 1997

During the phase-in in 1992-94 the annual contribution for 1992 was 10% of the excess of (1) the maximum for the sub-component over (b) the accumulated balance in that sub-component. The amount was 15% for 1993 and 20% for 1994-96.

#### VI SHORTCOMINGS OF THE MSVR

The history of the development of the MSVR process (initially created in 1951) is well documented in the report of the Joint Study Group of the NAIC and ACLI on the MSVR. The Committee reviewed that report and other information available to it and noted the following inadequacies of the MSVR.

##### A . Focus too narrow

It has already been pointed out that the MSVR should cover all assets. The MSVR addressed only about 60% of invested assets of the life insurance industry. For example, no account is taken in the MSVR for the following:

- Mortgage loans
- Real Estate Investments
- Other Invested Assets in Schedule BA.

##### B Purpose Unclear and Potentially Misleading

Those who are not familiar with life insurance accounting may be excused for thinking that MSVR was similar to other reserves carried on the annual statement, particularly when they see it placed among the liabilities of the company. But it was unlike other reserves; it was not calculated the way most reserves are, and it was not treated as a reserve by most experienced observers.

Sometimes it was thought of as allocated surplus, earmarked as a contingency reserve against particular types of unexpected catastrophic loss. But the MSVR also had some attributes of a reserve against expected capital losses, and some of the attributes of a smoothing mechanism.

##### C. Failure to make necessary distinctions among types of gains

Gains on fixed-income securities which arise from movements in prevailing interest rates should be treated differently from other types of gains, such as defaults, credit deterioration, or stock market gains. If, for example, a fixed income security is sold before maturity and replaced with a security of equal quality but bearing a current interest rate, the gain is merely the present value of future interest differentials, and the impact on the balance sheet should be consistent with this fact. Other types of gains, or changes in value, may represent a much more immediate and real impact on the long-term solvency of the company.

#### D Undesirable segmentation

There are some in the industry (but not all) who believe that the existence of a separate stock component created an uneven impact of the MSVR on surplus and may result in the release of gains to surplus from one component at a time when the other component is very weak, or could create unnecessary strains on surplus at a time when the other component is quite strong.

#### E Incompatibility with the valuation actuary concept

There are many reasons why the rapidly developing changes in actuarial methods and responsibilities made MSVR reform urgent. Briefly, some of them were:

- (a) The MSVR was not held to a "good and sufficient" standard. It is not at all clear how much of the MSVR is needed to bring asset valuation to the same standard of conservatism as that prescribed for liability valuation.
- (b) It was difficult to integrate the MSVR into cash flow testing. It would be desirable to have a reserve that could be treated on the same basis as other reserves in cash flow testing work.
- (c) Interest gains and losses (sometimes called "trading gains") were not reserved in the MSVR in a manner that is consistent with cash flow testing. As mentioned elsewhere, an approach that gradually releases trading gains over the valuation period is desirable.

### VII INTERIM IMR GAIN/LOSS EXCLUSIONS

When the IMR was being developed, the need for an exception in this case was recognized. But it was thought that there would be technical difficulties in carrying out the concept. As a first step in addressing the problem, a provision was adopted for 1992 that allowed the exclusion of gains and losses on the sale of assets associated with the reinsurance transaction from the IMR.

An interim recommendation for 1992, specified that all realized interest-related gains or losses which arise from the irrevocable sale, transfer, or reinsurance of a block of business to a non-affiliate will be excluded from the IMR and will be reflected in net income.

This Interim Proposal had a number of shortcomings:

- it is difficult to clearly delineate the assets sales that are associated with the reinsurance transaction,
- if the assets associated with the liability are not sold they may be valued inappropriately to back new business, and

- it is possible that the IMR attributable to a block of business will be non zero even after all of the assets and liabilities associated with the block of business are off of the company's books.

After reviewing these shortcomings, it was decided to adopt a revised method that avoids the difficulty of identifying the asset sales associated with the reinsurance transaction and also largely corrects the valuation of the remaining assets. However, the method requires more extensive calculations. The method presupposes that the company can identify:

- the assets that are presently associated with the liability, and
- the IMR arising from past dispositions of assets associated with the liability.

The assets allocable to the block would be the same as those used for investment income allocation purposes. This assures consistency and minimizes the administrative burden.

A. Each capital gain or loss on a fixed income investment would be split into two pieces, a piece arising from the change in the general level of interest rates and a piece arising from the changed circumstances of the issuer. At the time of sale or write down, the asset would be revalued as though it were still of the same quality as it was at the time of purchase. The excess of this new value over the original book value would be classified as a gain or loss from changed interest rates. If the residual gain or loss exceeded 10% of the book value it would be classified as a credit-related gain or loss. Otherwise the residual would be included with the gains or losses due to changes in the level of interest rates.

B. In the case of investments such as mortgages and unrated bonds it would be necessary to infer a credit rating for the investment. This can be accomplished by comparing the yield at acquisition to the yields for rated bonds. For instance, if the investment bears a yield comparable to BBB bond, then it would be revalued as a BBB bond at disposition in order to determine the split between the gain or loss due to interest rates and the gain or loss due to credit changes.

Although Method II is more theoretically correct, it is much more difficult to administer.

Conclusion: Capital gains and losses on fixed income investments should be separated into a component due to changes in the level of interest rates and a component due to changes in credit using Method I above. Slight variations in the treatment of preferred stock are set forth in a later section and 12/31/95 changes have been approved for convertible assets.