



AMERICAN ACADEMY *of* ACTUARIES

**Report of the American Academy of Actuaries'
Deficiency Reserve Work Group**

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

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Report of the Deficiency Reserve Work Group

Executive Summary

The Deficiency Reserve Work Group (DRWG) was formed in October of 2003 as a work group of the American Academy of Actuaries' Life Valuation Subcommittee. It was formed in response to the discussions being held by the NAIC Life and Health Actuarial Task Force (LHATF) Subgroup dealing with possible changes to the Standard Valuation Law (SVL). One of the changes being considered by the LHATF Subgroup is amending the SVL to eliminate or replace the current formulaic approach to determine deficiency reserves.

The goal of the DRWG is to provide LHATF with:

1. An analysis of the pros and cons of discontinuing deficiency reserves, and
2. A recommendation on what changes, if any, should be made to the SVL in regard to deficiency reserves.

Throughout this report, the term "deficiency reserves" refers to all instances where the SVL requires an additional reserve when the gross premium is less than the valuation net premium, as described in section 8 of the SVL, "Reserve Calculation – Valuation Net Premium Exceeding the Gross Premium Charged", regardless of whether or not the term "deficiency reserves" is actually used. Thus, items included in "deficiency reserves" include alternative minimum reserves required by the Universal Life Insurance Model Regulation, and deficiency reserves required by the Valuation of Life Insurance Policies Model Regulation (Regulation XXX).

A survey of Appointed Actuaries from the top 200 companies (ranked by net life reserves) was conducted to solicit input on a number of issues related to deficiency reserves. Responses were received from 50 companies, representing approximately 30% of the total net life reserves of the top 200 companies. Deficiency reserves as a percent of the total reserves were 12% for the two term lines combined, 2% for UL, and 1% for other lines. 77% of those who responded to the survey held the opinion that the SVL should be amended to eliminate deficiency reserves, and 81% of the survey respondents stated that Asset Adequacy Analysis could be an appropriate method to replace the current formulaic approach.

The majority of the report provides an analysis of the "pros and cons" of continuing the current formulaic approach.

Reasons to eliminate/replace the current formulaic approach for deficiency reserves include:

1. Asset Adequacy Analysis has made deficiency reserves redundant.

The reserve required by asset adequacy analysis and the alternate minimum reserve (i.e. the basic reserve plus the deficiency reserve) are now serving essentially the same purpose. A company should not be required to hold deficiency reserves above the basic reserve if it performs an asset adequacy analysis and holds any additional reserves that are required by that analysis.

2. The formulaic approach of funding premium deficiencies is ineffective.

The deficiency reserve, as currently defined, is an inflexible and rather artificial construct that sometimes fails to properly identify and establish the proper level of premium deficiency. Since the minimum and basic reserves are often calculated using different mortality or interest assumptions, there are many cases where the timing of when the deficiency reserve is established or released does not coincide with when the gross premium deficiency is present.

3. Additional conservatism leads to unnecessary and costly practices within the industry.

The additional level of conservatism leads to higher costs for these products. Consumers would be better served if a more economical, less conservative reserve standard were used, while still maintaining an appropriate level of conservatism. In addition, significant energy and resources are spent on product designs and reinsurance arrangements to minimize the additional conservatism of the current formulaic approach that could better be used elsewhere.

4. Dynamic modeling techniques to determine insurance company capital and reserve requirements is gaining acceptance by both the industry and regulators.

Due to advances in technology, the use of dynamic modeling techniques is gaining acceptance as a viable approach to quantify both capital and reserve requirements. Using more sophisticated methods (such as those used for asset adequacy analysis) may result in a more credible reserve standard than the current formulaic approach.

Reasons to continue the current formulaic approach for deficiency reserves include:

1. Deficiency Reserves have been a long-standing practice within the statutory reserve framework.

The current formulaic approach requires companies to set aside funds immediately from existing surplus to cover current and future expected shortfalls of the policy based on prescribed assumptions. Since statutory valuation law is generally focused on ensuring solvency, this approach protects beneficiaries by setting aside surplus immediately rather than depending on future uncertain income to cover the premium deficiency.

2. Asset Adequacy Analysis, although an accepted standard of practice within the industry, serves as a secondary layer of protection on the overall adequacy of prescribed reserves.

Asset Adequacy Analysis was never intended to be used as the primary method of setting reserves. Little guidance is available to Appointed Actuaries to establish the amount of the additional reserves required by Asset Adequacy Analysis. Two companies under similar situations would likely establish different amounts of additional reserves. Eliminating deficiency reserves removes a minimum level of solvency protection and replaces it with the liabilities derived from the subjectivity of asset adequacy assumptions.

3. **The current X-factor approach requires a higher validation standard than Asset Adequacy Analysis.**

The Valuation of Life Insurance Policies Regulation (Reg XXX) and the associated Actuarial Standard of Practice No. 40 set a higher standard of validation of anticipated mortality than the Actuarial Opinion and Memorandum Regulation. Consequently, any additional reserves required under Asset Adequacy Analysis as a result of deficient premiums would likely be less than the minimum reserves computed under Reg XXX.

Three alternative recommendations were considered:

1. The current formulaic approach is appropriate. No change to the SVL is needed.
2. Amend the SVL to remove the formulaic requirement for deficiency reserves (but continue the current formulaic approach for basic reserves) and replace it with a "stand alone" asset adequacy test on the block of business where the gross premium is less than the net premium.
3. The current formulaic approach for deficiency reserves needs revision, but defer any change to the SVL until more comprehensive revisions are made to the SVL for all reserves. One example of a possible revision would be to replace the current tabular approach with a more dynamic, stochastic approach.

The Work Group could not reach consensus on a recommendation, with most favoring #3 and some favoring #2. No one on the working group favored #1.

Although the majority of the Work Group favored option #3, one of the concerns with this option is the timing and nature of the "comprehensive revisions" to the SVL. Implementing a complete overhaul of the SVL all at once will be a major undertaking. Those from the Work Group who favored option #2 felt that a comprehensive revision to the SVL would best be accomplished by addressing specific reserve issues (such as deficiency reserves) in a piecemeal fashion, similar to the work currently underway for variable annuities by the Variable Annuity Reserve Work Group (VARWG).

Report of the Deficiency Reserve Work Group

Throughout this report, the term “deficiency reserves” refers to all instances where the Standard Valuation Law (SVL) requires an additional reserve when the gross premium is less than the valuation net premium, as described in section 8 of the SVL, “Reserve Calculation – Valuation Net Premium Exceeding the Gross Premium Charged”, regardless of whether or not the term “deficiency reserves” is actually used. Thus, items included in “deficiency reserves” include alternative minimum reserves required by the Universal Life Insurance Model Regulation, and deficiency reserves required by the Valuation of Life Insurance Policies Model Regulation (Regulation XXX).

History of Deficiency Reserves

Deficiency reserves are required whenever gross premiums are less than corresponding valuation net premiums. This requirement assured that the company was not taking credit in the reserve calculation for an amount that it would not collect (i.e., the excess of the net premium over the gross premium).

History of deficiency reserves in the United States:

- The deficiency reserve system has been in effect since 1887.¹
- In June of 1939, the First Guertin Committee proposed that deficiency reserves be required only if the gross premium was less than 105% of the net premium plus 5% of the ordinary life net premium. It also suggested that this reserve be calculated on the statutory minimum, not the company’s own reserve basis.²
- The 1948 version of the SVL (which included the introduction of the 1941 CSO Table) did not include the First Guertin Committee proposals and continued to require deficiency reserves whenever gross premiums were less than corresponding net premiums on the valuation table being used by the company.
- The Insurance Commissioners’ Subcommittee on Deficiency Reserves reported that the principle embodied in deficiency reserve statutes is sound and requirements of this kind are needed until a better method is found to assure that there will be funds on hand to maintain statutory reserves.³
- Further debate over the necessity of deficiency reserves took place at the SOA March 1957 meeting⁴, at about the same time that the 1958 CSO Table was developed. Despite the discussions, the existing deficiency reserve system did not change.
- In the 1970’s, deficiency reserves were criticized for several reasons, among them⁵:
 - Basic reserve strengthening (e.g., lowering the valuation interest rate from 3½% to 3%) often would introduce or increase deficiency reserves.

¹ E. J. Moorhead. *Our Yesterdays: the History of the Actuarial Profession in North America 1809-1979*.

² E. J. Moorhead. *Our Yesterdays: the History of the Actuarial Profession in North America 1809-1979*

³ TSA, *Volume IX (1957)*.

⁴ TSA, *Volume IX (1957)*.

⁵ Mark A. Tullis and Philip K. Polkinghorn. *Valuation of Life Insurance Liabilities*.

- More conservative reserve bases often resulted in deficiency reserves while more liberal reserve bases did not.
- Deficiency reserves have not been allowed as a tax reserve in the United States.
- The 1976 amendments to the SVL did the following:
 - Removed any explicit reference to the term “deficiency reserves”. Instead, the SVL now refers to a minimum reserve required.
 - Changed the test for premium deficiency to one performed against a net premium calculated using the minimum allowable standards of mortality and interest.
 - Where the test revealed any deficiencies, changed the total reserve for the policy to one that is effectively restated to the minimum basis of mortality and interest and substituting the gross premium for the net premium where the gross is less than the net.
 - Required that both the test for premium deficiency and the calculation of adjusted reserves utilize the actual valuation method used by the company.
- As a result of the 1976 amendments, some actuaries concluded that there was no longer a connection between the deficiency reserve calculation and the basic reserve calculation.
- When the 1980 CSO Table was published in the *TSA*⁶, the committee that developed the table stated that the mortality basis that is chosen for a plan, with regard to with selection factors or without selection factors, should be used to value both the basic reserve and the deficiency reserve. This statement made it clear that some actuaries felt that there should still be a link between basic reserves and deficiency reserves.
- The NAIC’s Valuation of Life Insurance Policies Model Regulation (Regulation XXX) allows the use of different mortality for basic and deficiency reserves.
 - Regulation XXX re-introduced the use of the term “deficiency reserves”.
 - The Regulation XXX methodology for determining deficiency reserves is to subtract the basic reserve from the quantity “A”.
 - The quantity “A” is a reserve calculated using the same methodology as used to determine the basic reserve, but using the minimum standard for interest and mortality (with or without selection factors), and substituting the gross premium for the net premium where the gross is less than the net.
 - If the 19-year Regulation XXX selection factors are used, an X-factor may also be applied to the mortality in determining the quantity “A”.
 - The quantity “A” is, in effect, the minimum reserve.
 - The excess, if any, of the quantity “A” over the basic reserves is the deficiency reserve.
 - Other than the use of the X-factors, this methodology is consistent with that contained in the 1976 amendments to the SVL.
 - Thus, Regulation XXX specifically allows for the use of a minimum standard for mortality used in determining the quantity “A” that is different than the basic reserve minimum mortality standard.

⁶ *TSA, Volume XXXIII (1981).*

- X-factors will be allowed to be applied to the 2001 CSO Table to determine the quantity “A”.
 - Note that in their initial draft of the model regulation to adopt the 2001 CSO Table, the NAIC LHATF included a requirement that the minimum standard of mortality for the quantity “A” be the same form of the 2001 CSO Table (with regard to select & ultimate versus ultimate) as the mortality used to determine basic reserves.
 - This requirement would have re-established the link between deficiency and basic reserves that the 1980 CSO committee established in their report.
 - Despite the pleas of some of the regulators to keep this requirement, it was removed from the final version of the NAIC model regulation.

Industry Survey Results

A survey was sent to the top 200 U.S. insurance companies as measured by reserves. The survey asked them to provide a breakdown of reserves between basic and deficiency reserves among level term, ART, universal life and “other” product lines. The survey also asked them to provide their opinion on 1) whether the SVL should be amended to eliminate deficiency reserves, and 2) whether asset adequacy analysis could be an appropriate method to replace the current formulaic approach.

Responses were received from 50 companies, representing approximately 30% of the total net life reserves of the top 200 companies. Deficiency reserves as a percent of the total reserves were 12% for the two term lines combined, 2% for UL, and 1% for other lines. 77% of those who responded to the survey held the opinion that the SVL should be amended to eliminate deficiency reserves, and 81% of the survey respondents stated that Asset Adequacy Analysis could be an appropriate method to replace the current formulaic approach. A summary of the comments received is given in Appendix A.

A follow-up survey was sent to the 50 companies that responded to the initial survey. This survey asked for a split of total reserves between those issued before and after the Valuation of Life Insurance Policies Regulation (Reg XXX) went into effect. A total of 27 of the 50 companies provided this split, which represented approximately 16% of the total life reserves of the top 200 companies. For these 27 companies, deficiency reserves were 11% of the total reserves for the two term lines combined. Pre-XXX deficiency reserves for the term lines were 4% of the total pre-XXX reserves. The corresponding percentage for the post-XXX business was 23%. Deficiency reserves were only 1% of the total reserves for universal life. Post-XXX deficiency reserves for UL were 6% of the total post-XXX reserves. The pre-XXX UL deficiency reserves were very small, only .15% of total reserves. Deficiency reserves for the “other” product line were negligible.

Rationale for Eliminating Formulaic Approach for Deficiency Reserves

There are four primary reasons that support the elimination of the current formulaic approach for deficiency reserves:

1. **Asset Adequacy Analysis has made deficiency reserves redundant.**

Asset Adequacy Analysis is now an accepted standard of practice within the industry. Under the new Model AOMR Regulation, essentially all companies will be required to perform an Asset

Adequacy Analysis. Using this well-established method to test the adequacy of reserves has eliminated the need to establish a separate formulaic reserve for premium deficiencies.

There are three de facto life insurance statutory reserve minimums in the current Standard Valuation Law (SVL):

- a. A reserve calculated using prescribed assumptions on a net premium basis. This is the basic reserve.
- b. A reserve determined by the qualified actuary to be necessary to render the actuarial opinion required by the SVL. This is the reserve required by asset adequacy analysis.
- c. A reserve calculated using prescribed assumptions on a basis that substitutes the gross premium for the net premium when the gross is lower. This is the alternate minimum reserve. The excess of the alternate minimum reserve over the basic reserve is the deficiency reserve.

The required statutory minimum reserve is the greatest of these three reserves.

The purpose of the basic reserve is to withhold enough funds to make sure that, on a generally conservative, prescribed basis, the company will be able to pay benefits when they become due. The basic reserve is a simple calculation that has been around in its current form for many years.

The purpose of the reserve required by asset adequacy analysis is to ensure that the reserves and related items, when considered in light of the assets held by the company (including investment earnings and considerations expected to be received under the policies), make adequate provision for the company's contractual obligations (including benefits and expenses associated with the policies). In other words, this reserve is meant to ensure that the gross premiums, when considered in conjunction with existing assets and future investment earnings, will be adequate to meet the future benefit and expense obligations of the company.

The purpose of the alternate minimum reserve is, essentially, also to ensure that the gross premiums are adequate and to establish an appropriate reserve if they are not. Historically, this test of gross premium adequacy was based on the same generally conservative, prescribed mortality used in the determination of the basic reserve, while the test of gross premium adequacy that is embedded in the asset adequacy analysis was based on a company's more realistic expectations of mortality. However, due to the introduction of Regulation XXX and the X-factor concept, the test of gross premium adequacy found in the alternate minimum reserve can now be based upon a more realistic mortality assumption – one that is more similar to the mortality assumption used in the asset adequacy analysis.

Thus, both the reserve required by asset adequacy analysis and the alternate minimum reserve are now serving essentially the same purpose. As a result, an argument can be made that a company should not be required to determine the alternate minimum reserve (and, thus, should not be required to hold deficiency reserves) if it performs an asset adequacy analysis and holds any additional reserves that are required by that analysis.

2. The formulaic approach of funding premium deficiencies is ineffective.

The deficiency reserve, as currently defined, is an inflexible and rather artificial construct that sometimes fails to properly identify and establish the proper level of premium deficiency. The 1976 amendments to the SVL changed the deficiency reserve calculation from one where the deficiency reserve was the present value of future gross premium deficiencies to one where the deficiency reserve is the excess, if any, of a minimum reserve over the basic reserve. Since the minimum and basic reserves are often calculated using different mortality and/or interest assumptions, there are many cases where the timing of when the deficiency reserve is established or released does not coincide with when the gross premium deficiency is present.

A couple of examples may help illustrate this point. First, consider a level premium, 20-year term plan issued to a 45 year old male. The gross premium is \$3.00 per \$1000. The basic reserve is determined on a CRVM basis using 2001 CSO ultimate, composite, male mortality and 4½% interest. The minimum reserve (the quantity “A”) is determined on a CRVM basis using 2001 CSO select & ultimate, composite, male mortality with X-factors of 20% in years 1-10 and 80% in years 11-20, and 4½% interest, with the gross premium being substituted for the net premium whenever it is less than the net premium. The renewal year net premium is \$3.15 in each of years 2-20, so there is a gross premium deficiency in each of these renewal years. However, deficiency reserves appear only in years 1-13, and their pattern decreases from years 2-6, increases from years 6-11, and then decreases from years 11-14.

Next, consider the same level premium, 20-year term plan issued to a 45 year old male. The gross premium is again \$3.00 per \$1000. The basic reserve is again determined on a CRVM basis using 2001 CSO ultimate, composite, male mortality and 4½% interest. The minimum reserve (the quantity “A”) is determined on a CRVM basis using 2001 CSO select & ultimate, composite, male mortality with X-factors of 20% in years 1-5, 25% in year 6, 30% in year 7, ..., 90% in year 19, and 95% in year 20, and 4½% interest. Again, the gross premium is substituted for the net premium whenever it is less than the net premium. The renewal year net premium is \$3.14 in each of years 2-20, so there is a gross premium deficiency in each of these renewal years. However, deficiency reserves appear only in years 1-4 and 11-19.

Graph 1 (Appendix B) shows the basic reserves as well as the quantity “A” reserves for these two examples. Notice the different slopes of the pink and yellow quantity “A” reserve curves compared to the black basic reserve curve. Deficiency reserves exist wherever the quantity “A” exceeds the basic reserve. Graph 2 (Appendix C) shows the actual deficiency reserves for these two examples.

3. Additional conservatism leads to unnecessary and costly practices within the industry.

Many actuaries believe that the base policy reserves include an adequate degree of conservatism. Adding additional conservatism with deficiency reserves, which often are several times greater than an annual premium, is not necessary. This level of conservatism leads to higher costs for these products, which are then passed on to consumers. Consumers would be better served if a more economical, less conservative reserve standard were used, while still maintaining an appropriate level of conservatism.

In addition, significant energy and resources are spent on product designs and reinsurance arrangements to minimize the additional conservatism of the current formulaic approach to deficiency reserves. Since the current valuation requirements are quite complex, there is a degree of professional judgment that must be exercised when attempting to interpret the current standard. This leads to a multitude of variations in product designs that make it very difficult for the regulator to assess whether the company has established reserves that meet the minimum standard. In addition, since unauthorized reinsurers are often used, there is the additional cost of letters of credit.

Asset Adequacy Analysis is arguably a better judge of whether base reserves are adequate, and the results are not subject to manipulation by clever product design. Also, the heavy use of unauthorized reinsurers to minimize the additional conservatism of the current approach puts pressure on the letter of credit capacity available to individual reinsurers and the reinsurance industry. It has been reported that a major life reinsurer estimates that the industry's LOC demand for XXX reserve credit alone was about \$9 billion as of year-end 2002; will be about \$45 billion by 2007, and will ultimately exceed \$100 billion⁷.

4. Dynamic modeling techniques to determine insurance company capital and reserve requirements is gaining acceptance by both the industry and regulators.

Due to advances in technology, the use of dynamic modeling techniques is gaining acceptance as a viable approach to quantify both capital and reserve requirements. For some types of products, formulaic approaches do not capture the varying capital and reserve requirements. Using the current formulaic reserve approach, it is possible that two contracts that should have different reserve requirements end up with the same formulaic reserve.

Countries such as Canada have already adopted dynamic modeling approaches to establish minimum reserve standards. In the US, dynamic modeling approaches are slowly gaining acceptance as an appropriate basis to determine minimum reserve standards, albeit on a "piecemeal" basis. Examples include AG39, which established the use of "stand alone" asset adequacy analysis as the reserve standard for variable annuities with guaranteed living benefits, and the work currently in progress to determine minimum reserves for individual variable annuities using stochastic modeling.

Deficiency reserves would be an excellent candidate for the next application of a more dynamic approach to establish minimum reserve requirements to replace the historical formulaic approach. A variety of techniques used to perform asset adequacy analysis, such as cash flow testing and gross premium valuation, could be applied on a "stand alone" basis as the minimum reserve standard for contracts that have premium deficiencies. This may result in a more credible reserve standard than the current formulaic approach, since it does a better job of capturing the amount of reserve required by the contract.

⁷ Moody's Special Report January 2004, *Hidden Credit Risks of Regulation XXX/Guideline AXXX Reinsurance Programs*.

Rationale for Continuing Formulaic Approach for Deficiency Reserves

There are three primary reasons for continuing the current formulaic approach for deficiency reserves:

1. Deficiency Reserves have been a long-standing practice within the statutory reserve framework.

The Standard Valuation Law is predicated on determining reserves based on a prescribed mortality table. When a company offers a policy with guaranteed benefits and guaranteed gross premiums less than the premiums necessary to fund the basic reserves based on this prescribed mortality table, there is a current and future shortfall in the policy's revenue necessary to set up the required reserves. There are at least three approaches that regulators may have considered when drafting valuation law and regulations to address this type of situation.

- a) Permissible for the company to fund the current year's shortfall from the revenue from all other sources of company revenue including other life insurance policies or other lines of business. Similarly, in future years, any shortfall would be funded out of the then current revenue from other sources.
- b) Require companies to set aside existing surplus to cover current and future expected shortfalls of the policy based on the prescribed assumptions (valuation mortality and interest, no lapses). These amounts are historical deficiency reserves.
- c) Require some combination of (a) or (b) above.

Since statutory valuation law is generally focused on ensuring solvency, it seems appropriate that regulation and law have historically followed approach (b) above when this situation arises. This approach protects beneficiaries by setting aside surplus immediately (rather than depending on future uncertain income) such that this surplus amount plus future premium payments should be adequate to pay for future guaranteed benefits. In addition, since the "economic" liability for these types of policies can be particularly sensitive to mortality and termination assumptions, a valuation system which requires minimum reserves such as basic reserves plus deficiency reserves, and which releases these reserves into income as business terminates is appropriate to maintain minimum solvency protection.

As pointed out in prior sections of the report, there have been historical changes in valuation mortality tables and the application of them to determine total policy reserves (basic reserves plus deficiency reserves). In some cases a more liberal valuation basis is allowed to determine deficiency reserves, while a more conservative basis is required for basic reserves. The effect of this is that a portion of any future shortfall in gross premiums necessary to equal valuation premiums for basic reserves is funded out of future company income rather than immediately out of surplus. Thus recent regulatory changes have resulted in approach (c) being followed. Eliminating deficiency reserves results in a complete shift to approach (a) and thus future company solvency would be dependent upon uncertain future income and uncertain surplus.

2. **Asset Adequacy Analysis although an accepted standard of practice within the industry, serves as a secondary layer of protection as a check on the overall adequacy of prescribed reserves.**

In most jurisdictions, Asset Adequacy Analysis is completed for the company in the aggregate and allows for sufficiency in reserves for some product lines to offset shortfalls in reserves for other product lines. Although Asset Adequacy Analysis can result in additional solvency protection when additional reserves are established when prescribed tables and methods do not recognize an estimate of a company's future liabilities and expenses, Asset Adequacy Analysis was never intended to be used as the primary method of setting reserves.

Life insurance reserves have historically used prescribed valuation mortality tables, interest rates and methods, as well as an assumption of no lapses to determine minimum statutory reserves. If the Appointed Actuary considers basic reserves to be inadequate, then the Appointed Actuary must determine what additional reserves should be established. While some guidance is available to assist the Appointed Actuary in assessing the need for additional reserves, little guidance is available to establish the amount of the additional reserves. Two companies under similar situations would likely establish different amounts of additional reserves, although both would be based on the professional judgment of each actuary as to the appropriateness of the reserve based on the assumptions (including scenarios for earned rates, lapse rates, mortality rates and expenses), provisions for moderately adverse conditions, and methods to determine the liability

Thus, eliminating deficiency reserves removes a minimum level of solvency protection and replaces it with the liabilities derived from the subjectivity of asset adequacy assumptions. This weakens the statutory framework in place today.

3. **The current X-factor approach requires a higher validation standard than Asset Adequacy Analysis.**

The Valuation of Life Insurance Policies Regulation (Reg XXX) and the associated Actuarial Standard of Practice No. 40 set a higher standard of validation of anticipated mortality than the Actuarial Opinion and Memorandum Regulation. Consequently, any additional reserves required under Asset Adequacy Analysis as a result of deficient premiums would likely be less than the minimum reserves computed under Reg XXX.

Recommendation

After considering the “pros and cons” of discontinuing the current formulaic approach for deficiency reserves, the work group considered three alternate recommendations:

- 1) The current formulaic approach is appropriate. No change to the Standard Valuation Law is needed.
- 2) Amend the SVL to remove the formulaic requirement for deficiency reserves (but continue the current formulaic approach for basic reserves) and replace it with a "stand alone" asset adequacy test on the block of business where the gross premium is less than the net premium following Actuarial Standards of Practice. The SVL would require an additional reserve be established at the level that makes the total reserve (sum of the basic reserve and the additional reserve) adequate under this stand-alone test. Further study is needed to determine the exact requirements of this stand-alone test, the types of policies it would be required for, and the amount of aggregation to be used.
- 3) The current formulaic approach for deficiency reserves needs revision, but defer any change to the SVL until more comprehensive revisions are made to the SVL for all reserves. One example of a possible revision would be to replace the current tabular approach with a more dynamic, stochastic approach.

The Work Group could not reach consensus on a recommendation, with most favoring #3 and some favoring #2. No one on the Work Group favored #1.

Although the majority of the Work Group favored option #3, one of the concerns with this option is the timing and nature of the "comprehensive revisions" to the SVL. Implementing a complete overhaul of the SVL all at once will be a major undertaking. Those from the Work Group who favored option #2 felt that a comprehensive revision to the SVL would best be accomplished by addressing specific reserve issues (such as deficiency reserves) in a piecemeal fashion, similar to the work currently underway for variable annuities by the Variable Annuity Reserve Work Group (VARWG).

Appendix A

Comments on survey question (a) & (b)

- (a) Do you think the Standard Valuation Law should be amended to eliminate, for policies where the gross premium is less than the valuation net premium, the requirement that minimum reserves be computed replacing the valuation net premium by the actual gross premium in each contract year for which the valuation net premium exceeds the actual gross premium?
- (b) Could asset adequacy analysis be an appropriate method to determine whether or not reserves in excess of "base" reserves are required?
- Unnecessary given asset adequacy testing. Significant energy and resource goes into product design to circumvent the regulation. Consumers could benefit by a better, easier to understand product without this regulation.
 - Base need on asset adequacy testing.
 - Companies should not be encouraged to give away guarantees.
 - The issue is not relevant to my company given our in force profile.
 - No opinion.
 - Small reserves in relation to effort to produce - cash flow testing should cover.
 - (a) An actuary prices a product to be profitable; i.e., the premium is large enough to cover expenses plus to provide a margin for profit. Deficiency reserves can be eliminated; however, the segmented reserve portion of XXX should be retained. (b) AAA could be appropriate if cash flow testing (or, at a minimum a gross premium valuation) is required, to show that the basic reserve is adequate, when added to future gross premiums, to fund future cash outflows. (And if not, it would be used as a basis to set up additional reserves.) This wouldn't affect taxes, since both deficiency and "additional" reserves are nondeductible.
 - There are substantial excess reserves in the industry for these products. It is leading to costly means to mitigate the excess reserves that raises pricing for consumers.
 - For most life insurance products, the conservatism built into the basic reserve is more than adequate to cover the actual mortality and economic risk. This is especially true now that segmented basic reserves are required for level term plans. The deficiency reserve, as currently defined, is an inflexible and rather artificial construct that fails to consider the other profit sources for funding the basic reserve. Instead of funding the premium shortfall on each

separate policy from surplus immediately, asset adequacy testing would allow the appointed actuary to demonstrate that the increase in reserve can be funded from future earnings on the in force business, and if this couldn't be demonstrated initially, require only the minimum amount necessary be allocated from surplus. Of course, the one potential obstacle in this is how do the regulators assure that the appointed actuary is being reasonable in his asset adequacy assumptions? Might they have to require additional sensitivity tests be conducted to demonstrate the level of adequacy? I would also like to make a comment about X factors.

Generally, the additional testing required to support the X factors provides little assurance that the reserves are adequate; rather all it does is provide relief from excess deficiency reserves. Furthermore, if the appointed actuary is already doing asset adequacy testing on all life insurance business, the X factor testing amounts to a lot of extra work for no real benefit. Therefore, my recommendation would be to remove the definition of deficiency reserves from the Standard Valuation Law, the UL Model Regulation, and the Valuation of Life Insurance Policies Model Regulation, for new and existing business, and require the appointed actuary to demonstrate reserve adequacy through asset adequacy testing.

- I believe the 2001 CSO is an aggressive mortality table and that removing the deficiency reserve requirement would encourage overly aggressive actuaries to hold reserves without the appropriate level of conservatism. Asset adequacy analysis would in theory be adequate to determine the total level for sufficient reserves. I do not believe there is adequate control of and sufficient standardization of cash flow testing requirements to give me comfort that the purpose of going to an adequacy approach had any purpose other than to subvert prudent reserve requirements. I believe most state regulators have no ability to go through tedious actuarial reports or to do more than use a checklist to make sure that every required piece of paper has actually been filed. Our profession has gotten a lot of bad press lately. This is not the time to say "trust to our honor and sense of judgment." Why should outsiders trust us? I don't even trust us.
- The requirement should be eliminated if an otherwise adequate reserve standard can be set.
- (a) The concern is - Will companies act responsibly when the requirements are removed? (b) In theory, yes. But, in practice it will be difficult & expensive for many companies to perform the analysis.
- I believe the calculation is reasonable so long as the mortality table and interest rates are reasonable.
- Methods using net premiums with mortality closer to the expected by class with sufficient margins.
- Asset adequacy analysis would provide a sufficient means to ensure that reserves are adequate without requiring deficiency reserves.
- If deficiency reserves were to be eliminated, our company's reserves, in the aggregate, would still be more than adequate.
- Yes, these could be eliminated, but only if asset adequacy analysis is used to demonstrate reserve adequacy.

- Per (b) below; asset adequacy analysis serves as a backstop against an inadequacy of formula reserves. If upon performing the asset adequacy analysis, basic reserves are sufficient, then any additional (deficiency) reserves serve only to deplete company capital and raise the price of products to the consumer.
- (a) With the 2001 CSO and flexibility of XXX, a formula min based on reasonable mort is fine. (b) SVL analysis would need to be expanded and more directly focused on this.
- Alternatively, use a plan by plan test, rather than cell by cell.
- 'Makes it impossible to develop innovative products such as reversionary annuity where benefit is contingent on survival of beneficiary.
- Asset adequacy analysis should be a sufficient test. This would mean that deficiencies in some policies could be offset by sufficiencies in other policies among the same line. This should still be actuarially sound.
- In the USA, we are on a net premium valuation basis that does not consider expenses and uses assumptions that generally are conservative for most, but not all, companies. Replacing net premium with gross premium is critical to maintaining the expected conservatism. Unless the NAIC decides to replace the net premium valuation with a gross premium valuation with standardized required margins in all assumptions, some companies will have inadequate reserves. Asset adequacy analysis is subject to wide variations between companies and, if losses occur for the more aggressive companies, then the more conservative companies will ultimately pay for these losses.
- Not sure yet.
- Since asset adequacy analysis is now required of all companies, it is a better methodology to establish the appropriateness of the base reserve, rather than imposing a rather arbitrary, formulaic reserve that attempts to quantify the additional reserve that is needed to cover the premium deficiency.

Appendix B

Graph 1

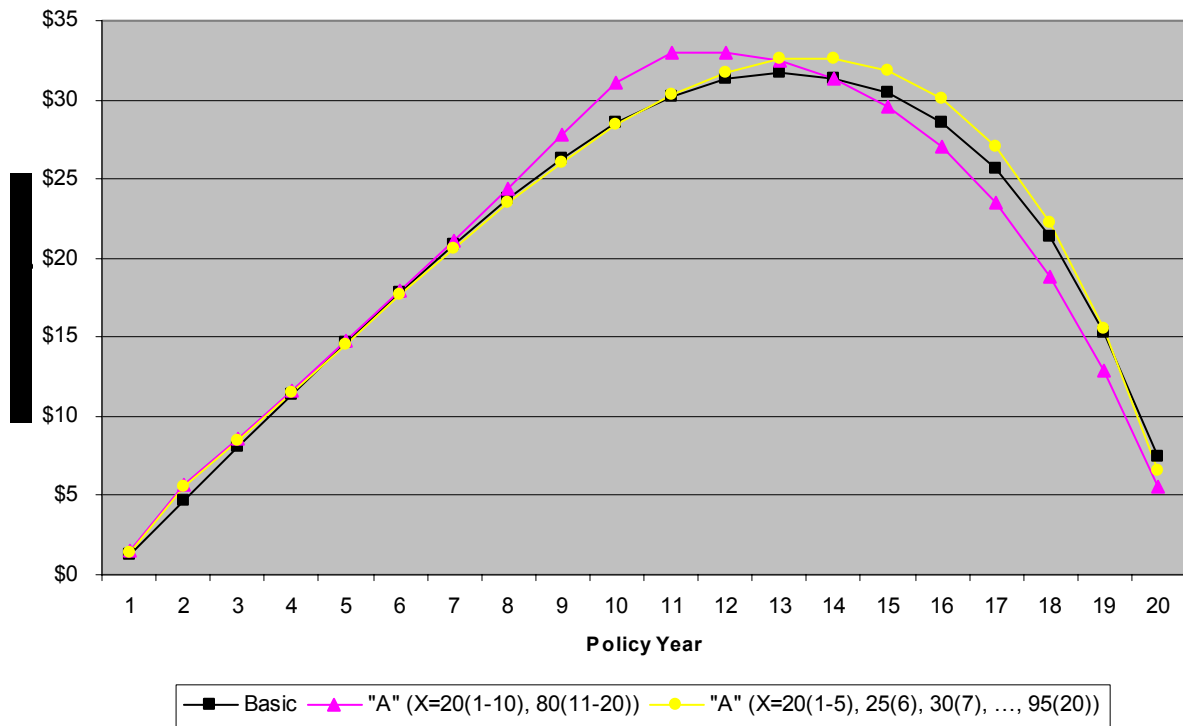
Level Premium 20 Year Term Basic & "A" Reserves

Male, 45, 4.5%

Basic Reserve uses 2001 CSO Ultimate, Composite

"A" Reserve uses 2001 CSO Sel & Ult, Composite with X-factors

Gross Premium = \$3.00 per \$1000



Appendix C

Graph 2

Level Premium 20 Year Term Deficiency Reserves

Male, 45, 4.5%

Basic Reserve uses 2001 CSO Ultimate, Composite

"A" Reserve uses 2001 CSO Sel & Ult, Composite with X-factors

Gross Premium = \$3.00 per \$1000

