

Note: This version of ASOP No. 22 is no longer in effect.
It was superseded in 2001 by ASOP No. 22, Doc. No. 083.

**ACTUARIAL STANDARD
OF PRACTICE
NO. 22**

**STATUTORY STATEMENTS OF OPINION
BASED ON ASSET ADEQUACY ANALYSIS
BY APPOINTED ACTUARIES
FOR LIFE OR HEALTH INSURERS**

**Developed by the
Life Committee and an
Ad Hoc Task Force of the
Actuarial Standards Board**

**Adopted by the
Actuarial Standards Board
April 1993**

(Doc. No. 042)

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April 1993

TO: Members of Actuarial Organizations Governed by the Standards of Practice of the Actuarial Standards Board and Other Persons Interested in Statutory Statements of Opinion by Appointed Actuaries for Life or Health Insurers

FROM: Actuarial Standards Board (ASB)

SUBJ: Actuarial Standard of Practice No. 22

This booklet contains the final version of Actuarial Standard of Practice (ASOP) No. 22, *Statutory Statements of Opinion Based on Asset Adequacy Analysis by Appointed Actuaries for Life or Health Insurers*, for statutory actuarial opinions required under the model Standard Valuation Law (SVL) promulgated by the National Association of Insurance Commissioners (NAIC), as amended in 1990, and under Section 8 of the NAIC's model *Actuarial Opinion and Memorandum Regulation* (the *Model Regulation*). Opinions required under Section 8 (Section 8 opinions) include an asset adequacy analysis, that is, analysis of whether the company's assets supporting the reserves are adequate to mature the company's obligations.

This standard replaces Financial Reporting Recommendation 7 of the American Academy of Actuaries (AAA), *Statement of Actuarial Opinion for Life Insurance Company Statutory Annual Statements*, and its related Interpretations as guidance for Section 8 opinions by appointed actuaries which are filed in states that have enacted the 1990 amendments to the Standard Valuation Law and promulgated the *Model Regulation*.

In those states, this standard also replaces AAA Financial Reporting Recommendation 11, *Statement of Actuarial Opinion for Interest-Indexed Universal Life Insurance Contracts*. Recommendation 11 was a special version of Recommendation 7 for a single type of business, which is now covered by this standard.

For statutory opinions filed in states that have not enacted the 1990 amendments to the SVL and have not promulgated the *Model Regulation*, actuaries should continue to be guided by Financial Reporting Recommendation 7 and by Financial Reporting Recommendation 11.

Background

The ASB voted in April 1992 to expose a proposed actuarial standard of practice titled *Statutory Statements of Opinion by Appointed Actuaries for Life or Health Insurers*. The exposure draft covered both types of actuarial opinions required by the Standard Valuation Law and the *Model Regulation*: (1) the opinion under Section 8 of the *Model Regulation* that requires an analysis of and an opinion as to adequacy of those assets that support the reserves to mature the company's obligations, and (2) the opinion under Section 7, which requires neither an asset adequacy analysis nor an opinion as to whether the assets supporting the reserves are adequate to mature the insurer's obligations.

Letters of comment received, and discussions at an ASB public hearing on the draft in June 1992, focused largely on the issue of whether the proposed standard appeared to impose an asset adequacy analysis or cash flow testing on the smaller companies exempted from such analysis under Section 7. Some commentators expressed the view that such analyses could be imposed on the appointed actuaries for the exempted companies because of ASOP No. 14, *When to Do Cash Flow Testing for Life and Health Insurance Companies*.

The debate led the ASB, at its October 1992 meeting, to replace the proposed standard with two separate standards. A second exposure draft limiting application of the standard of practice to statutory statements based on asset adequacy analysis, for companies covered by Section 8 of the *Model Regulation*, was drafted by an Ad Hoc Task Force and published. Statutory statements not including asset adequacy analysis would be covered, the board decided, by an actuarial compliance guideline instead of an actuarial standard of practice. An exposure draft of such a guideline, developed by the same task force, is expected to be published concurrently with this standard.

Public Hearing

Shortly after the beginning of the exposure period for the first exposure draft, the ASB held a public hearing on the subject, in conjunction with the 1992 summer meeting of the NAIC in Washington, DC. Ten witnesses spoke at the June 10 hearing, including insurance regulators, actuarial consultants, insurance company actuaries, and a spokesperson for the National Association of Life Companies. The hearing panel consisted of three members of the ASB and two members of the Life Committee of the ASB.

A key point raised in testimony was that the proposed standard went beyond the SVL

and the *Model Regulation* in requiring opinions as to reserve adequacy from appointed actuaries for companies exempt from Section 8 of the regulation. This testimony was given considerable weight in the restructuring of the original into two documents—the present actuarial standard of practice and the proposed actuarial compliance guideline.

Examples of other changes made in the second draft because of issues raised at the hearing and in letters of comment are as follows:

1. the addition of section 5.2, Appointment as Appointed Actuary;
2. the modification of section 5.5, Reinsurance; and
3. the clarification of section 6.3, Reliance on Others for Data and Supporting Analysis.

One witness at the hearing proposed that the appointed actuary standard focus on documenting the “process” used to develop an opinion instead of on “techniques” that should be used. Although this approach was not adopted in entirety, a number of additions were made to section 6.5, Additional Disclosures.

A transcript of the hearing is available from the ASB office on request.

Written Comments on the First Exposure Draft and the Committee's Responses

Numbers and headings before the comments refer to sections of the second exposure draft. Where the comments are quoted or summarized, they are in ordinary type. Responses of the Life Committee are in **boldface**. In several places, the committee responses have been updated from what appeared in the *second* exposure draft.

p. vii Background—A number of respondents commented on the need both for information on state-by-state valuation requirements, and for practice guides. **On state valuation requirements, the American Academy of Actuaries, with substantial financial assistance from the Society of Actuaries, published a *Life and Health Valuation Law Manual* in 1993; this will be updated periodically. A set of practice notes for appointed actuaries, compiled by an actuarial task force chosen by the AAA Committee on Life Insurance Financial Reporting, was made available in early 1993; the practice notes are available from the AAA.**

1.2 Scope—Many respondents commented on the possible imposition of a cash

flow testing requirement on opinions rendered under Section 7 of the *Model Regulation*. **The committee determined that the preferred approach would be to apply this actuarial standard of practice to Section 8 opinions only and to draft an actuarial compliance guideline to advise actuaries on complying with the Section 7 portion of the *Model Regulation*.**

2. Definitions—A definition was added for *gross premium reserve* because of later reference to this term.
3. Background and Historical Issues—Throughout the document, the term *actuarial report and memorandum* has been changed to *supporting memorandum* to clear up confusion expressed in comments received.
5. Analysis of Issues and Recommended Practices—This section was extensively restructured to restrict the application of the standard to Section 8 opinions only.
 - 5.1.2 State Valuation Requirements—See the committee's response to initial comments under the Background section above.
 - 5.1.3 NAIC Actuarial Guidelines—Both sections 5.1.2 and 5.1.3 have been changed to show that the actuary is not required to “meet” guidelines or interpretations that do not have the force of regulation; the actuary is required only to “be aware” of them. It is intended that if there should be any significant impact of such guidelines and interpretations on the opinion, this fact should be noted in the supporting memorandum.
 - 5.2 Appointment as Appointed Actuary—This new section was added on the advice of several respondents; it borrows from language used by the Canadian Institute of Actuaries in its standard of practice for appointed actuaries.
 - 5.3.1 Asset Adequacy Analysis—Here and elsewhere, it was suggested that the actuary be urged to document in the supporting memorandum the actuary's response to particular requirements of the standard. **The committee believed it unwise at this point to insert too many specific documentation requirements.**

Comments urging broader provisions for market value analysis, and other comments opposed to this were received. **On consideration, the committee believed that market value approaches are appropriate for analyzing asset-liability risks in only very limited circumstances; the references to market value analysis were deleted.**

Comments on the term *runoff tests* led to the conclusion that this reference was inappropriate, except possibly in situations covered by ASOP No. 5, *Incurred Health Claim Liabilities*, which is mentioned in a succeeding paragraph. One commentator pointed out that cash flow testing may be appropriate for claim liabilities, in addition to the methods described in ASOP No. 5. **The committee agreed, but believed this was already implicit in ASOP No. 14, *When to Do Cash Flow Testing for Life and Health Insurance Companies*.**

A new paragraph was inserted on gross premium reserve tests because of the elimination of this material with the rest of the Section 7 opinion material in the standard, and because of the appropriateness of this method of analysis.

- 5.3.1b Assumption Bases—Concern was expressed about the degree of conservatism in assumptions. **This was considered by the committee to be a subject for actuarial research literature.**

Concern was also expressed about a better definition of *number and types of scenarios*. **The committee believed that this was also a subject that should be treated in actuarial literature other than a standard of practice.**

- 5.3.1c Modeling and Use of Prior Studies—**Despite some adverse comments, the committee believed that the need for thorough analysis, together with the short amount of time usually available after the statement date, make the use of prior studies and data a necessity in many cases. The wording with regard to material subsequent events was changed, however, to clarify the intention.**

Completeness and Consistency—There seemed to be considerable dispute about the definition of *assets supporting the tested reserve*. Some commentators implied that surplus should be included in the analysis. **The committee desired it to be clear that surplus should not be included in the analysis, and that the statement value of supporting assets cannot**

exceed the reserves. The point has been clarified by a change in the definitions section.

There were also a few comments about segmentation. **No change was made in response to these comments because it was believed that asset assignment should normally follow segmentation, although reasons could exist for exceptions to this principle.**

- 5.4 Reinsurance—One commentator suggested major clarification in this section. **Given ASOP No. 11, *The Treatment of Reinsurance Transactions in Life and Health Insurance Company Financial Statements*, such clarification was not believed to be needed, except for one minor change.**
- 5.5 Forming an Opinion with Respect to Asset Adequacy Analysis—Comments indicated objections to the phrase *reserves maturing the obligations* and similar wording. **In some cases, revisions have been made to speak more clearly about assets supporting reserves.**
- 5.5.2 Economic and Experience Conditions—Substantial problems with this paragraph were indicated in the comments. **Wording changes were therefore made.**
- 5.5.3 Adequacy of Reserves (formerly Sufficiency of Reserves)—Many comments were received about the phrase *substantially better than even chance* and similar phrases used in the exposure draft. Some respondents said that the phrases were too vague; others, that the probability of failure should be set at a very low level. **This section was entirely rewritten. The committee believes that further research and debate in this area are desirable.**
- 5.5.4 Pattern of Annual Gains and Losses—Some commentators suggested a prohibition of deficits at any interim point in the calculation; other comments expressed puzzlement. **It was the intent here to point out that in some cases, reserves can be adequate when viewed over the entire testing horizon but may not be adequate at some interim point (usually because of the pattern of statutory minimum reserves). The actuary may wish to set up extra reserves to avoid that situation, but there was not general agreement within the committee that the actuary should be required to do so.**
- 5.5.5 Analysis of Prescribed Interest Scenario Results (formerly titled Failure of

Prescribed Test)—Several comments indicated that various interpretations could be placed on this section. **Hence, the committee decided to narrow the focus to speak specifically of prescribed interest scenarios, and how to proceed in forming an opinion when one or more such tests are failed.**

- 5.5.8 Management Action—Commentators mentioned the difficulty of modeling future management actions. **The committee recognized this. One option the actuary has is to document in the supporting memorandum the assumptions about future actions and the actuary's sources of knowledge of future actions.**
- 6.1 Required Communications—**In response to comments, this section was reworded to indicate to whom the appointed actuary's opinion should be rendered. The language used is similar to that of the *Model Regulation*.**
- 6.3 Reliance on Others for Data and Supporting Analysis—There were comments on the difficulty of providing written evidence of the qualifications of individuals whose data or analysis are relied upon. **The section was modified to remove this requirement.**
- 6.4 Opinions of Other Actuaries—A number of respondents expressed concern about not being able to rely on other actuaries' opinions. **The Standard Valuation Law requires that *the* appointed actuary provide the opinion. The appointed actuary may use the work product of others, as stated in section 6.4.**
- 6.5 Additional Disclosures—**In response to comments, the list of items warranting disclosure was expanded to include failure to comply with the NAIC's *Actuarial Guidelines* and other generally distributed interpretations; use of off-balance-sheet items; investment and reinvestment strategies; and sensitivity tests performed.**
- 6.6 Deviation from Standard—Several commentators expressed concern about requiring the actuary to disclose deviations of which the actuary might not even be aware at the time of the valuation. **This section now requires disclosure of only those deviations of which the actuary is aware.**

In addition, the committee reworded the section to require disclosure of the fact of a known deviation in the actuarial opinion, and details concerning it in the supporting memorandum only.

Written Comments on the Second Exposure Draft and Committee's Responses

As in the section on comments received on the first exposure draft, the comments themselves are in ordinary type, and the Life Committee's responses are in **bold**.

General

Some comments received were to the effect that a standard of practice should address actuarial process and not the details of particular laws and regulations. **The committee was of the opinion that the new SVL and the *Model Regulation*, with their direct reference to ASB standards, made it necessary to develop a standard that is directly responsive.**

Another line of commentary was that the standard as drafted did not adequately communicate the fact that actuarial opinions do not guarantee future soundness. **Several changes have been made in the text to emphasize this point.**

- 2.3 Asset Risk—It was proposed that potential losses from subsidiaries and joint ventures be mentioned. **The committee believed this was a good comment, but also that the issue would be more appropriately addressed elsewhere in the actuarial literature.**

- 5.1.2 State Valuation Requirements—Concern was expressed that the actuary might find it difficult to know all applicable regulations. **The committee hopes that the *Life and Health Valuation Law Manual* available from the AAA will fill this need.**

- 5.1.3 NAIC Actuarial Guidelines—Here also, lack of knowledge might be a problem, it was said. **The wording was changed to require a reasonable effort rather than complete awareness.**

- 5.2 Appointment as Appointed Actuary—The prescribed knowledge of qualifications was felt to be capable of misinterpretation. **Wording was changed to clarify this.**

- 5.3.1 Asset Adequacy Analysis—**Words were added to this first paragraph to emphasize the need for actuarial judgment in applying all items in the section.**

- 5.3.1a Analysis Methods—**Minor wording changes were made.**

- 5.3.1b Assumption Bases—Some writers did not want to give weight to the standard scenarios. **Rather than take out the reference to scenarios, which would have left stochastic testing as superior to deterministic, the committee clarified the wording and eliminated any implication of a preference for “generally accepted” scenarios.**
- 5.3.1c Completeness and Consistency—Several respondents pointed out an awkward sentence. **It was reworded.**
- 5.5 Forming an Opinion with Respect to Asset Adequacy Analysis—**A change was made for consistency, and a reference to another ASOP was added.**
- 5.5.2 Economic or Experience Conditions—Many comments were received on this section as being unclear. **The committee was concerned that some models may project extreme conditions, such as a “run on the bank” or extremely high or low interest rates. As is the case with the next section, there must be limits on what conditions reserves can withstand without recourse to surplus. The section was reworded to clarify this point.**
- 5.5.3 Adequacy of Reserves and Related Items—Some commentators were critical of the phrase, *moderately adverse*, and some criticized the second sentence as vague. **The committee believes that *moderately adverse* is the best way to express the current state of the art. No doubt more definitive expressions will arise in the future. “Professional judgment” wording was added to indicate that this is not a completely objective standard at this time. The awkwardness of the second sentence was corrected.**
- Old*
- 5.5.4 Pattern of Annual Gains and Losses—This former section was criticized as being unclear or requiring an otherwise unnecessary projection of reserves, or describing essentially a solvency test rather than an adequacy test. **The committee responded by deleting the section and renumbering subsequent paragraphs.**
- 5.5.7 Management Actions—Some were concerned about the actuary's knowledge of management actions. **But since this section was intended to apply only to strengthening actions taken to address the actuary's expressed concerns, no change was made.**

- 5.5.8 Subsequent Events—Several comments included concerns about the actuary's knowledge or about details of wording. **Some wording was moved to the Definitions section. Materiality was clarified. Reliance on management representations was added.**
- 6.1 Required Communications—**To avoid the appearance of interpreting the law, the phrase *is required to* was changed to *should*.**
- 6.5 Additional Disclosures—Many comments were received on this section. **In response, three new items were added to, and one deleted from, the disclosure list.**

The standard as revised was approved by the Life Committee in March 1993 for submission to the ASB for adoption. The board adopted it on April 21, 1993.

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ACTUARIAL STANDARD OF PRACTICE NO. 22

**STATUTORY STATEMENTS OF OPINION
BASED ON ASSET ADEQUACY ANALYSIS
BY APPOINTED ACTUARIES
FOR LIFE OR HEALTH INSURERS**

PREAMBLE

Section 1. Purpose, Scope, and Effective Date

- 1.1 Purpose—This standard delineates the responsibilities of the appointed actuary (see section 2.1) in providing a statement of actuarial opinion relating to reserves and other actuarial items, when such opinion (1) is prepared in accordance with the model Standard Valuation Law as amended by the National Association of Insurance Commissioners (NAIC) in 1990 and with Section 8 of the model *Actuarial Opinion and Memorandum Regulation* (the *Model Regulation*) adopted by the NAIC in 1991 and subsequently amended; and (2) is included in the financial statement of a company to a state regulatory authority, i.e., the *annual statement*.
- 1.2 Scope—This standard applies to appointed actuaries providing statements of opinion, and supporting memorandums as required by Section 8 of the *Model Regulation*, on reserves and related actuarial items contained in the annual statements of life or health insurers—i.e., life or health insurance companies or fraternal benefit societies. This standard also applies to appointed actuaries providing statements of opinion and supporting memorandums as required by individual state regulations that are substantially similar to Section 8 of the *Model Regulation*.

This standard does not apply to actuarial opinions rendered under Section 7 of the *Model Regulation*; those opinions will be addressed in an actuarial compliance guideline applicable to Section 7 of the *Model Regulation*.

- 1.3 Effective Date—This standard is effective for all statements of actuarial opinion provided for annual statements prepared for fiscal periods ending after December 15, 1993.

Section 2. Definitions

- 2.1 Appointed Actuary—Any individual who is appointed or retained in accordance with the requirements set forth in the model *Actuarial Opinion and Memorandum Regulation* of the NAIC.
- 2.2 Asset Adequacy Analysis—An analysis of the adequacy of reserves and related items, in light of the assets supporting such reserves and related items, to meet the obligations of an insurer.
- 2.3 Asset Risk—The risk that the amount or timing of items of cash flow connected with assets will differ from expectations or assumptions for reasons other than a change in investment rates of return. Asset risks include delayed collectibility, default, or other financial nonperformance. This is commonly referred to in actuarial literature as the *C-1 risk*.
- 2.4 Cash Flow Testing—The process of projecting and comparing, as of a given date called the valuation date, the timing and amount of asset and obligation cash flows after the valuation date.
- 2.5 Gross Premium Reserve—The actuarial value of an insurance or annuity contract, calculated using best-estimate assumptions, of future cash flow disbursements minus future cash flow receipts.
- 2.6 Investment-Rate-of-Return Risk—The risk that investment rates of return will differ from expectations or assumptions, causing a change in the amount or timing of asset or obligation cash flows. This is commonly referred to in actuarial literature as the *C-3 risk*.
- 2.7 Obligation—Any tangible or intangible commitment by, requirement of, or liability of an insurer that can reduce revenues or generate disbursements.
- 2.8 Obligation Risk—The risk that the amount or timing of items of cash flow connected with the obligations considered will differ from expectations or assumptions for reasons other than a change in investment rates of return or a change in asset cash flows. This is commonly referred to in actuarial literature as the *C-2 risk*. At or prior to the issue date it is also referred to as the *pricing risk*.

- 2.9 Subsequent Events—Events that occur after the valuation date and before the date of the opinion.

Section 3. Background and Historical Issues

In 1975, the NAIC began requiring that a statement of actuarial opinion as to reserves and related actuarial items be included in the annual statement filed by life and health insurance companies. In response to this requirement, the American Academy of Actuaries promulgated Financial Reporting Recommendation 7, *Statement of Actuarial Opinion for Life Insurance Company Statutory Annual Statements*, setting forth the actuary's professional responsibilities in providing such an opinion.

The form and content of this actuarial opinion, as specified in the instructions to the annual statement, dealt specifically with reserves and did not explicitly address the adequacy of the assets supporting these reserves to meet the obligations of the company. Although not explicitly required to do so by the opinion or by existing professional standards, some actuaries began to analyze the adequacy of assets in forming their opinions. In addition, when the state of New York adopted the 1980 amendments to the Standard Valuation Law, it established an optional valuation basis for annuities, permitting lower reserves provided that an asset adequacy analysis supported the actuarial opinion with respect to such reserves.

The type of asset adequacy analysis most widely used by actuaries is multiscenario cash flow testing. To guide actuaries choosing to use this technique, the Actuarial Standards Board (ASB) adopted Actuarial Standard of Practice (ASOP) No. 7, *Performing Cash Flow Testing for Insurers*, in October 1988 (revised July 1991). In addition, in July 1990, the ASB adopted ASOP No. 14, *When to Do Cash Flow Testing for Life and Health Insurance Companies*, to provide guidance in determining whether or not to do cash flow testing in forming a professional opinion or recommendation.

In December 1990, the NAIC amended the Standard Valuation Law, and, in June 1991, the NAIC adopted the *Model Regulation*. These actions had the effect of moving the requirement for the statement of actuarial opinion from the annual statement instructions into the model law itself, and provided detailed instructions for the form and content of both the opinion and the newly required supporting memorandum. The most significant changes made by the NAIC were that companies are now required to name an appointed actuary, and, for companies subject to Section 8 of the *Model Regulation*, statements of actuarial opinion as to reserve adequacy are required to be based on an asset adequacy analysis described in the supporting memorandum. The asset adequacy analysis required

by the regulation must conform to the standards of practice promulgated from time to time by the ASB.

For companies subject to Section 7, the *Model Regulation* requires an actuarial opinion that the reserves and related items have been calculated in accordance with the Standard Valuation Law and supporting regulations. Section 7 does not require an opinion as to reserve adequacy. The criteria by which companies are eligible for Section 7 opinions, as opposed to Section 8 opinions, are set forth in Section 6 of the *Model Regulation*.

Section 4. Current Practices and Alternatives

Statements of actuarial opinion as to reserves and related items have been provided since 1975, and practice as regards the basic elements of the opinion is well established. With respect to opinions based on asset adequacy analysis, current practice varies.

Actuaries who currently perform asset adequacy analysis use a variety of methods as well as differing testing periods, modeling techniques, and levels of aggregation. In addition, the results of such analyses are used in different ways by actuaries in actually forming the required opinion, and the quantity and quality of documentation varies.

STANDARD OF PRACTICE

Section 5. Analysis of Issues and Recommended Practices

- 5.1 Technical Requirements and Professional Qualifications—The *Model Regulation* contains explicitly detailed instructions and technical requirements regarding many aspects of the statement of actuarial opinion.
- 5.1.1 Standard Valuation Law and Model Regulation—The appointed actuary should be familiar with the Standard Valuation Law, the *Model Regulation*, and any other NAIC model laws and regulations that bear on valuation.
- 5.1.2 State Valuation Requirements—The appointed actuary should be aware of the valuation requirements of the regulatory authority to whom the opinion is to be expressed and should be satisfied that the requirements of duly adopted regulations have been met.
- 5.1.3 NAIC Actuarial Guidelines—The appointed actuary should also be aware of the *Actuarial Guidelines* published in the NAIC's *Examiners Handbook*, and make a reasonable effort to be aware of generally distributed interpretations of each regulatory authority.
- 5.2 Appointment as Appointed Actuary—Before accepting an appointment as a company's appointed actuary, the actuary should determine that he or she meets the qualifications described in *Qualification Standards for Public Statements of Actuarial Opinion*, adopted by the American Academy of Actuaries. The appointment should be in writing, from the board of directors or its designee, citing the appropriate law and regulation. Acceptance of or withdrawal from the position should be in writing.
- 5.3 Statement of Opinion—The form, content, and recommended language of the statement of opinion are specified in Section 8 of the *Model Regulation*. The opinion must include a statement on reserve adequacy based on an asset adequacy analysis, the details of which are contained in the supporting memorandum to the company.
- 5.3.1 Asset Adequacy Analysis—Both the type and depth of asset adequacy analysis will vary with the nature and significance of the asset, obligation, and/or investment-rate-of-return risks. The appointed actuary may use a

single analysis for reserves in aggregate or a number of analyses for each of several blocks of business. In either case, a number of considerations may bear on the actuary's work. The actuary should use professional judgment in determining which of the following, or other, considerations apply:

- a. Analysis Methods—A number of asset adequacy analysis methods are available to, and used by, actuaries. The most widely used method is cash flow testing (see ASOP No. 7, *Performing Cash Flow Testing for Insurers*; and ASOP No. 14, *When to Do Cash Flow Testing for Life and Health Insurance Companies*). This method is generally appropriate for products and/or investment strategies where future cash flows may differ under different economic or interest-rate scenarios. Such differences are associated with, for example, call options and prepayment risk for assets, and with policyholder withdrawal rights in the case of products. Among other acceptable methods described in actuarial literature are the following:
 - i. Demonstration that a block of business being tested is highly risk-controlled or that the degree of conservatism in the reserve basis is so great that reasonably anticipated deviations from current assumptions are provided for. For example, such methods might be appropriate for a block of accidental death and dismemberment insurance.
 - ii. Gross premium reserve tests, which may be appropriate when the business is not highly sensitive to economic or interest-rate risks, but is sensitive to obligation risk. If the reserve held is not materially greater than the gross premium reserve, sensitivity testing of variables such as expenses, mortality, morbidity, or lapse should be done to determine whether additional reserves are needed.
 - iii. Loss-ratio methods, development methods, or follow-up studies as described in ASOP No. 5, *Incurred Health Claim Liabilities*.

The appointed actuary should be satisfied that the analysis methods chosen are appropriate to support the opinion.

- b. Assumption Bases—In addition to selecting an appropriate analysis method, the appointed actuary should select acceptable assumption bases. Acceptable alternatives described in actuarial literature include the following:
 - i. Adaptation of company experience or industry studies.
 - ii. Use of a deterministic scenario or set of scenarios.
 - iii. Statistical distributions or stochastic methods.

The appointed actuary should be satisfied that the assumption bases chosen are suitable for the business and risks involved. In particular, the actuary should be satisfied that the number and types of scenarios tested are adequate. Limiting such scenarios to those contained in the *Model Regulation* is not necessarily adequate.

- c. Additional Considerations—These include the following:
 - i. Modeling—Asset adequacy analyses are generally based on modeling of in-force mix, asset mix, current yields, investment policy, etc. Such modeling may be based on data taken from a time that predates the valuation date; for example, September 30 data may be used to support a December 31 valuation. However, in such cases the actuarial memorandum should contain an explicit statement that the appointed actuary has confirmed the reasonableness of such prior period data and is satisfied that no material events have occurred prior to the valuation date that would invalidate the analysis on which the reserve adequacy opinion was based.
 - ii. Use of Prior Studies—As with the use of modeling data from a date that precedes the valuation date, the appointed actuary may also use asset adequacy analyses performed prior to the valuation date (e.g., prior year's analysis of a closed block of business). Again in such cases, the actuarial memorandum should contain an explicit statement that the appointed actuary has confirmed the reasonableness of such prior period studies and is satisfied that no material events have occurred

prior to the valuation date that would invalidate the analysis on which the reserve adequacy opinion was based.

- iii. Testing Horizon—Asset adequacy should be tested over a period that extends to a point at which reserves on a closed block are immaterial in relation to the analysis. Use of a shorter testing horizon is acceptable if, in the appointed actuary's judgment, use of a longer period would not materially affect the analysis.
- iv. Completeness and Consistency—The asset adequacy analysis should take into account all anticipated cash flows such as renewal premiums, guaranteed and non-guaranteed benefits, expenses, and taxes. In determining the assets supporting the tested reserve, any asset segmentation system used by the company should be considered. For reserves to be reported as “not analyzed,” the appointed actuary should judge them to be immaterial.

5.4 Reinsurance—For guidance with respect to the effect of reinsurance on the statement of actuarial opinion, the appointed actuary is directed to ASOP No. 11, *The Treatment of Reinsurance Transactions in Life and Health Insurance Company Financial Statements*. When cash flow testing is done, the actuary should refer particularly to section 5.7 of ASOP No. 11. Even in the case where a company has ceded all of a particular block of business, the appointed actuary should consider the need to establish provisions for any residual or contingent obligations of the ceding company.

5.5 Forming an Opinion with Respect to Asset Adequacy Analysis—Reserves and related items, when considered in light of the assets held with respect to such reserves and related items, are considered to make adequate provision for the obligations and expenses of the company, provided that satisfactory results are obtained under appropriate analysis methods from section 5.3.1 of this standard. In judging whether these results are satisfactory (see ASOP No. 7, section 5.7, Development of Conclusions), the actuary should use professional judgment in determining which of the following, or other, considerations apply:

- 5.5.1 Limitations of Models, Assumptions, and Data—Test results can vary significantly with the degree of sophistication of the models used, the conservatism or reliability of assumptions, and the accuracy of data. The appointed actuary should recognize such limitations in forming an opinion. In particular, when test results are highly volatile, additional testing may be appropriate.
- 5.5.2 Economic and Experience Conditions—Modeling future economic and experience conditions can lead to a wide range of test results. Sometimes projected conditions used in a model may appear to be unreasonable. The actuary should exercise caution in basing reserves on the results of modeling under those conditions.
- 5.5.3 Adequacy of Reserves and Related Items—In addition to meeting appropriate regulatory requirements, the appointed actuary should use professional judgment to be satisfied that the assets supporting the reserves and related items, plus related future revenues, are adequate to cover obligations under moderately adverse conditions. To hold reserves so great that a company could withstand any conceivable circumstances, no matter how adverse, would usually imply an excessive level of reserves.
- 5.5.4 Analysis of Prescribed Interest Scenario Results—In the event that the reserves and supporting assets are insufficient to meet the unmatured obligations under a prescribed interest rate scenario, further analysis may be required. However, this situation does not necessarily mandate additional reserves. Further analysis and/or testing may indicate that current reserves are adequate. The basis of any such judgment should be recorded in the supporting memorandum.
- 5.5.5 Aggregation—The level of aggregation at which reserves are tested is also significant in forming an opinion. The actuary can have more confidence when aggregate reserves are tested using a single method of analysis than when various segments of business are tested using different methods of analysis. When combining test results for different segments where different methods were used, the actuary should be confident that the assumptions used are not contradictory, or the segments are subject to mutually independent risks.

- 5.5.6 Trends—Test results from prior years can provide valuable insight into the dynamics of asset adequacy analyses, particularly if successive years' results have been reconciled. Analysis of trends and reconciliation analyses can be invaluable in forming an opinion.
- 5.5.7 Management Action—Any anticipated future actions by management to address adequacy concerns identified by the appointed actuary should be considered in forming an opinion. The assumed results of any such actions should be quantified and should be disclosed in the supporting memorandum.
- 5.5.8 Subsequent Events—A subsequent-events paragraph is required by the *Model Regulation* to be included in the opinion. The appointed actuary has an obligation to be reasonably informed about such events. Material subsequent events should be noted in the opinion. The appointed actuary's reliance, if any, on representations of company management regarding subsequent events should be disclosed in the opinion.

Section 6. Communications and Disclosures

- 6.1 Required Communications—The appointed actuary should provide annually to the board of directors of the company or the board's designee a statement of actuarial opinion as to reserves and related items, along with a supporting memorandum.
- 6.2 Format and Content of Statement—Detailed specifications for the statement of actuarial opinion and the supporting memorandum to the company are contained in the *Model Regulation*. If the appointed actuary departs significantly from the opinion's recommended language or gives an adverse opinion, such departure or adverse opinion should be clearly disclosed in both the opinion and the supporting memorandum.
- 6.3 Reliance on Others for Data and Supporting Analysis—Reliance on another person or firm for any aspect of the data or analysis supporting the appointed actuary's opinion should be disclosed. Such disclosure should be in the manner prescribed in the *Model Regulation*. The actuary should be satisfied that the data or analysis provided are reasonable.
- 6.4 Opinions of Other Actuaries—When more than one actuary contributes to forming an opinion, supporting memorandums may be included in the appointed actuary's memorandum. The actuary should review and comprehend the contributions of

other actuaries. The appointed actuary should then form an overall opinion without claiming reliance on the opinions of other actuaries. The use of the work product of other actuaries should be described in the supporting memorandum.

6.5 Additional Disclosures—In addition to the details of the asset adequacy analysis required by the *Model Regulation*, the supporting memorandum should include disclosure and discussion of the following:

- a. *Actuarial Guidelines* of the NAIC and other generally distributed interpretations of regulatory authorities that have not been complied with in forming a reserve opinion;
- b. confirmation of the reasonableness of any prior-period data or studies that are used;
- c. details regarding the release of any additional reserves from a prior opinion date;
- d. investment and reinvestment strategies;
- e. level and method of aggregation of results;
- f. method of selecting assets for analyses;
- g. sensitivity tests performed;
- h. testing horizon;
- i. use of assets supporting asset valuation reserve and/or other mandatory or voluntary statement reserves;
- j. use of off-balance-sheet items;
- k. variables tested, e.g., mortality, morbidity, interest, and lapse;
- l. strategies with regard to policyholder dividends or non-guaranteed elements;
- m. use of any optional grading-in of additional reserves; and
- n. identification of the intended users of the memorandum.

- 6.6 Deviation from Standard—An actuary must be prepared to defend the use of any procedure that departs materially from this standard and must include, in any actuarial communication disclosing the result of the procedure, an appropriate statement with respect to the nature, rationale, and effect of such use.