

Note: ASOP No. 14 is no longer in effect. It was repealed in 2001.  
Please see the repeal notice, Doc. No. 082, for further information.

**ACTUARIAL STANDARD  
OF PRACTICE  
NO. 14**

**WHEN TO DO CASH FLOW TESTING  
FOR LIFE AND HEALTH  
INSURANCE COMPANIES**

**Developed by the  
Life Committee of the  
Actuarial Standards Board  
with Substantial Assistance from the  
Committee on Life Insurance Financial Reporting  
of the American Academy of Actuaries**

**Adopted by the  
Actuarial Standards Board  
July 1990**

**(Doc. No. 022)**

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July 1990

**TO:** Members of the American Academy of Actuaries (AAA) and Other Persons Interested in Cash Flow Testing for Life and Health Insurance Companies

**FROM:** Actuarial Standards Board (ASB)

**SUBJ:** Actuarial Standard of Practice No. 14

This booklet contains the final version of Actuarial Standard of Practice (ASOP) No. 14, *When to Do Cash Flow Testing for Life and Health Insurance Companies*.

### Background

This actuarial standard of practice was developed by the Life Committee of the ASB with substantial assistance from the Committee on Life Insurance Financial Reporting of the American Academy of Actuaries (AAA). The standard provides guidance to the actuary in determining whether or not to perform cash flow testing as part of forming a professional opinion or recommendation for a life or health insurance company. The standard further provides guidance to the actuary in determining the type and depth of such testing, if the actuary decides that cash flow testing should be performed. And the standard provides expanded guidance on when to do cash flow testing in areas other than testing statutory reserves.

This standard was submitted in exposure draft form to the members of the AAA and other interested persons in October 1989. Comments were received through February 15, 1990. The Life Committee has considered these comments in preparing a revised standard for adoption by the ASB. A summary of comments received and the committee's responses to them follows.

### Responses to Comments on Exposure Draft

The Life Committee is grateful to the respondents who submitted comments on the exposure draft. A total of twenty-three individuals responded. All comments have been carefully considered by the Life Committee, and a number of changes have been made in the standard as a result.

About a third of the respondents believed that the proposed standard had the tone of an "eleventh commandment," containing numerous phrases that seemed to imply that an actuary could rarely forego cash flow testing when dealing with one of the topics in section 5.1. The Life Committee agrees with these comments and has therefore made a number of phrasing changes in the standard. For example, in

the heading of section 5.1, the words *might be appropriate* have been substituted for *is generally appropriate*.

Section 6.1 was modified to read, “Any actuarial *report in an area where cash flow testing might be appropriate* should state whether or not cash flow testing was performed . . .” [emphasis added]. Several respondents had noted that the exposure draft was overly broad in this section, in that it seemed to imply that a statement as to whether cash flow testing was performed would be required in almost every actuarial communication.

A considerable number of respondents objected to the listing of excess death claims due to HIV infection as one indication of a need for cash flow testing. The Life Committee agrees with these commentators that sensitivity testing is more appropriate in this instance. Accordingly, this reference to HIV has been deleted. Also, section 3.2 (Sensitivity Testing) has been retitled “Multiple Scenario Testing,” rewritten to better distinguish cash flow testing and sensitivity testing, and moved to section 5.3.

Three respondents believed that the standard should make clear that cash flow testing is an important function for all actuarial assignments (valuation, corporate, pricing, etc.). In response, section 1.1 now states that the standard is intended to relate to reserve testing *or pricing* for a life or health insurance company.

Several mutual company respondents questioned the need to do cash flow testing for setting annual policyholder dividends on participating business. The Life Committee extensively considered and rejected any postulation that such business should be substantially exempted from cash flow testing. However, as stated in section 5.4 of the standard, if the actuary can demonstrate that a block of business (e.g., participating business) is relatively insensitive to influences such as changes in economic conditions, the actuary may determine that cash flow testing is not needed to support the opinion or recommendation being given.

Two respondents expressed concern that section 5.5, Extent of Analysis, as written in the exposure draft, seemed to provide a dangerous out for a small insurance company that had a concentration of products with significant cash flow risks but claimed that the costs of cash flow testing would outweigh the benefits. To address this concern, this section (now 5.6), was modified to state, “Materiality considerations should influence the complexity and frequency of the cash flow testing.”

One respondent expressed a preference for a cash flow testing standard that would be broader in scope—a standard that would cover different types of risk analysis and would discuss when each was appropriate. The Life Committee does not disagree with the comment, but notes that a comprehensive standard will be more feasible at a later date as practices continue to evolve.

The standard was adopted by the ASB on July 13, 1990. It is effective as of October 15, 1990.

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## ACTUARIAL STANDARD OF PRACTICE NO. 14

# WHEN TO DO CASH FLOW TESTING FOR LIFE AND HEALTH INSURANCE COMPANIES

### PREAMBLE

#### Section 1. Purpose, Scope, and Effective Date

- 1.1 Purpose—This actuarial standard of practice gives guidance to the actuary in determining whether or not to perform cash flow testing as part of forming a professional opinion or a recommendation—e.g., on reserve testing or on pricing—for a life or health insurance company.
- 1.2 Scope—This standard applies to all work performed by the actuary for a life or health insurance company. Cash flow testing performed under this standard is to be consistent with Actuarial Standard of Practice (ASOP) No. 7, *Concerning Cash Flow Testing for Life and Health Insurance Companies*, adopted by the Actuarial Standards Board (ASB) in October 1988.
- 1.3 Effective Date—This standard is effective as of October 15, 1990.

#### Section 2. Definitions

- 2.1 Asset Risk—The risk that the amount or timing of items of cash flow connected with assets will differ from expectations or assumptions as of the valuation date for reasons other than a change in investment rates of return. Asset risk includes the risk of default or other financial nonperformance.
- 2.2 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.
- 2.3 Investment-Rate-of-Return Risk—The risk that investment rates of return will depart from expectations or assumptions as of the valuation date, causing a change in the amount or timing of asset or obligation cash flows.

- 2.4 Obligation—Any tangible or intangible commitment by, requirement of, or liability of an insurer that can reduce receipts or generate disbursements.

### Section 3. Background and Historical Issues

- 3.1 Background—Actuaries have been making recommendations and offering professional opinions based on financial projections for many years. Various cash flow elements have always been an integral part of these projections. Historically, most of these projections were performed using simplified assumptions regarding both asset and liability cash flows. These assumptions were deemed appropriate because insurance and investment cash flows had been reasonably predictable. The 1989 Report of the Special Advisory Committee on the Standard Valuation Law, appointed by the Life and Health Actuarial Task Force of the National Association of Insurance Commissioners, sets forth a basis and framework for development of standards as to when to do cash flow testing related to statutory reserves. This standard builds on that report and also provides expanded guidance for when to do cash flow testing in areas other than testing of statutory reserves.
- 3.2 Recent Developments—With the large increase in the level and volatility of interest rates beginning in the 1970s, the growing availability of nontraditional investment vehicles, the increased default risk associated with below-investment-grade bonds and with mortgages in certain regions of the country, the development of interest-sensitive insurance and annuity products, and health underwriting losses, it became apparent that analytical testing needed to be more sophisticated and more frequent.
- 3.3 Need for Cash Flow Testing—The need for cash flow testing depends on the nature of the risk; in the case of certain risks, even though large, the risk can be identified and analyzed without cash flow testing. Testing becomes particularly important in cases where management actions are dependent on the comparison of income and outgo in a given period.
- 3.4 Related Standard—ASOP No. 7 gives the actuary guidance on *how to do* cash flow testing. The standard contained in the present document, on the other hand, gives guidance as to *when to do* cash flow testing.

### Section 4. Current Practices and Alternatives

Cash flow testing is an evolving area of actuarial theory and practice; therefore, it is appropriate that actuaries keep abreast of new developments. Because of the research being performed and the rapid pace of change in available computer technology, new developments are expected to continue at a fast rate in the near future.

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### Section 5. Analysis of Issues and Recommended Practices

- 5.1 Areas Where Cash Flow Testing Might Be Appropriate—Actuaries are called upon to provide professional recommendations or opinions in a number of areas. Examples of actuarial work for which cash flow testing should be considered include:
- a. product design and pricing studies;
  - b. evaluation of investment strategies;
  - c. testing of policyholder dividend scales and future non-guaranteed elements;
  - d. long-term financial projections and forecasts (GAAP, statutory, or tax);
  - e. reserve testing; and
  - f. actuarial appraisals of insurance companies, segments of insurance companies, and/or blocks of insurance contracts.
- 5.2 Reasons for Cash Flow Testing—The type and the depth of the actuary's cash flow testing analysis should be related to both the type and the severity of the asset and liability risks. The expected cash flows in certain products and lines of business are very sensitive to changes in economic conditions and investment scenarios, mortality rates, morbidity rates, premium payment patterns, lapse rates, and expense inflation. For these, the need for cash flow testing may be readily apparent. In other situations, the foundation for the actuary's opinion or recommendation is strengthened by analyzing the results of cash flow testing.

The composition of assets supporting reserves may indicate a need for cash flow testing. For example, assets that might indicate a need for cash flow testing would include bonds with liberal call provisions, below-investment-grade bonds, mortgages concentrated in certain regions of the country, and large illiquid assets such as real estate.

Structured settlement annuities often have guaranteed payouts for 50 years or more, and thus impose a significant reinvestment risk. Cash flow testing will help the actuary determine how well the underlying assets will perform if reinvested in the future under various economic conditions and investment scenarios. Sound investment strategy and pricing recommendations presuppose that these risks are understood.

For a new product or line of business, or for rapidly growing blocks of business, it is important to understand the risks that are being undertaken and know what types of deviations from expected experience are adverse. Intuitive guidance, though valuable, may not be reliable, particularly with respect to the investment-rate-of-return risk. Cash flow testing can give the actuary necessary objective information with respect to various deviations from expected experience, while the blocks of business still have relatively small exposure.

Where options have been granted to policyholders or borrowers and the likelihood of antiselection in the exercise of these options is significant, cash flow testing is needed to help quantify the risks. For example, certificate-of-deposit annuity products, which guarantee the initial interest rate for the same duration as the surrender charge period, provide policyholders with greatly increased liquidity. Cash flow testing will help the actuary to determine exposure to non-renewal after the initial period.

- 5.3 Multiple Scenario Testing—In making financial recommendations, actuaries have often done sensitivity testing. By varying one or more assumptions at a time, the financial effect resulting from changes in assumptions can be determined.

In the context of cash flow testing, sensitivity testing requires the projection of cash flows under multiple scenarios. The actuary should consider how sensitive the results of the testing would be to the effect of variations in the key assumptions. In determining whether the actuary's testing produces reasonable estimates of expected cash flows, the actuary should consider the degree of confidence in the conclusions of the cash flow test, the degree of uncertainty in the cash flow projections due to asset and investment-rate-of-return risk, and other relevant factors.

- 5.4 Cash Flow Testing Is Not Always Necessary—Not all products are subject to the same type or degree of risk. Following are examples of situations when cash flow testing may not always be necessary:

- a. The risks inherent in short-term products may be more appropriately analyzed through other means. These risks usually involve a small number of large individual claims over a short-term period and may be better addressed using risk theory techniques.
- b. If the actuary can demonstrate that a block of business is relatively insensitive to influences such as changes in economic conditions, the actuary may determine that cash flow testing is not needed in order to support the opinion or recommendation given.
- c. Variation in benefit and expense experience for disability income and medical expense reimbursement policies may arise from uncertain secular trends in experience. These variations may appropriately be analyzed using statistical techniques applied to historical data to quantify the risk.

- d. The valuation actuary may be able to demonstrate that experience will almost certainly be less severe than that provided for in the reserves. For example, the actuary could compare actual to tabular mortality or confirm that the interest earned on the assets will exceed tabular interest with a high degree of probability.
- 5.5 Acceptability of Prior Studies—The use of prior cash flow studies may be acceptable. When relying on prior work, the actuary should confirm that the study's key assumptions continue to be appropriate for the future, and that the experience to date is consistent with anticipated results. For example, the valuation actuary can rely on cash flow testing done by a pricing actuary so long as the pricing assumptions have been confirmed by emerging experience, there has been no significant change in the allocation of assets and/or investment income, and expectations about the future have not changed. Similarly, an actuary performing an appraisal on a block of business may rely on a valuation actuary's or pricing actuary's cash flow studies if they are still appropriate.
- 5.6 Extent of Analysis—There are practical limitations on the amount of cash flow testing that is needed to support an actuarial opinion or recommendation. The analysis needs to be refined to the point where, in the judgment of the actuary, further refinement would not result in a materially different opinion or recommendation. Materiality considerations should influence the complexity and frequency of the cash flow testing.

## Section 6. Communications and Disclosures

- 6.1 Actuarial Report—A written actuarial report is recommended as a means of documenting the assumptions, techniques, and conclusions reached when providing a professional recommendation or opinion. Any actuarial report relating to an area where cash flow testing might be appropriate (see section 5.1) should state whether or not cash flow testing was performed and, if not done, why not.

An actuarial report, as defined in Interpretative Opinion 3 of the *Guides and Interpretative Opinions as to Professional Conduct* of the American Academy of Actuaries, is

a document, or other presentation, prepared as a formal means of conveying the actuary's professional conclusions and recommendations, to record and communicate the methods and procedures, and to ensure that the parties addressed are aware of the significance of the actuary's opinion or findings.

- 6.2 Deviation from Standard—An actuary who uses a procedure which differs from this standard should include, in the actuarial communication disclosing the result of the procedure, an appropriate and explicit statement with respect to the nature, rationale, and effect of such use.