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REQUIRED STATEMENTS OF ACTUARIAL OPINION

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The actuary is required to express an opinion as to the adequacy of insurance and investment cash flows to make good and sufficient provision for the company's unmatured obligations.

- o Statutory annual statement
- o Statement of actuarial opinion for interest-indexed universal life insurance
- o American Academy of Actuaries Financial Reporting Recommendation 7
- o Statement of opinion required by New York State for annuity products
- o Other required statements of actuarial opinion
- o The Valuation Actuary
- o Practical techniques and actual experiences

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My career started in the 1950s. Things were very simple then. Products were simple -- whole life, limited pay life, endowment. All annuities, whether single premium or deferred, had fixed payments. The standard valuation law was simple. Interest rates were low but steadily increasing; there were no such things as select and ultimate, male/female, or smoker/nonsmoker mortality tables for valuation purposes. Calculating reserves and compiling values for the annual statement, most generously described, followed cookbook procedures. An actuary could prepare the annual statement from published tables or from Jordan's methods, then sign the jurat.

In 1975, the states enacted regulations requiring the actuary to provide an opinion on the annual statement. A minimum of four items in the

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annual statement had to be addressed. Financial Reporting Recommendation 7 was immediately promulgated to assist the actuary in expressing his opinion. Still, the products remained sufficiently simple that the 1978 revision of Interpretation 7B -- Adequacy of Reserves (under Financial Reporting Requirement 7 -- Statement of Actuarial Opinion for Life Insurance Company Statutory Annual Statements, American Academy of Actuaries) provided that the actuary did not have to express an opinion on assets. He was allowed to rely on the company's valuation of the assets and the resultant yield in determining valuation interest assumptions.

This neglect of assets proved to be an unfortunate oversight when we entered the era of exotic products, ridiculous interest rates, and the dynamic standard valuation law.

Suddenly, vocabulary such as disintermediation and stagflation came into use. We read horror stories about the Baldwin-United Companies. The heavy writers of single premium deferred annuities (SPDAs), whether recognized or not, were in extreme danger of becoming insolvent and would have had there been runs on the banks of these companies. These situations, especially Baldwin-United, caught the attention of the regulators. They decided that it was necessary to look at assets, maturities, investment cash flows, matching, disintermediation, immunization, and evaluation of various risks.

Those decisions gave rise to the indexed universal life and New York State annuity requirements. However, these rules do not cover the rest of universal life, single premium deferred annuities or flexible premium annuities issued by companies doing business outside of New York.

Consequently, revisions are being made to Recommendation 7. In this process, the role of the valuation actuary is becoming more defined, and we are coming up with a whole new set of terms again:

- o solvency versus solidity
- o vitality surplus
- o capacity surplus
- o good and sufficient (one definition to cover future reasonable deviations from expected assumptions; another definition to cover future plausible deviations from the expected assumptions).

MR. WILLIAM T. TOZER: Mr. Turnquist asked me to discuss the American Academy of Actuaries Financial Reporting Recommendations, and the actuarial opinion for interest-indexed universal life insurance -- Recommendation 11. I will begin with the latter and believe a little history would be helpful.

In December 1980, the National Association of Insurance Commissioners (NAIC) passed the 1980 Amendments to the Standard Valuation and Nonforfeiture Laws. The Amendments provided that any plan of life insurance not covered by the law shall have minimum reserves and cash

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surrender values computed by a method that is consistent with the principles of the law. Immediately following the adoption of the 1980 Amendments, the NAIC requested a consistent computation method for universal life. The American Council of Life Insurance (ACLI) offered to develop a method. As a result, an actuarial task force was appointed in the spring of 1981.

Initially, the interest credited on universal life was determined solely by the company. Then in 1981, a major life insurance company introduced a universal life policy that linked its credited interest to Treasury Bill rates. Soon after, the California Insurance Department proposed a regulation requiring additional reserves to cover the increased risk in interest-indexed products. As a result, the ACLI Task Force prepared a proposed model for the valuation of indexed life insurances and annuities. This guideline described the valuation of two elements of such contracts: (1) measurable future guaranteed benefits, and (2) various indeterminate future risks. The measurable future guaranteed benefits could be valued in the traditional manner using existing laws. The several indeterminate future risks were listed with methods of protecting against them. The first was reinvestment risk which could be handled by investing in instruments whose yield rates could be expected to follow the index.

The second was risk of capital loss on cash outflows. It was suggested that product design be used to protect against this risk. For example, surrender charges and front-end loads could defer investment anti-selection. If the index and the associated investments frequently change, the risk of capital losses would be lessened. Also, a frequently changing index value could reduce antiselection. Likewise, the taxing of the proceeds upon surrender serves as a deterrent to investment antiselection.

The third was the risk that appropriate investments would not be available or in sufficient quantities. The careful selection of the appropriate index would minimize this risk.

The last was the risk that the index would fall below the minimum contractual interest in the policy. This risk could be reduced by establishing a lower guarantee.

The task force proposal required, with the contract filing, a description of the company's plans for minimizing the indeterminate future risks. The company would also furnish an actuarial statement that the company's planned investments would adequately minimize the indeterminate future risks and any additional reserves would not be necessary. Additionally, the company would furnish, with its annual statement, a statement of actuarial opinion that the actuary had examined the nature of the company's assets and that the reserves established for these contracts made good and sufficient provision for the risks associated with them.

In 1982, before final action was taken by either the state of California or the ACLI Task Force, the NAIC appointed a Universal Life Task

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Force to develop a model universal life regulation. This would cover not only the nonforfeiture and valuation issues, but also policy provisions, cost disclosure, sales proposals and annual reports to policyholders. The ACLI Task Force contributed their work on minimum reserves and nonforfeiture values and the NAIC Task Force concentrated their efforts in the remaining areas.

In 1983, the Academy's Committee on Life Insurance Financial Reporting Principles became aware of the ACLI's proposed guidelines for valuation of index-linked life insurance. The NAIC Task Force was incorporating those as Article 10 of the Model Universal Life Regulation. The Academy Committee offered to review and revise, if necessary, Article 10. Both the ACLI and NAIC Task Forces were very appreciative of this offer. The Academy Committee expanded and clarified policy filing requirements. They required the company to submit an annual description of the amounts and types of assets currently being held for interest-indexed policies.

Also, prior to implementation, a domestic insurer would submit a description of any material change in the company's investment strategy and the method of determining any interest credited. The Academy Committee continued the requirement of an annual actuarial opinion. However, the scope of that opinion was changed to include policy provisions, reinsurance agreements, and characteristics of the identified assets and investment policy as these affect future insurance and investment cash flows. The actuary would perform a number of tests under various future interest rate assumption with particular attention paid to those policy provisions and characteristics that might cause future insurance and investment cash flows to vary. The actuary would state whether or not anticipated insurance and investment cash flows made good and sufficient provision for the contractual obligations.

When the NAIC adopted the Model Universal Life Regulation in December 1983, the Academy began developing Recommendation 11. An exposure draft was released in April 1984. In late 1984, Recommendation 11, Statement of Actuarial Opinion for Interest-Indexed Universal Life Insurance Contracts, and Interpretation 11A were adopted.

Recommendation 11 delineates the responsibility of the actuary in signing the actuarial opinion described in the Universal Life Regulation.

The interpretation supporting Recommendation 11 provides more detailed guidance for the actuary. This is a deliberate effort on the part of the Academy Committee to provide guidance in an area where methodology is likely to continue to change. Because new techniques are expected to emerge in the near future, it should be remembered that the interpretation is a guideline. Other approaches and techniques are acceptable if the actuary demonstrates they are satisfactory.

To test the adequacy of future cash flows, the actuary must make projections under various paths of future interest rates. For these projections, the actuary should employ assumptions which contain margins sufficient to cover reasonable fluctuations from best estimates. In projecting insurance cash flows, the actuary should consider con-

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tractural provisions and noncontractual conditions that can effect future cash flows. For example, the actuary should consider the amount of:

- o projected death benefit payments;
- o policy loans, partial withdrawals and surrenders (recognizing the surrender charges);
- o future premiums and compensation to be paid; and
- o future maintenance expenses and taxes.

Each of these should be examined to determine the anticipated variations in insurance cash flows due to changes in interest rates. For example, future premium payments, partial withdrawals, surrenders and policy loans may be expected to vary as interest rates change.

The Universal Life Regulation requires each company to submit a description of the amounts and types of assets held for its interest-indexed universal life policies. The company is also required to file its investment policy. In expressing an opinion, the actuary may rely on the investment policy.

In projecting investment cash flows, the actuary should pay particular attention to those characteristics of the invested assets that can affect future cash flows. Some examples are:

- o the types of investments and whether future investment cash flows are fixed or variable,
- o the amount of expected investment earnings,
- o the expected amount of principal repayments,
- o early repayment provisions,
- o the marketability of the investments,
- o the impact of hedging, options or similar strategies, and
- o investment related expenses and taxes

Each of these should be examined to determine the anticipated variations in future investment cash flows due to changes in interest rates. For instance, nonscheduled repayments of principal may be expected to rise if interest rates fall.

Projections of investment cash flows should be based on both currently invested assets and assets acquired in the future. This requires an assumption about the investment of future positive cash flows, with particular emphasis on the durations of such investments and the extent those durations may vary with changes in interest rates. Similar assumptions about interest rates and durations of borrowed money are also required. To the extent assets are expected to be sold, assumptions about capital gains or losses and federal income taxes are required. The actuary is not expected to express an opinion on the quality of the assets and the risk of default on interest or principal.

Among the most important assumptions in the projections of cash flows are the various paths of future interest rates. Testing a single path, even if that path is deemed to be most likely, is insufficient. Similarly, a simple extrapolation of recent rates is not enough. Several

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different paths need to be tested in the calculations. The paths should extend far enough into the future to provide for the major portion of runoff of cash flows. Paths to be tested should include at least one with future interest rates higher than the current rates and at least one with lower future interest rates.

A useful test is to assume a cyclical path with rates increasing during the immediate future followed by decreasing rates. A level path may also be useful. In most situations, it is expected that more than three paths will be tested. Tests should cover as many alternative interest rate paths as the actuary deems necessary.

An actuary who states that the anticipated cash flows make good and sufficient provision is expressing a personal opinion for which he or she takes full responsibility. In forming such an opinion, assumptions with a plausible set of adverse circumstances should be selected. A favorable opinion does not imply that the cash flows would be adequate under every conceivable adverse circumstance, no matter how remote. The actuary is not required to include paths of future interest rates that, while possible, can be considered implausible. However, if it is the actuary's opinion that assets need to be greater than reserves, the amount should be disclosed. If he or she believes the level of future dividends would need to be reduced (for instance, if the amount of such excess were added to statutory reserves), this should be disclosed in a report to company management.

The final report of the Joint Committee on the Role of the Valuation Actuary in the United States was adopted by the Board of Directors of both the American Academy of Actuaries and the Society of Actuaries during 1984. In adopting the report, both bodies agreed to work toward its implementation. In addition, the NAIC requested that the Academy revise Recommendation 7 to incorporate cash flow tests for the entire company.

The Academy Committee on Life Insurance Financial Reporting Principles has drafted a response to the NAIC request. This draft was recently discussed by the Academy Executive Committee and is scheduled to be reviewed by the Academy Board in June 1985. At this time, neither the Academy Board or the Academy Committee is proposing the adoption of laws or regulations requiring an actuarial opinion on asset/liability matching. The Committee is unanimous in its belief that the general framework of the valuation actuary needs to be in place before the profession can accept broader responsibility in the statement of actuarial opinion. Based on the committee's understanding of the current timetable, they do not anticipate the need for an expanded opinion prior to 1987.

The Academy would like to stimulate discussion to permit the preparation of a revised recommendation before such an opinion is required. They would like to reflect a broad base of thinking within the profession. Therefore, they wish to expose a draft early this summer. I recommend very strongly that this discussion draft be carefully read and commented on.

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The committee has chosen to revise Recommendation 7 rather than completely rewrite it. The new Recommendation 7 has fourteen sections compared to the current ten. The new Section 1 is very similar to the current Section 1. Likewise, the new Section 3 is very similar to the current Section 3; however, the statement in reference to good and sufficient provision has been replaced by a paragraph requiring a cash flow opinion.

Section 2 is very similar to the current Section 10. Section 4 contains language similar to that in Recommendation 11, stating that the actuary may rely on data provided by other individuals in the company such as the Chief Investment Officer. It also states that when any reliance is made, the person and items of reliance should be enumerated in the opinion. Section 5 is very similar to Section 2 of the current recommendation. Section 6 requires that an actuarial report to management include the details of the assumptions used in the calculation of any additional cash flow reserve. This report should be available for scrutiny by regulatory authorities, but should be considered confidential. Sections 7 and 8 are similar to Sections 4 and 5 of the current recommendation. Section 9 states that significant elements in examination of future cash flows include, but are not limited to, interest rate scenarios, investment strategies, lapse, mortality and expense assumptions, tax rates, dividends, and reasonable margins for adverse deviations. Section 10 is very similar to the current Section 6. Likewise, the first part of Section 11 is similar to Section 8 but contains the additional statement,

"Assumptions utilized for cash flow projections should be updated annually, including those relating to prior years' issues. For this portion of the opinion, it is not necessary to disclose changes from the prior years' assumptions. A statement should be made that provision has been made for all actuarial items which ought to be established."

Sections 12 and 13 cover the cash flow items in Recommendation 11. Section 14 says that it is appropriate to state any limitations on the opinion. However, the actuary should be satisfied that all known items have been considered and that due care and professional procedures have been followed.

Interpretation 7A, Responsibility of the Actuary and Others, is unchanged. Likewise, Interpretation 7C, Qualification of Actuary's Statement of Opinion, is unchanged. However, Interpretation 7B, Adequacy of Reserves, has been completely rewritten. This interpretation has nine sections. The first six are essentially the same as the first six of Interpretation 11. However, they have been expanded to include all life and health policies. Also, Section 2 has been expanded to state that the actuary should normally assume that the company will continue on a going-concern basis. If the results of the tests cause the actuary doubt if the company can continue as a going concern in the near future, the actuary should qualify his opinion.

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For an actuary to express an unqualified opinion, Section 7 requires tests based on assumptions which contain margins sufficient to cover reasonable future deviations.

If the cash flow generated by the statutory reserves is adequate, Section 8 states that the actuary can express an unqualified opinion. If statutory reserves are not adequate, then the reserves must be increased for the actuary to express an unqualified opinion. If the increase is not made, a qualified opinion should describe the amount of reserves that would be needed to express an unqualified opinion.

Section 9 requires the actuary provide company management with a report describing the assumptions and methods used, the scope of the work and the results of the tests. In particular, the actuary should indicate the various amounts of surplus, if any, required in addition to current reserve amounts for each of the interest paths tested. If the required amount of surplus for the most unfavorable path exceeds the remaining assets, this deficiency should be stated. Likewise, if the results of the tests cause the actuary to question the company's ability to continue as a going concern in the long term or to continue paying the current level of dividends, this should be disclosed.

A new Interpretation 7D has been developed. This interpretation provides an illustrative disclosure of the company's investment policy.

The committee would appreciate members' comments on all aspects of revised Recommendation 7 and its interpretations. In particular, they would like members to comment on these items:

1. Are margins for adverse deviations required on all assumptions? The committee feels that for a given interest rate scenario, reasonable margins for adverse deviation in all other assumptions are also necessary. Additional tests using plausible margins should be made to determine if an allocation of surplus needs to be made. The results would then be disclosed in a report to management.
2. Should overhead expenses be included in the projections? The committee believes that provision for all costs including overhead expenses should be made, but it may be reasonable to assume, for example, that future administration may become more or less efficient when a portion of the costs are allocated to future sales.
3. Who should select interest rate scenarios for testing?

Possibilities include: (a) the individual actuary, (b) the NAIC (selecting a specific set of scenarios at the time valuation interest rates are determined, with the actuary adding additional scenarios as appropriate), (c) a Society Actuarial Research Committee, or (d) an outside expert who would provide an illustrative universe of scenarios.

4. Is the current "good and sufficient" language in the actuarial opinion stronger than needed? The committee feels that language

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along the lines of "appropriate according to presently accepted actuarial standards of practice" would be preferable.

5. Should there be a time horizon, or self-destruct period, for the opinion? Since the actuary will update the opinion annually, and material events subsequent to the opinion date may occur, there is an implication of limited utility for the opinion. The committee feels that certain caveats should be included in the opinion.
6. Should we assure the confidentiality of proprietary information? Proprietary information must be preserved, but some feel that disclosure of all relevant information is critical. The draft calls for maintaining the confidentiality of the information by use of a separate report to management.
7. Should the actuary, management or the NAIC require the Chief Investment Officer to prepare the necessary investment disclosure information for the actuary to rely on? The committee believes that it would be advantageous if the NAIC required it. Interpretation 7D details the information to be included in the disclosure. Additionally, the actuary may obtain representations from other officers within the organization in any other areas as needed. Whether disclosed reliance will shift legal responsibility will depend on the courts and the wording of any legislation.
8. Would inadequacy of reserves under one reasonable path of interest rates cause a need to increase aggregate reserves, or would another criterion be needed? The committee believes that the failure of one reasonable path should cause the actuary to increase reserves, or qualify the opinion.
9. How should assets be allocated between surplus and the various lines of business? The committee believes that a consistent and sound approach be used, considering any segmentation the company already has in place. Any assets can be allocated to surplus, but no asset should be counted twice.
10. What further caveats need to be included in the actuarial opinion? The committee believes that a limitation paragraph should be included in the opinion, in view of the lack of research, the possibility of subsequent events and the general uncertainties of financial projections.
11. Are Accident and Health (A&H) policies included in the opinion? The committee believes that A&H policies should be included in the same fashion as life policies, bearing in mind the company's ability to modify premiums, variability and trends in morbidity experience.

MR. DONALD B. MAIER: When Mr. Turnquist asked me to make the presentation on the New York annuity requirement, I had to do some research into areas which were relatively new to me. This research surfaced important issues in the definition of qualifications of the valuation actuary and other areas of required opinion.

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During the late 1960s and into the 1970s, annuity writers pressed for authority to use higher interest rates for valuation. Interest rates were rising rapidly and the resulting strain from valuation law interest rate restrictions was severe on those companies issuing guaranteed investment contracts (GICs) based on competitive interest guarantees. An ad hoc industry group comprised of the major GIC writers worked with the New York Insurance Department to achieve a modicum of relief from strict adherence to the interest rates set forth in the valuation laws.

Circular Letter 17 of 1980 developed from these efforts. It set out the bases permitted for group annuity active life funds in three appendices; one for contributions received in 1974 and prior, one for contributions received in 1975, and one for contributions received in 1976 and later. In each case, the permissible rate for valuation is defined in terms of the interest rate guaranteed under the contract, the individual company's new money rate for funds received in particular years and, for 1975 and later, an index rate based on the average new money rates of a fairly large number of companies.

While a certain amount of relief from statutory strains resulted, interest rates continued to rise awfully fast. In addition, even where rates based on new money were recognized, the department tended to restrict higher levels. For example, it was restricted by only recognizing one-half of the rate in excess of 10 percent.

During 1981, it became apparent that the 1980 amendments to the standard valuation law would not be adopted in time to be of help for year-end 1981. Even if the new law was adopted, the New York Department was concerned that it did not pay enough attention to the asset side of the situation.

Circular Letter 26 was promulgated in December 1981. For contributions received in 1980 and 1981, it extended the procedures established the prior year. However, this is where the State of New York introduced the concept of an actuarial certification. The letter removes the limit of only one-half the rate in excess of 10 percent providing

"that an actuary who meets the qualifications determined by the Superintendent certifies that he or she has performed satisfactory tests to demonstrate that there is a reasonable matching of assets and liabilities relative to such group annuity contracts. Such tests should include demonstrations that the expected cash flow, including scheduled investment earnings and maturities of the invested assets, is adequate to provide for the guarantees under the contracts and that there is appropriate protection against loss to the company in case of (1) premature prepayments of loans or investments (in case of falling interest rates) and (2) premature withdrawal by the policyholder (in case of rising interest rates)."

Only four such certifications were filed for year-end 1981.

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New York adopted the dynamic valuation law in 1982. Two formulas are given there, one for life insurance and one for certain annuities. The latter is more liberal, permitting higher valuation rates for such contracts. Specifically, New York says that if you want to use the more liberal formula acceptable for annuities, you must

"submit to the superintendent with each annual report reflecting the valuation of such annuities, benefits or contracts based on such formula an opinion, in form satisfactory to the superintendent, of a qualified actuary that the reserves for such annuities, benefits or contract and the assets held by the company in support of such reserves, make good and sufficient provision for the liabilities of the company with respect thereto, such opinion to be accompanied by a memorandum, also in form satisfactory to the superintendent of the qualified actuary describing the calculations made in support of such opinion and the assumptions used in the calculations. If the company fails to submit such opinion or memorandum with respect to the reserves for any annuities, annuity benefits or guaranteed interest contracts, the formula for such annuities, benefits or contracts shall be that for life insurance stated in item (1). For purposes thereof, 'qualified actuary' means any individual who is a member of the American Academy of Actuaries and satisfies the qualification standards set by the superintendent for practice in the valuation of life insurance company annual statement liabilities or who is designated a qualified actuary by the superintendent after written application to the superintendent providing such evidence of such individual's actuarial knowledge and experience in the valuation of such liabilities."

Thus, the State of New York requires two items from the qualified actuary, an opinion and a memorandum. Each is to be in a form satisfactory to the superintendent. As to who is a qualified actuary, we have two options: a member of the Academy who satisfies the qualification standards set by the superintendent, or a person who is designated a qualified actuary by the superintendent after written application.

Meanwhile, a task force of the ACLI's Subcommittee on Actuarial Aspects of Valuation Problems undertook the development of a set of guidelines for actuaries preparing opinions that might include justifying higher interest rates. An illustrative draft was completed in November 1982. An information copy was sent to the New York Insurance Department. The draft intentionally avoided defining strict standards. Instead, it relied on the individual actuary's professionalism and judgment.

Sections of this draft are similar to earlier cited interpretations applicable for interest-sensitive universal life.

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The third section of the draft says that the opinion should

"conform to the standards applicable to all statements of actuarial opinion for life insurance company statutory annual statements as set forth in the American Academy of Actuaries Recommendation 7 and Interpretations 7A, 7B, and 7C."

Some excerpts from Section 6 of "Comments Relating to the Actuary's Conclusion" may be of interest. The opening paragraph of the Section says

"An actuary stating an actuarial opinion that the assets held by the company in support of certain policy and contract reserves make good and sufficient provision for the contractual obligations of the company under such policies and contracts is expressing a personal opinion for which the actuary takes full responsibility."

We heard this same thing from Mr. Tozer. This is an example of the emphasis on professionalism and individual integrity rather than on a more specific list of standards.

The next paragraph says the actuary should evaluate what is plausible, and suggests that ultraconservatism is not called for.

"To hold reserves so great that a company could withstand any conceivable circumstance, no matter how adverse, including paths of future interest rates with wide swings, that while certainly possible, can be considered unlikely or not very plausible, would imply an excessive level of pricing of the insurance products, and good actuarial practice does not encompass such a degree of conservatism."

And finally, to confirm the reason the draft avoids specifying tests, paths of interest rates and other quantifications, the last paragraph states,

"Commonly accepted actuarial standards and sound actuarial principles emerge from the utilization and adaption of concepts described in actuarial literature."

In December 1982, the New York Department sent out Circular Letter 33 on the subject of qualified actuaries. The definition given here expanded on the options set out in the law. A primary route to qualification would include membership in the American Academy of Actuaries. But in place of a standard to be set by the superintendent, the provision specifies that an Academy member must be

"qualified to sign a life insurance company annual statement in accordance with the American Academy of Actuaries qualification standards for actuaries signing such statements."

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A Fellow of the Society of Actuaries was now also specifically qualified. In addition, competence could be demonstrated by achieving

"fellowship in another actuarial body which has similar examinations and professional standards relating to actuarial expertise in life insurance and annuities."

A secondary route to qualification is

"evidence of such individual's actuarial knowledge and experience in the valuation of life insurance company annual statement liabilities."

Whether following the primary or secondary route, the individual must not have been found to have broken certain laws, be guilty of dishonest practices or have demonstrated incompetence or untrustworthiness.

Included with Circular Letter 33 are guidelines concerning the actuarial opinion and memorandum. These were identical to those developed by the ACLI Task Force and submitted to the department for information. These guidelines are characterized as being

"intended to illustrate some considerations, methodology and approaches which will probably provide a 'safe harbor', as acceptable for the December 31, 1982 valuation of these policies and contracts."

The letter goes on to say that alternative methods will be acceptable,

"provided that the qualified actuary is able to demonstrate to the satisfaction of the superintendent that they provide a sound actuarial basis for the actuarial opinion and memorandum."

In June of 1983, the department distributed a set of questions and comments on the Special Actuarial Opinion and Supporting Memorandum along with some general observations and background. The questions attempted to elicit views on the definition of appropriate standards for the opinions. Questions were asked about the number and range of interest rates paths which should be used, the amount of cash flow data to be included and the process used in selecting the assets. The department comments cleared up a few details about the filings.

The observations highlighted the wide variety of reports that were received. About thirty opinions and memorandums were submitted each year. They ranged from as few as six pages to more than fifty. The quality of the submissions also varied considerably.

The department later summarized the responses to the questions and commented on them in the form of summary notes. Again, the responses to the questions were varied and the department notes suggest that, while there was some indication that standards might be desirable, they did not yet choose to specifically restrict the discretion of the actuary.

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It seems clear from this material, that the department would feel more comfortable with a more definite set of standards. Their 1983 notes indicate, however, that it would be desirable to await a few more years experience and then see whether there is any need for minimum standards.

A new annuity bill is now being proposed by a task force of Life Insurance Companies of New York (LICONY) -- New York State's life insurance company association. The primary purpose of the bill is to authorize the issuance of so-called modified guaranteed annuities that permit surrender values to be adjusted for changes in the market values of underlying investments. The bill would also

"amend the annuity valuation law to give the Insurance Department increased authority over reserves calculations for annuities to help ensure the financial soundness of insurers issuing annuities."

In particular, one section would (I'm quoting here from the memo in support of the bill rather than from the bill itself.)

"require that every insurer must submit to the superintendent each year an opinion and memorandum of a qualified actuary, in form and substance satisfactory to the superintendent, that the reserves for all annuities make good and sufficient provision for liabilities, and to authorize the superintendent to issue regulations to prescribe the calculations required to support such opinions. The regulations would also prescribe the calculations to be used, and the guarantee durations and interest rates to be assumed, in computing reserves for contracts for which no opinion and memorandum has been submitted. The current provisions of Section 4214 call for similar actuarial opinions and memoranda, but only for certain annuities. Moreover, the superintendent has authority only over the form (not the substance) of such opinions and memoranda and does not have authority to issue the regulations provided for in the bill."

Thus, the superintendent would have specific authority to promulgate detailed standards for nonopinion situations. Additionally, he would have the general authority to prescribe required calculations for opinions, in contradiction to the thrust of the draft guidelines which call for more reliance on the judgment of the actuary.

This raises important operating issues. It seems understandable that regulators want to have specific authority to impose minimum standards. Apparently, some of the material that the New York Department received was of questionable quality. At the same time, the goal of sufficient provision might be better served if the regulator referred questionable responses to an appropriate committee of the Academy for a ruling. Then an important element is whether or not we have defined minimum standards to enable peer actuaries to judge an opinion. If we have not, we ought to get moving. The Academy Board has recently adopted a report which would establish an Interim Actuarial Standards Board. Hopefully, the appropriate operating committee of this new

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board. Hopefully, the appropriate operating committee of the new board will put a high priority on standards for asset-liability cash flow matching. In the meantime, there may be a major void in the process. Regulators can hardly be blamed for trying to fill it.

MR. DENNIS L. CARR: I have been selected to cover some of the practical problems associated with reaching opinions. In general, opinions require extended-period models of product and investment cash flows, for a given product group or for the entire company. My comments will address difficulties building these models in each of three opinion areas: the New York annuity requirement, the requirement of indexed universal life insurance, and the current recommendations for the statutory opinion on the entire company.

The New York requirement calls for cash flow projections of in-force business only. Future sales can be ignored. This simplifies the modeling process. First, the book value of assets at the valuation date is set equal to the statutory reserves for the particular products being tested. For this, assets must be segmented and assigned to selected products, either annuities or GICs. The requirement describes two potential methods of segmenting assets. In the first, cash flows of assets are matched with the cash flows expected from the product. In the second, assets are chosen on the basis of the investment income allocation used in the annual statement. With either method, the requirement stresses that the actuary attempt to assure that the remaining assets are adequate for the remaining product liabilities of the company -- everything but the annuities and/or GICs.

In projecting specific product cash flows, the state of New York requires consideration of all interest rate guarantees and product provisions affecting cash flow; for example, withdrawal rights on GICs. Therefore, the next step in the modeling process -- selection of the asset and liability model(s) -- is very important. Choices are a single interactive model or a separate model for each component. In an interactive model, each period's product cash flow can be adjusted for the actual investment results to date. This allows the credited interest rate to be adjusted to portfolio performance; in other words, a portfolio related interest crediting strategy. If product and investment cash flows are projected separately, it is very difficult to obtain a portfolio related interest crediting strategy. So, this is a critical initial decision -- build a more complex interactive model or try to get by with separate ones. Another key item with product cash flows is the projection of federal income taxes. This adds an additional layer of complexity to the model.

In projecting the investment cash flows, one must consider the types of assets which will be projected, as well as their durations. The modeling process is simplified if it is possible to limit the types and durations of assets on a given product. In evaluating the investment cash flows, it is necessary to consider any early repayment provisions, including call provisions and mortgage prepayments. The actuary is also required to consider the expected marketability of investments. This could get somewhat difficult with items such as private placement bonds. Again, in projecting the investment cash flows, as with the

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product cash flows, any taxes, expenses, and the MSVR are to be considered.

In these projections, an investment strategy for positive cash flows must be assumed. The requirement states that the variation in rate by duration of the assets should be considered. In other words, a specific assumption as to the yield curve should be made. If negative cash flows appear, a specific borrowing assumption needs to be made, including the rate and duration assumed for borrowing. Also, the projection period should be long enough so that a major portion of the product cash flows run out, and a major portion of the investment cash flows run out for assets which were held at the valuation date. This means that the projection period will be fairly long in most cases -- probably well in excess of ten years. Longer projection periods mean longer running model programs. This has implications for other parts of the model. For example, does the model proceed on a quarterly basis, a monthly basis or an annual basis? If it is necessary to project for thirty years, a monthly model may become impractical.

Once we've built this model, how do we evaluate the results? The requirement states that the cash flows from product and investments may be accumulated or discounted. They can be combined or treated separately. However, the method used for accumulating or discounting must be consistent with the investment strategy in the projection. In other words, discounting or accumulating with a single rate of interest is not appropriate. In practice, I have seen discount rates calculated by putting a one hundred dollar investment into the first model year and seeing what the net answer is at the end of the model period. The discount factor is then set equal to one hundred divided by the accumulated value at the end of the model. In any case, it is important to recognize that this is not a simple task.

Another method of evaluation, described in the requirement, is to accumulate the net cash flow results forward to the end of the model through a reinvestment process. At that point, the market value of assets is measured against the statutory reserve. If the market value of assets exceeds the reserve, the reserve is considered sufficient under that scenario.

Next, let's take a look at the opinion required for interest-indexed universal life plans. This opinion is backed by Academy Recommendation 11. Many of the items described are similar to those in the New York requirement. For example, Recommendation 11 requires that the test apply to in-force business only, avoiding the complication of additional sales. It requires that the model begin with the book value of assets equal to statutory reserves. However, Recommendation 11 does not comment on the segmentation of assets. So, this practical problem is left to the actuary's judgment.

The Academy opinion is also similar to the New York requirement in its description of projecting product cash flows. All policy provisions which might affect cash flow, as well as federal income tax, need to be considered. But Recommendation 11 allows the actuary to rely on the

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investment policy as provided by the Chief Investment Officer. This may simplify the modeling process; however, it necessitates communication with the investment department.

Recommendation 11 has an additional requirement in that the actuary must consider future management actions. One which must be assumed is the policy for setting mortality charges and interest rates on the interest-indexed universal life policy. For example, if interest rates on the indexed universal life plan become noncompetitive, what will the company's interest crediting strategy be? This could become quite important in cash flow projections under certain scenarios. Here, we have the practical problem of getting management to define potential future strategy.

The specifics for projecting investment cash flows are also quite similar to the New York requirement. All the various types and durations of assets must be considered, as well as any prepayment provisions. Additional items in Recommendation 11 include accounting for the impact of any hedging or option programs. Recommendation 11 also seems to have stronger language in that it requires an explicit investment strategy for future positive cash flows. Negative cash flows can be handled either through a borrowing assumption, in which case both the rate and duration of borrowing must be defined, or through the sale of assets. In the case of borrowing, it is suggested that the borrowing rate generally would be greater than the investment rate available on a similar asset. For selling assets, it is suggested that the actuary consider the capital gain or loss associated with such a sale, as well as the federal income tax effect of that sale. The borrowing assumption is much easier to use in building an asset/liability model. However, if substantial amounts of borrowing exist, results need to be carefully reviewed. Distortions, particularly if an aggressive borrowing rate is assumed, can occur with large amounts. Assuming the sale of assets, on the other hand, complicates the model a great deal, including the special federal income tax treatment of capital gains and losses.

In defining scenarios, the Academy guidelines specify the necessity of testing at least one upward and one downward scenario. Recommendation 11 further states that, generally, more than three interest rate patterns should be tested. That is, enough interest rate patterns should be tested to allow the actuary to understand the dynamics of insurance and investment cash flows. Practically speaking, this requirement means that the model must be run several times.

Recommendation 11 describes only one method of evaluating results. However, it does not eliminate other possibilities. The method described is accumulation to the end of the period and comparison at that point between the market value of assets and the statutory reserve. If the market value of assets exceeds the reserve, the reserve is deemed sufficient for that scenario; otherwise, it is deemed not sufficient.

Recommendation 11 also references a management report which would include testing under additional scenarios not used for valuation purposes.

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Both the annuity opinion in New York State and the indexed universal life opinion are actual current requirements. Now let's move to tentative revisions to Recommendation 7 and the current thinking of the American Academy of Actuaries Committee on Life Insurance Financial Reporting.

Recommendation 7 differs from the indexed universal life and New York opinions in two important ways. First, nothing is official yet. Second, it applies to the whole company, not just a product or line of business.

The Academy's draft of Recommendation 7 follows the format of Recommendation 11 on the interest-indexed universal life opinion. In turn, as we have seen, this is consistent in nearly all respects with the New York requirement for annuities. We have discussed the modeling elements for those opinions, and will not repeat them. However, for the entire company opinion, there are several additional considerations. One of the most important is that the asset/liability model becomes much larger. Along with size comes difficulty in validating the model.

In evaluating the asset/liability cash flows for the entire company, it becomes tougher to hide any poor assets a company might be holding. When a specific line of business or product is tested, the allocation of assets can mask some of these.

The Academy does make specific suggestions about required investment data, including a segmentation of assets into four groupings. Group #1 contains policies dependent upon investment earnings -- participating policies or those crediting excess interest. Group #2 includes policies where elements are tied to outside indices, or indexed policies. Group #3 has the remaining policies, those not dependent upon investment earnings. Group #4 is capital and surplus.

The Academy thinking is that the NAIC would require the Chief Investment Officer to provide all of the investment information. So, if the Academy has its way, the company will be required to segment assets into these four groups, at a minimum, in rendering the statutory opinion.

The Academy's latest position states that provision for adverse deviation should be included in all assumptions. This probably will take the form of an explicit provision. Obviously, the assumptions become more complex if each must be split into a best estimate plus an adverse deviation.

Last, but certainly not least, the draft of Recommendation 7 contains a detailed description of the management report required from the actuary. In developing the statutory opinion, the actuary is required to test all reasonable interest rate scenarios. For the management report, all plausible scenarios are to be tested. Practically speaking, it may be difficult to separate these two shades of gray -- reasonable and plausible.

The suggested Academy Recommendation 7 mandates a major effort. The job to fulfill it is a big one. Current thinking is that this opinion

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will be required within the next two or three years. The best practical advice I can give is how to start the modeling process. The following are some recommended steps for setting the wheels in motion:

1. Define your first project clearly. Confusion often occurs because of an unclear definition.
2. Keep your first project simple. Don't try to immediately build the all inclusive model you will use for your total company statutory opinion. A good starting point is an asset/liability matching model for a single product type, preferably a product which is highly susceptible to the risks of interest rate variation.
3. Make sure that top management is behind your project, because of the need for input from various areas of the company.
4. Involve the investment, marketing and actuarial people in your project at its inception. Make it a company-wide project, not just a project of the actuarial department.
5. Document results and problems as they occur. The lessons learned in the simplified situation will be most helpful in defining the specifications for your ultimate model.
6. Use some imagination in management presentations of the results from your first asset/liability study. Even on a simplified basis, the model will involve huge amounts of data. One of the greatest challenges is making the results understandable.

In summary, the best advice I can give you is to begin studying your investment and product cash flows now. You have to take the first step if you hope to complete the marathon.

MR. EDWARD H. FRIEND: I am a pension actuary. I found the deliberations on these opinions considerably interesting. Perhaps my questions are naive, but I am most interested in knowing what is done between valuation dates. Is there an ongoing monitoring process? Also, is the valuation actuary to be concerned about what is happening between valuation dates?

MR. TOZER: I'm not aware of any plans to do anything on an interim basis. The Academy's recommendations and opinions specify an annual basis since reporting requirements are annual. I'm not aware of any group, at the present time, talking about anything other than an annual basis. I would imagine that if it looks like a company has some questionable financial situations, the regulators would monitor them on a more frequent basis. There are situations where they ask for quarterly, or more frequent, reports to make sure things are not getting worse, and hopefully are getting better.

MR. RICHARD S. MILLER: I am a member of the Academy Board and the Committee on Financial Reporting. I would like to comment on two items. Concern was expressed about a possible void between the time the Committee of Life Insurance Financial Reporting Principles issues its

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recommendations, and the time the Standards Board and the Interim Actuarial Standards Board issue theirs.

The Committee on Life Insurance Financial Reporting Principles will continue, and will become a part of any eventual Actuarial Standards Board. That board, as envisioned, would be a coordinating group, a group that would get things done. It will not be one that would set the standards by itself. It will need its own committees and experts to help it along. So, if there is a void, it's a general void that exists today, not one that will develop as we move through this process. In fact, the perceived existing void is what's behind the whole push for the Actuarial Standards Board.

There was a statement by Mr. Carr that I, as a member of the committee, take exception to. He said, "if the Academy has its way." These opinions are not a cause of the Academy, the committee or the board. They are an attempt to make the members aware of what we see going on, and to get their input before new requirements fall upon us with no preparation. The Academy Committee, two and a half years ago -- maybe a little longer -- voted eleven to one to avoid commenting on the question of actuarial responsibility for any part of the assets. A year later, we voted thirteen to four to go ahead and expose Recommendation 11. Times change. Baldwin United is a fact of life, and we've got to recognize that there will be responses to it. The responses might be desperate, but the actuary is going to be involved, whether or not by choice.

One other item I'd like to point out is that the two existing required opinions have a major omission that is addressed in the proposed changes to Recommendation 7. That is, there is currently no requirement for interim testing of the market value of assigned assets against statutory resulting reserves to assure interim solvency of the block of business -- be it the annuity business or the indexed universal life. There is a requirement only that the life of the business be economically sound. Revised Recommendation 7 would require some balance sheet testing of assets versus liabilities in the interim. This is what is referred to as either the short-term or intermediate-term viability of the company. After more than five or six years, it is doubtful that any projections of balance sheets have enough credibility to answer solvency questions.

MR. TOZER: I would like to comment on what Mr. Miller said. When the discussion draft comes out, the committee wishes input from the members. In some of the committee work I've done, we feel we are getting good response when we hear from twelve or fourteen people. Twelve or fourteen people out of a body this size isn't much feedback. I hate to see the profession making decisions based upon comments from a dozen people. So, when you get this material, please give us your feedback.

MR. RALPH H. GOEBEL: This is an editorial comment regarding reasonable and plausible. In this day and age, I'm not sure what's

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reasonable. It seems like almost nothing that's happening is reasonable. I wonder if a lot of the tests should be towards the unreasonable side of the fence.

MR. TURNQUIST: I have a similar question regarding the whole area of plausible and not implausible, or possible but does not have to include implausible. That is, would the patterns of interest rates in the early 1980s followed by the inversions occurring today be considered an implausible scenario? Anyone care to venture an answer?

MR. TOZER: I think that what happened last Saturday is what is plausible on Monday morning. The real problem we are wrestling with is that the definitions of plausible and reasonable very often get defined after the fact. I think the only thing we, as a profession, can do is make our best effort.

MR. MAIER: The Committee on Life Insurance Company Valuation Principles has also been talking about these questions. We imagine that somehow or other probabilities will be required by the standards people. That's going to be a really tough job.

MR. ROBERT J. CALLAHAN: I am with the New York Insurance Department. One of the things we have failed to do to date is apply our requirements to the accredited reinsurers. If there are any accredited reinsurers in this room, please be advised that although they have not submitted an actuarial opinion and memorandum to the State of New York, they may have to do so in the future.

We hope, with pending legislation, to come out with a regulation that all companies writing annuities or guaranteed interest business must submit an actuarial opinion and memorandum. The penalty for not submitting a satisfactory opinion is that they will have to set up higher reserves.

Both John Montgomery, Chief Actuary of the California Insurance Department and I have spent most of our careers in the valuation-nonforfeiture area. While we have been known to disagree, we do agree on one thing, that the statutory valuation laws have been very arbitrary. For many years, Mr. Montgomery worked on the industry side. At the June 1980 NAIC meeting, he indicated that, having become a regulator, he was in a position to do something about statutory valuation. He stated that he began by looking at a gross premium valuation system to replace the present legal reserve approach. Today, we are both looking beyond gross premium valuation to interest-sensitive analysis of cash flows. Regulators like to have objective standards. Yet, we have found that objective standards have at times required redundant reserves which, in turn, have restrained an insurer's ability to write new business. The record shows that I have been a participant in the liberalization of the statutory reserve valuation laws. I am thoroughly convinced that the actuary needs to look at both sides of the ledger sheet, the assets as well as the liabilities, and analyze cash flows. There are situations where the statutory reserves are not adequate; hopefully, those cases will be caught in the analysis required for the actuarial opinion and memorandum.

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In New York, we have four years experience with actuarial opinions and memorandums on annuities and guaranteed interest contracts. Circular Letter 33 (1982) spells out some of the requirements, but it leaves a great deal of judgment to the individual actuary. The opinions and memorandums submitted to date are the best evidence that there is great disparity in the assumptions used.

At the October 1983 Society of Actuaries Annual Meeting at Hollywood, Florida, I made reference to these opinions and memorandums on the topic of deregulation. I noted that many industry actuaries were not willing to accept responsibility. In an earlier session today, there was one individual who felt that the responsibility for an opinion on the solvency of the company should not be placed upon the actuary. Somebody has to accept responsibility, and if the actuarial profession does not, perhaps the accounting profession will. Then an independent CPA would have to advise the Superintendent of Insurance of any condition which may raise questions about the solvency of the company. But how can a CPA draw any conclusions without looking at the reserve liability and, in turn, hire actuaries to help him in forming his opinion?

I was pleased that today's panelists noted that both an individual company actuary and the state regulator may be brought up on charges. Again, there are responsibilities on both sides. As was mentioned, there are a few actuarial opinions and memorandums I think which are highly questionable. But I feel that the guidelines and principles have not been defined well enough at this time. Would the regulator be obliged to take action against the company or against the actuary? Could a court action be brought against the regulator for defamation of character, particularly if the regulator cannot win his case? If a company goes insolvent, could court action be brought against the actuary signing the statement and also against the state regulator who did nothing about the actuarial opinion and memorandum? *Some companies want the memorandum to be confidential. We publicized the option that an insurer could request confidentiality at the time of submission. If no such request is made, the memorandum becomes public record. Out of close to forty memorandums submitted for 1984, only four or five requested confidentiality. If the memorandum is confidential, is the state regulator then free to submit a copy to an actuarial review board of either the American Academy of Actuaries or the Society of Actuaries?*

In 1983, following review of the actuarial opinions and memorandums for the 1982 statements, I published a circular which stated that much more work was needed in the individual SPDA area. We have asked for advice from industry experts, and hopefully we can come up with some better guidelines by the end of the year.

MR. MATTHEW S. EASLEY: I am an enrolled actuary and am involved in defining the function of the valuation actuary. I have about ten years experience in selecting assumptions for certified statements. With the potential for being sued, this is an area of some concern.

What has happened with selection procedures is interesting. A middle standard has developed and everybody has tended toward it. If it was

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completely left to the actuary, reasonable or plausible might end up being defined in that manner. Certainly, if there are no clearcut guidelines on the kinds of rate paths to examine, the pressure on individuals becomes too great. I do think it's desirable to keep the selection of assumptions in the company. However, there is a need to have some minimum standards whether set by the Society, the Academy or the regulators.

Without minimum standards, reserve disparities among companies becomes a problem, as does the area of tax reserves. We have a new tax law which defines tax reserves in terms of the minimum permitted by twenty-six states. What does one do when no minimum is defined? Where there is a minimum defined reserve, one can go a little bit beyond if the minimum is not adequate in a particular situation. At least, one has something to send to the federal government.

I am not sure if there is an objective standard -- a pure stochastic model for interest rates. But eventually, we must get to the point where we can say we have a collective best guess of what is reasonable and plausible. Having to make an isolated guess on something that's essentially unknowable is not fair to the individuals being forced to make that guess. Some kind of consensus as to what is acceptable is needed so an individual isn't left hanging by himself.

MR. TURNQUIST: Relative to that last point, the life insurance industry in the last several years has not had a single set of assumptions that can be used in either valuation or testing of gross premiums from interest-sensitive products. It has been necessary to use sensitivity testing under various reasonable or plausible alternatives. One cannot rely on the average of all the possible assumptions as this may yield something completely different than the mid-range of some of the alternative scenarios.

MR. EDWARD S. SILINS: I'd like to describe the conversations within the Academy's Financial Reporting Committee on plausible versus reasonable. We're all quite aware of the fact that what is plausible to one actuary won't be to another. The future interest rate for one year T-bills isn't dependent on a particular company, but different companies will invest different quality assets for different time durations. Therefore, there are various alternatives for selecting interest rate scenarios and we lean towards having a prescribed set (plausible set), perhaps issued by the NAIC but allowing the actuary to add as many different other scenarios as deemed necessary for the sensitivities involved.

