

RECORD OF SOCIETY OF ACTUARIES 1993 VOL. 19 NO. 2

ACTUARIAL STANDARDS FOR PRODUCT ACTUARIES

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- What is required? Actuarial Standards Board (ASB) Guideline Review
- What should be included in reports?
- How to present to management

MR. BRADLEY E. BARKS: I am the chief product actuary for LifeUSA Insurance Company. Esther Milnes will be covering Actuarial Standard of Practice (ASP) 12 on Risk Classification and ASP 15, "Dividend Determination and Illustrations for Participating Life Insurance and Annuities." Esther is a vice president and associate actuary with Prudential and an FSA. She is currently responsible for product development and pricing of individual life and annuity products. Her past experience includes risk analysis studies and dividend determination.

Craig Likkell will cover ASP 1, "Determination and Redetermination of Nonguaranteed Elements." ASP 1 is closely related to the dividend standard, so we will discuss it after the dividend standard. Craig is a consultant with the Seattle office of Milliman & Robertson and is an FSA. Prior to 1991, he worked as chief actuary of a stock life company group in Seattle. His past experience varies from pricing to experience studies, and he has been involved in valuation and financial reporting.

Jack Taylor will cover ASP 14, "When to do Cash-Flow Testing" and ASP 7, "Performing Cash-Flow Testing." Jack is executive vice president for London Pacific Life & Annuity and is an FSA. He is responsible for a range of duties from pricing to financial reporting. I've also asked Jack to offer some comments from a small company perspective.

Finally, Esther will return and offer some general comments about how to comply and how management can get value out of complying with these standards.

QUALIFICATION STANDARDS

We will have some time for questions at the end. Before we get started, I want to make a couple of general comments about the qualification standards. They apply to all these actuarial standards, so I thought that it would be good to discuss them first.

I think we are all familiar with the specific qualification standards for NAIC annual statement opinions. However, there also are general qualification standards that apply to most Actuarial Standards of Practice. These requirements are found in a booklet titled "Qualification Standards for Public Statements of Actuarial Opinion" in the Actuarial Standards Board (ASB) literature. It is a white booklet just in case you're wondering what it looked like. It is published by the American Academy of Actuaries. The qualification standards start on page two and include basic education, continuing education, experience requirements, acknowledgment of qualification in reporting, and substantiating compliance. I invite you to study these on your own.

However, I will highlight two of the areas. First, any report you prepare should include a statement similar to the following: "I, Brad Barks, am Chief Product Actuary of LifeUSA Insurance Company and am a member of the Academy of Actuaries and meet its qualification standards for the determination of nonguaranteed elements for life insurance products."

Second, you must be prepared to provide evidence of compliance with the Academy's qualification standard requirements. My understanding is that those tend to be about 12 hours per year. There are general qualification standards and general education standards. These are not the same as the specific standards for actuarial opinions for NAIC purposes, but we are subject to these standards also.

So, not only is it necessary as an actuary to meet the standards of practice, but is also necessary in meeting the standard of practice to be a "qualified" actuary. At this point, I will turn it over to Esther.

MS. ESTHER H. MILNES: Brad asked me to answer a question before I begin my talk. We're trying to answer some questions about the applicability of these actuarial standards for product actuaries. Before we get to that, Brad's question was, "Why do we have these actuarial standards at all?"

NEED FOR STANDARDS

The Academy addresses the area of quality of work through these standards. They're promulgated to assure a certain level of quality in the work done by actuarial professionals. It's part of self regulation of the profession and grows out of our professional duty to serve the public interest. Now let's take a look at some of these standards.

ACTUARIAL STANDARD OF PRACTICE NUMBER 12

ASP 12 concerning risk classification is a relatively new one. It was adopted in October 1989, and became effective in January 1990. ASP 12 provides guidelines for designing, using and updating risk classification systems. Risk classification is a means of lining up pricing with cost. We group risks with similar characteristics so that differences in cost may be recognized.

Classification subsidies happen if the price that we charge fails to reflect differences in costs among different risk classes. That invites antiselection and can lead to financial loss. The importance of considering your risk classification system as you develop products or enhance older products is very clear. A sound risk classification system should reflect the cost and experience differences based on relevant risk characteristics. Product actuaries need to show the relationship between risk characteristics and cost by showing that experience is different when the different risk characteristics are present.

A risk classification system needs to be applied objectively and consistently. Objective means it's based on determinable facts. For example, rather than base classification on whether a person is blind or not, it would be better to distinguish based on whether a person's vision is corrected to no more than 20/100.

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A risk classification system should be cost effective, practical, and responsive to change. We have to balance precision and expense. The standard provides flexibility for that balancing.

A risk classification system should minimize antiselection. The product actuary needs to consider things like: How broad is the class that is being defined? and What does industry practice normally define for risk classification? The standard requires us to look at all these aspects of risk classification as we develop products.

What does the actuary have to do? First, the actuary should disclose antiselection potential in a report. The report should discuss the effects of departing from usual industry practice. The actuary also needs to comply with any regulatory constraints that may limit the ability to have a sound risk classification system. The product actuary needs to examine new products for effects on existing risk classification systems. The report should explain any differences between what we have done to classify risks from what the standard lays out as sound practice.

ACTUARIAL STANDARD OF PRACTICE NUMBER 15

Lets go on to ASP 15. This standard on dividend determination applies to both illustrated dividends and current payable dividends. While product actuaries may be more interested in illustrations, they should not overlook the fact that this standard applies to illustrations as well as dividends paid today. The golden rule of dividend determination which is included in ASP 15 is the contribution principle: "Aggregate divisible surplus should be distributed among policies, in the same proportion as the policies are considered to have contributed to divisible surplus."

METHODS

Several methods of accomplishing this are commonly used. It isn't the dividend method itself which determines whether you've applied the contribution principle. Rather it's the method along with the policy and experience factors that are involved, that enables you to decide whether you have applied the contribution principle.

ASP 15 also recognizes the practical constraints on determining dividends. For example, it isn't practical to calculate the finest degree of equity in a dividend scale. The cost of that calculation might actually exceed the amount of differential that you're making. Similarly, if you have a very small class of policies, you might group them with another class rather than calculate a separate dividend scale for them. Or the cost of actually making a dividend scale change in relationship to the size of the change you were contemplating might make you decide it would not be worthwhile to revise the scale.

POLICY AND EXPERIENCE FACTORS

The standard also gives guidance on policy factors. Policy factors are inherent in the structure of a policy, such as cash values or gross premiums. Policy factors used may be actual or approximate.

ASP 15 provides guidance on experience factors. Experience factors are supposed to be based on actual experience, or experience as similar to actual as possible. It is permissible to project experience. The standard says that the projections of experience should be projected forward to the same point in time and that experience

should be projected only for a short period. For example, it would be appropriate to project experience for a period as long as you might expect the next dividend scale to stay in effect. The experience assumptions must be consistent for in-force and illustrated dividends.

Differences between dividend classes must be justifiable and based on uniform criteria for placement of a policy within a class. The standard specifically says that it is not appropriate to base a class on whether or not a claim has occurred. For example, it would be inappropriate to move a policy with an accelerated death benefit provision to a new dividend class simply because the benefit had been exercised.

Many different kinds of experience factors go into a dividend calculation. An experience factor class is group of policies for which the same value of a factor is used. For example, all the policies that have the same investment income rate in their dividend constitute an investment experience factor class. Let me comment on two of these items: investment income and expenses.

Investment income factors usually recognize policy loans in some way. The standard specifically mentions both portfolio average and investment generation approaches to allocating investment income. It says that those are appropriate.

The standard goes into quite a bit of detail about what is permissible and what is not with respect to expense factors. Direct expenses should be charged to those policies that generate the expenses. Indirect expenses should be allocated to the policies based on sound principles of expense analysis. ASP 15 does not specify what these sound principles are. Different classes should be treated consistently with respect to expenses. A minimum test of consistency laid out in the standard is that the total charge to a class should be justifiable and based on sound principles of expense analysis.

ILLUSTRATE DIVIDENDS

Let's consider illustrated dividends, and how this standard applies to them. The standard says that illustrated dividends must reflect the current financial results of the company. They must be equitable and justifiable in relationship to paid dividends. The dividends that are illustrated must be supportable in the near future. The standard directs the actuary to consider recommending a cut in dividends if the dividends are not supportable in the near future.

ACTUARIAL REPORT

What does the actuary have to do for ASP 15? Again, an actuarial report is required. At The Prudential, this report is very large. It is prepared with a lot of care each year and is a very important document to us. In the report we describe the process that we use for determining dividends. There's an explanation of how policy factors and experience factors are reflected along with descriptions of all the formulations that are used to calculate the dividends. There are many disclosures. The standard provides considerable detail about what needs to be disclosed and I encourage you to read it carefully. Besides the specific disclosures that are required, the standard also requires the actuary to describe any changes in method or factor classes that have occurred since the prior report.

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MR. CRAIG F. LIKKE: As Brad mentioned, my presentation today will focus on the treatment of nonguaranteed elements, life insurance and annuities. I will address four particular topics on this subject: ASP 1 on nonguaranteed elements, an actuarial report sample outline, relationship to exhibit 8 interrogatories, and other observations.

ACTUARIAL STANDARD OF PRACTICE NO. 1 – BACKGROUND

My objectives today are really twofold. One is to provide a good general review of where we currently stand with respect to the treatment of nonguaranteed elements. The second and perhaps more important objective is to provide you with some bits of useful information or insight on this subject that you can put to practical use.

One important caveat is that quite a bit of information has been said or written before by others on this subject: the panel discussion in the 1987 *Record* of the Society of Actuaries (Vol. 13, No. 4B), and two open forums in the 1988 *Record* (Vol. 14, No. 3, 4A). Also, in the 1991 *Record* (Vol. 17, No. 2), there is a good overview of the more general topic of standards of practice and the ASB.

ASP 1 is formally titled, "The Redetermination (or Determination) of Nonguaranteed Charges and/or Benefits for Life Insurance and Annuity Contracts." As the lengthy name indicates, the standard applies to all individual life and annuity contracts with nonguaranteed elements. This probably covers the majority of individual plans sold today, including universal life, interest-sensitive whole life, indeterminate premium products, and almost all forms of deferred annuities, except pure variable annuities. The standard defines redetermination to include initial determination, so I will do the same while speaking today.

In order to fully understand the content of ASP 1, we should first review the history of the standard. In the fall of 1980, the SOA Dividend Philosophy Committee changed its name to the Committee on Theory of Dividends and Other Nonguaranteed Elements in Life Insurance and Annuities. Their stated purpose was to study the underlying actuarial theory of dividends and nonguaranteed elements, and also to develop reports on their findings and recommendations.

In August 1982 this committee released two exposure drafts. One concerned dividends, and ultimately evolved into ASP 15, which you've already heard about. The second exposure draft was titled "Recommendations Concerning Actuarial Principles and Practices in Connection with Individual Policies and Contracts Containing Nonguaranteed Charges and/or Benefits." They liked long titles. This 1982 exposure draft contained 18 recommendations. Most of these recommendations dealt with the content of the required actuarial report supporting the actuary's advice on nonguaranteed elements. In at least two instances, however, the exposure draft described principles affecting the design and pricing of non-guaranteed elements.

The first was the Continuity Principle, which the 1982 exposure draft defined in Section 2:

The basic principle of nonguaranteed charge and benefit determination is that any change in the levels of nonguaranteed charges or benefits after issue should be based on changes in the underlying experience. This is said to be the Continuity Principle. . . . The use of the

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Continuity Principle in the determination and redetermination of non-guaranteed elements is a generally accepted practice.

My reading is that this would prohibit the use of, for example, nonlevel spread objectives.

In Section 12, the 1982 exposure draft also stated that the provision for profit and risk should not be increased in a redetermination decision, unless there is a clear increase in risk.

As you know by now, these particular recommendations proved to be controversial, and ran into significant opposition by the industry. As a result, the committee eliminated these principles when they published their revised report in 1985. The Academy Subcommittee on Dividends and Other Nonguaranteed Elements used this report to develop recommendations on this subject for the Interim Actuarial Standards Board in 1986. The ASB ultimately adopted these recommendations in ASP 1.

The current focus of ASP 1 is on documentation rather than policy. Some regulators and other members of our profession are unhappy with the lack of any requirement for equity among policyholders with respect to nonguaranteed elements. In some ways this concern is similar to a desire to return to the principles in the 1982 exposure draft. Partly in response to these concerns, the ASB held a public hearing on March 3, 1993 to collect input on this subject. The first question on their agenda was, Should the periodic redetermination of nonguaranteed elements be subject to the same or similar requirements regarding equity as are applied to policyholder dividends? After my presentation, Brad Barks will give us a brief summary of the activity that took place at that hearing.

The reason I spent time on the background of ASP 1 is because some of the ideas coming to the ASB are really a throwback to those original proposals. In fact, not to steal Brad's thunder, but there was a very specific proposal at the hearing to adopt the Contribution Principle as a part of the standard for nonguaranteed elements. Obviously, we will all want to monitor the developments in this area.

REQUIREMENTS

Getting back to the current content of ASP 1, the basic requirement for the actuary to develop his or her advice on nonguaranteed elements is the company's redetermination policy. The standard states that the redetermination policy includes solvency, marketing and profit objectives. I am not sure how to distinguish between solvency and profit objectives, although I do agree that whatever you call it, this key objective should be specified in the policy. Marketing objectives might include competitive position and/or market share targets.

With respect to gains and losses, the standard states that recovery of past losses or distribution of past gains also is a possible element of a company's policy. This again contrasts with the 1982 exposure draft which stated in Section 13, "a company should not seek to recover past losses in redetermining charges and benefits."

In addition, the standard clearly states in Section 4.2 that the redetermination policy and key objectives associated with that policy are management responsibilities. This

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policy then provides the framework for actuarial advice on nonguaranteed elements. ASP 1 also specifies in Section 5.1 that if the company has an incomplete policy, the actuary should fill in the gaps and describe what additional assumptions were necessary to develop his or her advice.

With the wide latitude allowed by the standard for setting redetermination policy, several policy elements (perhaps better described in some cases as loopholes) have come into common use. First and foremost, almost all companies state that their redetermination of nonguaranteed elements, particularly excess interest, is done at the sole discretion of the company. I suppose this serves as kind of a generalized caveat or escape clause. They also commonly state that the redetermination is influenced by competition, but it's usually not defined exactly how this influence works. They frequently include in some way the concept that they make redeterminations on a prospective basis, considering future expectations with respect to interest spread, mortality, etc. This concept often implies the practice of nonrecovery of past losses. Finally, we often find an indication of relationship or dependence upon profit objectives, although public expressions of redetermination policy tend not to quote any particular profit objective.

DEFINITIONS AND TERMINOLOGY

ASP 1 defines some key concepts and terminology used in the development and administration of nonguaranteed elements. The actuary needs to consider the company's special operating practices in developing advice on nonguaranteed elements. Such practices include investment, underwriting, claims, and other administrative practices. Contract classes, contract factors and experience factors are other important concepts described in the standard. These are very similar to the terminology in ASP 15, but with the key difference being the absence of any Continuity or Contribution Principle.

ACTUARIAL REPORT

Section 6 of ASP 1 gets to the point of what the actuary must do to comply with the standard, and that is writing an actuarial report which documents his or her advice. The report should include a description of the company's redetermination policy, the special operating practices, the contract classes, the contract factors, the experience factors, and the processes and methods used in the redetermination. The methods would include any modeling or averaging used to facilitate the calculations. The report also should describe the recommendation of current charges for benefits, the degree of conformity with the company's policy, any sensitivity testing results, any regulatory requirements, and any interpretations of ambiguous areas of regulation which may be relevant. Finally, any deviation from the standard is required to be disclosed and justified in the report. My observation is that as long as you document what you do, it's awfully difficult to come up with a deviation from the standard. One other important point is that the standard clearly states that for frequent updates of nonguaranteed elements, such as a weekly or monthly change in interest rates, an updated actuarial report is not necessary if the redetermination follows an established, documented procedure and the actuary's formal advice is not required.

With these specifications in mind, I thought it might be helpful to provide an outline of a sample actuarial report used in practice for the initial actuarial advice on a new product. An important caveat is that one size does not necessarily fit all. The ASB,

in fact, had concerns about publishing a standardized report. The statement in the preface to ASP 1 reads: "Because the needs of actuaries can vary so significantly by product, circumstances, and clients, the subcommittee decided that a model report might be misleading." In spite of this good advice, I decided to go ahead and provide the following outline:

- I. PRODUCT DESCRIPTION
 - General Features and Benefits
 - Key Rates Limits and Options
 - Special Operating Practices
 - Filing and Compliance Issues
- II. MARKETABILITY
 - Target Market
 - Appeal
 - Volume and Timing
- III. PRICING ASSUMPTIONS
 - Contract Factors and Classes
 - Experience Factors
 - Financial Reporting Elements
- IV. INVESTMENT POLICY
 - Targeted Mix of Assets
 - Quality and Maturity Profiles
 - Segmentation/Allocation Issues
- V. REDETERMINATION METHOD
 - Company Redetermination Policy
 - Product-Specific Procedure
 - Compliance Issues
- VI. PRODUCT PROFITABILITY
 - Base Case Results – Margin, ROI, ROE
 - Sensitivity Testing Results and Interpretation
 - Capital Requirements
 - Business Plan Projections
- VII. INTEREST RATE RISK
 - Cash-Flow Testing
 - Option Pricing Analysis
 - Other Risk Analysis

You should keep in mind that this format was developed by a few of us at my former company in response not only to the standards, but also to the need for clear management communication during a period of fairly high product development activity. I also would describe the context as that of a medium-sized company with about 250 home office employees.

Section I of our report format is the basic product description. It includes the general features and benefits, as well as the other topics shown. This section is written in an executive summary style with brief descriptions of the basics of the plan, such as premium structure, death benefits, minimum guarantees, commissions, surrender charges, and riders available. The special operating practices would include underwriting, reinsurance, and any conversion specifications. Filing and compliance issues would include any SEC or IRS definition of life insurance issues, as well as any

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unique state requirements. We tried to focus on the key elements that an executive reader would be interested in, and we tried to keep this description to about two pages.

Section II of our report format includes descriptions of the target market, the customer appeal and the expected volume and timing. The target market is briefly described in terms of the distribution system, age ranges expected, economic status of the buyers and the particular insurance or savings needs which we designed the product to fill. The customer appeal is a short summary of the key features that are unique, competitive, or saleable with the product. The volume and timing represent the marketing departments commitment to the product. This may relate to the results of macro pricing, if that process is used by your company. You might also include a description of other marketing objectives and key competitors.

Section III is our detailed description of pricing assumptions, including the relevant contract factors, contract classes, experience factors, and financial reporting elements. I used the terminology of ASP 1, but our reports did not use the terms contract factors or experience factors. We used specific, familiar subheadings such as mortality rates, lapse rates, premium rates, etc. The financial reporting elements specify the key assumptions relating to the statutory, GAAP and/or tax reporting bases, such as reserves, target surplus, or deferred acquisition costs.

Section IV is our description of investment policy for asset accumulation products. The mix of assets covers not only the mix of bonds, mortgages, stock, real estate, etc., but also any liquidity or diversification requirements. The segmentation/allocation issues include the description of any involvement with separate accounts, segmentation of the general account or investment-year method allocation structure.

Section V is a description of the redetermination method for products with significant nonguaranteed elements. The product-specific procedure should be very specific, as opposed to the redetermination policy statement, which tends to be very general. The procedure should really specify the who, what, when, where and how of nonguaranteed element redetermination. It should include any relevant formulas or key considerations, or even if-then scenario examples. Compliance issues include any unique state requirements or explicit approvals needed in the redetermination process. It might also include any IRC (internal revenue code) Section 7702 or 7702A related procedures.

Two suggestions in this area come to mind. First, designate someone in your company to keep up-to-date with the NAIC Life and Health Actuarial Task Force projects and proposals. A number of projects on their agenda might ultimately affect pricing and reserving for policies with nonguaranteed elements. Second, use the Academy's new *Life and Health Valuation Law Manual* to review the summaries of each state's valuation related laws and regulations.

Section VI is a summary of the expected profitability of the product. The first two points are probably self explanatory. The capital requirements refer to our per unit statistics like surplus strain and break-even year. Business plan projections which could again relate to macro pricing, illustrate the overall expected cash flow, capital flow, and return-on-equity pattern of the business.

Last, Section VII, is sometimes included and sometimes may be a separate report on the subject of interest rate risk. For appropriate accumulation-type products, this section would include cash-flow testing results, or option-pricing analysis, or even other risk analysis, such as a special focus on default risk. This section completes the actuarial report outline that we used.

As I indicated earlier, my associates and I used this format for a variety of life and annuity products at my former company, and it was generally well received by management. The reports typically ended up being about 10-25 pages long, depending on the product, and were distributed to all officers, managers, and key professional staff.

RELATIONSHIP TO EXHIBIT 8 INTERROGATORIES

Exhibit 8 interrogatories in the annual statement are closely related to ASP 1 and the administration of nonguaranteed elements. These have been in place since 1987 and were developed in conjunction with ASP 1, for the general purpose of requiring companies to disclose publicly the principles, policies, and practices used in their redetermination. The interrogatories include requirements to describe the company policy, the methods and procedures, the answers to eight questions, and an actuarial opinion on the determination of nonguaranteed elements.

The first requirement is to "define the company's policy to be used in the process with particular reference to the degree of discretion reserved for the company, together with the general methods and procedures which are expected to be used." This direction from the annual statement instructions mentions three components: the policy, the method and the procedures. My observation is that most companies don't really distinguish between these three, although I feel methods and procedures are kind of synonymous. However, the annual statement response should be consistent with the expression of policy, methods and procedures in the actuarial reports on nonguaranteed elements.

The actuarial opinion requires a statement that the nonguaranteed elements have been determined in accordance with generally accepted actuarial principles and practices. In light of ASP 1 this means only that the method has been well-documented in an actuarial report. Besides the obvious relationship to ASP 1, the person signing this opinion and writing the related actuarial reports should coordinate his or her work with the valuation actuary signing the appointed actuary opinion. I recognize that this may often be the same person. If not, however, the benefits of such coordination might include improved efficiency of work, more consistency in assumptions, and possibly even a synergy that will improve your understanding and awareness of overall risk and profitability.

At Milliman & Robertson we recently reviewed 14 different interrogatory responses as part of a survey of companies on their single premium deferred annuity (SPDA) crediting strategies and management practices. We found some similarities and some differences in their handling of these disclosures. The similarities included the common elements of a redetermination policy which I described earlier. In particular, the companies virtually all stated that they reserve complete discretion in the redetermination of the credited interest rates on their SPDAs. They generally included a description of the process in terms of what committee made these decisions and how

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often. They were consistently vague with respect to the actual procedure and criteria or formula used to determine SPDA renewal rates.

In phone interviews we determined that some of the companies had a nonlevel spread objective. We also found that the companies had a renewal practice of following the new money rates down faster than they follow them up. These kinds of details were generally not disclosed in their annual statements. The differences in the range of disclosure were prominent in some cases. One company simply stated that renewal crediting rates were based on product and market conditions at the time. Others went into a lengthy description of some of the key considerations.

The regulators view of this disclosure and the interrogatories is that generally they are not accomplishing their original intent of public disclosure. I spoke to a couple of regulators this past week, and they generally feel quite strongly that they are not getting much disclosure due to the lack of clarity and specificity in the response to these interrogatories. They do like the fact that it's a form of self-regulation to simply force companies to put things in writing. They also believe that it's important to get companies and actuaries to think more about treating policyholders more equitably in this process. One regulator expressed the thought that we need new, stronger standards and interrogatories, or we should simply drop them.

OTHER OBSERVATIONS

I have just a few miscellaneous other observations. These observations are really in the form of questions. As product or pricing actuaries, have you considered some of the changes in our industry in terms of the impact on your pricing and redetermination of nonguaranteed elements? Have you considered the impact of risk-based capital on pricing and target surplus? Have you considered the impact of the asset valuation reserve and the interest maintenance reserve on the timing of recognition of investment income and spread?

Federal income tax changes are in the wind again. We all understood the impact of the deferred acquisition cost (DAC) tax, but in areas such as the alternative minimum tax and the differential earning rate on mutual companies we perhaps have not done as well. Now we have on the horizon higher corporate tax rates. We should probably be thinking and planning for their impact on our redetermination of nonguaranteed elements.

Finally, I will simply mention FAS 97 GAAP analysis as another area where an accurate, consistent reflection of nonguaranteed elements is necessary. If you are using the gross profits method for DAC amortization, remember to consider the sensitivities of this method to changes in nonguaranteed elements and the required unlocking of assumptions.

At this point Brad Barks will return to summarize some of the activity at the March 1993, ASB public hearing on determination and illustration of nonguaranteed elements and policyholder dividends.

ASB ACTIVITY

MR. BARKS: I have some quick comments. Keep in mind that a lot of it is my interpretation although I did talk to one of the members of the ASB about where the

board is headed. The ASB considered two subjects: first, equity with regards to nonguaranteed elements, and second, whether there needs to be from the ASB a standard of practice relating to illustrations and disclosures on policies.

There was an underlying question as to whether abuses existed and whether the standards of the practice solved the problems of abuse. If you want to get detailed information on the meeting, transcripts are available. It went on for six hours and there were some comments that were read directly into the records, so there is a lot of material there. You can get the transcript from the Academy.

To summarize the comments at that meeting, the opinions were varied. On one end of the spectrum, as Craig mentioned, was the position that nonguaranteed elements should be treated the same as dividends, and that the contribution principle should apply to nonguaranteed elements. At the other end of the spectrum was the opinion that there should be no restrictions on nonguaranteed elements.

Several commentators noted general abuses in illustrations. One commentator suggested that applying equity principle to nonguarantee elements would be too costly for small companies. Some suggested that a standard of practice should follow any NAIC regulations. Others suggested that the ASB needs to take a lead in these areas. The ASB met in April to discuss these comments. My understanding of their conclusions were that, yes, there are abuses in illustrations and they need to be addressed and that questions in the Exhibit 8 interrogatories with regard to illustrations are probably out of date and need to be revised. They also concluded that the NAIC is interested in doing something with regard to equity and nonguaranteed elements.

Finally, they concluded that there needs to be coordination between the NAIC and the ASB. If there isn't coordination a danger exists that one of the following two things can happen. Either the NAIC will adopt a law that the ASB doesn't agree with so we end up with a compliance guideline rather than a standard, or the ASB will promulgate a standard that the NAIC doesn't agree with and we end up with a standard that nobody follows. The ASB has recognized that these problems exists and is going to try to coordinate their efforts through the Academy Life Practice Council, which includes members from the various different groups.

If you're interested in the activities in these areas, there are a couple of things you should probably follow. NAIC activity on illustrations and disclosures should produce something before year-end. There are numerous advisory groups that have submitted comments to the NAIC, and something will probably be happening there. If something does happen, the ASB may get involved with a standard.

Also, the draft of the new Standard Nonforfeiture Law for Life Insurance has references to equity in it. There is a strong interest on the regulators part to introduce equity into that law. My guess is that if this happens, there could be impetus to modify ASB 1.

MR. JACK W. H. TAYLOR: It is interesting to hear about the current discussions of indeterminate premium whole life. When I was with Philadelphia Life in the mid-1970s, we introduced that product. At that time, regulatory direction was to prohibit a product which did not provide for participating in a company's surplus from

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reflecting prior losses in future premiums. In the 1980s the industry went through discussions of whether or not indeterminate and participating products should comply with the same rules of equity in determination of nonguaranteed elements with the result that there was no change in direction. Now once again the issue is being raised.

I'm here to talk about ASP 14 and ASP 7, which are the when and how of cash flow testing. Before I get started, I would like to give you some background on London Pacific Life & Annuity Company to give insight into my perspective.

London Pacific was formed four years ago, when Govett & Company, a international investment management firm, purchased a shell company with 41 state licenses. Govett itself is not a very large firm staffwise, but it does have \$6 billion in assets under management. It has 170 employees worldwide. London Pacific is a young and small company. When we started four years ago, there were four of us. The company now has 70 employees, over \$650 million in reserves, and in 1992 processed \$268 million in premiums. The actuarial staff includes, in addition to myself, a valuation actuary, who is the appointed actuary, and one associate. For a small company, it has a fairly heavy actuarial staff, which reflects the fact that our product line is investment-oriented utilizing our parent's investment-management expertise.

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ASP 14 raises a question, To do or not to do, that is the question? Is it better to be valiant, read risky, and reduce the cost of product development, or is it better to be safe and make sure all the risks are analyzed and to see that a masterful memo showing that the pricing actuary has followed all the steps suggested by the ASP has been provided? That is obviously an extreme description of the end point of a continuum line on this issue. The answer to the question as reflected in these standards is, basically, it depends on many things. One, for example, is the company. Once again, there is a continuum here.

At one end is a company that I would like to call MicroLife. You as the pricing actuary are presented with this issue. On Wednesday at 10:00 A.M., your chief marketing officer enters your office and says, "You know Jones out in Alaska? He's our big producer in Anchorage. He has a great universal life idea. I'd like you to tell me if it's something we can do. I need to know by Monday, so I can get back to him." Obviously your time is short. Your staff is about as short as the time you have. The sales may be as limited.

On the other extreme, we have what I call MacroLife where you may be operating in a profit center area as the pricing actuary. Your profit center chief enters your office and says, "I want someone from your unit on the product X task force. The first meeting will be two weeks from today. This product is really going to be big and I want you to be prepared to move." Here you have a little more time to prepare. Staff is no doubt available, and sales maybe as macro as MacroLife.

Another factor upon which the decision to do cash-flow testing depends is the product. Once again, we have a continuum line. The product can range from a one-year term life or health product (which is nonrenewable, and nonconvertible where

cash-flow testing is clearly not required) to a single premium deferred annuity product, where there is no doubt cash-flow testing is required.

How does the standard of practice address these issues and the wide range of products, companies and sales volumes? What guidance does it provide on whether we should or whether we shouldn't? In the standard of practice, there's a little section where it notes, needs for cash-flow testing. It says, cash-flow testing is "particularly important where management actions are dependent upon the comparison of income and outgo in a given period." Well, I've been operating in this environment for some 25 years, and I've yet to experience a situation where that wasn't the case. Clearly the ASB was telling us it should be done in almost every situation.

Then the standard even adds to the emphasis. When "cash flows" are very sensitive to changes in economic conditions and investment scenarios, mortality rates, morbidity rates, premium payment patterns, lapse rates, and expense inflation the need for cash-flow testing may be readily apparent. That's almost every experience factor. It's hard to picture a product that isn't very sensitive to changes in any of those factors. Once again, this is a very broad statement that cash-flow testing should be performed in pricing a product.

NEED FOR CASH-FLOW TESTING

Why do we need to go through cash-flow testing? Clearly there's an opportunity to improve our understanding of the risks. The projection of cash-flows under multiple scenarios will provide us with objective information as to the sensitivity of a product to various variables. Now I believe we can all think of quite a few examples. Here are several to start us in our thought process. The analysis of the impact of various asset mixes with a goal of limiting the impact of the investment rate of return risk on deferred annuities is something we can gain from cash-flow testing. The running of scenarios utilizing various options as to investment mix, such as bonds with and without call provisions, and their different investment returns provides input into the analysis of the risk and return coefficient. Almost everything we do in this area has two sides to the equation. One of which is, reduce the risk, and one of which is reduce reported earnings.

Another example would be the analysis of various maturity schedules. Cash-flow testing will assist us to properly understand the risk of durational mismatches. The difficulty lies in weighing the reduction in mismatch risk against the reduction in reported earnings.

The analysis of CMOs, if you are able to model them, will help you to understand whether they will help or hinder economic and/or reported earnings. CMOs are an investment for which actuaries are just now getting some tools to help in understanding their impact. Many companies have invested in these securities before they had the ability to analyze their economic impact.

Another area that your investment management team, in its role in the pricing function, will want to consider is how will the use of derivatives help in managing the investment rate of return risk. Actuaries will need to provide input, and cash-flow testing will be an important tool. At the moment most modeling systems do not provide sophisticated data for analysis for derivatives.

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The above investment issues are very straightforward cash-flow situations. There are other areas, such as, the analysis of various interest crediting strategies. The decision theory algorithms currently in use are primarily based on intuition. Historic data is limited or not existent. The algorithms support our feeling that the higher the credited rate of interest, the lower lapses will be and vice versa. We might not know, which results in better financial results. Cash-flow testing will help in our understanding of the sensitivity of profit levels to combinations of algorithms, crediting strategies and investment strategies.

There are other areas that actuaries are just starting to improve their understanding in for which cash-flow testing will be an important tool. I feel as a profession we are just starting to understand the strengths and weaknesses of the cash-flow testing methodologies available to us. Sometimes I wonder if we are trying to build the ultimate model that answers all questions, for all people, in all situations for micro as well as macro trends. ASP 7 in fact states, "No model can fully take into account all the uncertainties and interdependencies affecting an insurer's future cash-flows."

The indirect effect of the various economic scenarios can be important. The issue of the impact on mortality of higher lapse rates as a result of economic conditions has been considered by actuaries in pricing renewable term policies. How to reflect this effect on mortality in cash-flow testing will need to be addressed.

Think about how refined the cash-flow tests should be. As you can see, the test can call for a really complex model. ASP 14 leaves this issue clearly in the actuary's hands: "Where, in the judgment of the actuary, further refinement would not result in a materially different opinion, or recommendation," it need not be done. How are we going to tell whether additional refinement will lead us to an answer we did not expect? That is the question. How do we approach this? Predetermined scenarios can be run to try to test the sensitivity of our results to changes in various variables. Sometimes the answers are not expected. Many of us get accustomed to using our smell test on results. Sometimes, regardless of our experience, we are surprised as we go through the cash-flow testing process.

When isn't it necessary to perform cash-flow testing? Clearly, one area is short-term products where they create little strain on assets. Here traditional analyses of experience ratios or ruin theory approaches to analyzing the cost of the product may be utilized.

ASP 14 also tells us that 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. It is sort of a Catch-22 because in order to demonstrate insensitivity, it seems the actuary has to perform cash-flow testing. I believe there is an option in the standards that may be of help especially for smaller companies. The pricing actuary may make use of appropriate actuarial cash-flow studies if available. To me, this is a key for at least controlling the cost of these efforts and yet being able to analyze what we need to analyze. It requires close communication between the appointed actuary and the pricing actuary.

If now, through your understanding of the issues and ASP 14, you feel you should perform a cash-flow test, how do you go about doing it? Let's say your company is

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considering offering a new product which the appointed actuary has not analyzed from a reserve adequacy standpoint and where you have not looked at the asset and liability flows.

First, an investment strategy to be tested needs to be determined so that the assets can be identified. This is an area where the profession is moving rapidly to improve its understanding. The strategy may be the one currently in use in the profit center, or company, or a modification based upon a preconceived view of the liabilities.

Second, the liability assumptions need to be defined for both traditional assumptions and those based upon decision theory.

Third, a model has to be selected and validated. This is certainly an easier task in pricing than on the reserve adequacy side. The pricing actuary is working with a hypothetical distribution of assets and liabilities.

Fourth, an appropriate set of scenarios needs to be selected so that sensitivity can be analyzed. Finally, the work can begin.

On the asset side, a significant effort to obtain good communication is required between the pricing and valuation actuaries. Communications can lead to an understanding of how the pricing actuary can utilize what may be a full analysis of the assets held in the companies current portfolio.

Good communication with the investment manager is critical and frequently is difficult. We have two different sets of jargon. Both professions I think have been rightly criticized for developing a jargon that no one else understands. Sometimes to outsiders, it looks like an effort in self interest. It is important that we keep working together to understand each other's terms. Major mistakes can be made if this does not occur.

As a start, when delivering a new product, look at the company's current portfolio and the current distribution of assets being purchased. That's what the company's investment management team feels is correct for the current product portfolio. A basis for communication will be developed by an analysis of the current investment strategy in conjunction with the initial design of the product. The results of that first cash-flow test should lead to (1) changes in the benefit design to moderate the impact of options being provided, or (2) alternative investment strategies that will limit some of the fluctuations in cash-flow.

At this point, working closely with the investment management side of the company's operation is important. To really carry out whatever is agreed upon, they have to buy into the need for a change in strategy. I don't know about your experience, but my experience is that the best way to gain a buy-in is for the investment side to feel it's their decision. This takes some doing for actuaries.

The liability side is certainly something we have a much longer history of understanding. Many of the issues faced in cash-flow testing have been faced in the past in performing asset share studies. Assumptions as to distribution of sales and premium payment patterns are needed. Universal life plans, for example, basically have an

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infinite number of premium payment patterns, which makes the life of the pricing actuary a lot more complex.

Traditional lapse rates and surrender rates are needed. Interest crediting strategies are very important in determining where the company wants to be in the market. Those strategies have a significant impact on the companies lapse experience. Decision theory algorithms are needed to estimate that impact.

Expectations as to mortality and/or morbidity rates and finally expense assumptions need to be prepared. What is comparatively new as well as difficult is building algorithms to vary these factors based on interest crediting strategies and economic scenarios. The material that Walt Rugland distributed on dynamic solvency issues addresses this challenge to some degree. The article recognized the fact that the profession does not have data on which to base its formulas. Nevertheless, there are many formulas. What Walt suggested is the collection of the formulas so that the members understand the assumptions being made. The problem is that the formulas, which are educated guesses, will impact cash-flow tests significantly. In fact, they may define the variances. Unlike many of the other assumptions actuaries need to make, data for determining the decision theory algorithm is not available. This is a real challenge in developing credibility for results.

In selecting scenarios to study, I believe it is important to determine a handful of predetermined scenarios to test the sensitivity of the product to changes in various variables. Once the limited sensitivity analysis has been performed, a decision as to where to concentrate your effort can be made.

In making the decision on whether to use a small number of predetermined scenarios or a large number of stochastic scenarios, there are differing opinions on the advantages of each. Several articles have been written which discuss some of the challenges encountered in developing stochastic scenarios. One of the issues is the fact that assumptions are made as to how variable interest rates will be allowed to be prior to the development of the randomly generated numbers. It should be recognized that the result is not random. Another view of problems encountered in the use of stochastic approaches to interest rate movement is that next year's interest rates will have moved either up or down. Attempting to apply probabilities to that movement may be similar to a one-life group mortality projection. Yes, the probability of various life expectancies can be analyzed, but the person will be either alive or dead next year.

In conclusion, some of the issues I have raised are recognized in the standards by their recommendation that "the actuary should be satisfied that the results of cash-flow testing are reasonable." The judgment of the actuary is challenged immensely in the process. Based on preconceived opinions, on the front end, you are selecting assumptions for the model as to the sensitivity of the various factors to interest rate changes. At the end, you are looking at answers to determine whether they are reasonable? On what will you base your decision as to reasonableness. Is it the preconceived opinions? The actuary must be very careful to analyze results if they seem to fail the reasonableness test. More analysis is needed and no doubt little time will be available.

ACTUARY'S REPORT

The actuarial reports required by the standards require a high degree of thoroughness. Previous speakers have discussed actuarial reports as required by other standards. Speaking from the perspective of an actuary in a small company environment, I believe it is very important to determine an approach to effectively summarize. Most senior executives are not accustomed to reading a 25-40 page report. The reports are fine for providing detailed reasoning as to why the recommendation for an action has been provided. Summarization will be an actuary's challenge. How do you summarize the immense amount of data that cash-flow tests will provide without misleading? This will be a very difficult test for many actuaries.

The standard ends with a caveat. If an actuary deviates from the standard, the actuary should include in the communication a statement as to the effect of such deviation. In effect, sufficient cash-flow testing will be needed to determine the impact of not performing a cash-flow test where the standards suggest they be performed.

The standards of practice were adopted in 1990 (14) and 1991 (7). The extent of the efforts required by consulting firms to bring their modeling tools to a position that appointed actuaries could satisfy the cash-flow test requirements for December 1992, leaves one with the feeling that many companies and their actuaries had not completely incorporated the practices in their pricing efforts.

Many actuaries felt their product lines had shown insensitivity to interest rate changes in the past. Actuaries involved in participating whole life and individual disability income products have expressed this view. The standards though are quite broad and times have changed. What was insensitive in the past may not be viewed as such in the future. I feel that actuaries have to develop methods to satisfy our need for thoroughness while addressing the cost implications of that thoroughness.

How can we organize the data? How can we organize the models to be able to perform the required studies in a cost-effective manner? I think it is very important to leverage our work being performed on the reserve adequacy side with the pricing effort, and to develop models that can satisfy both sides. You must stay on top of these dramatically changing issues. Last year our small company's appointed actuary memo was more than 150 pages long. It was, with great effort, placed in the hands of the California department by March 15. My understanding is that more than one-half of the companies were not able to accomplish this goal.

I think we need to come up with ways to be able to perform the studies and prepare the reports in a timely manner. We have to utilize the facilities we have available to us today to do that. In most companies though, the actuaries are one of the last to push to get their system's staff to help them in this type of automation. I believe we're going to have to do that or otherwise, due to the cost and delay in obtaining actuarial input, you are going to find decisions being made without the actuaries.

HOW TO COMPLY

MS. MILNES: Jack, that was a great lead in to what I'm going to be talking about next, which is, how can actuaries comply with these standards? Compliance often seems overwhelming, and documentation has never been an exciting task. We have

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several actuaries working on different kinds of product development projects and documentation is always last on their list. In fact, our discussions about how to comply with these standards, and the work that it entails, reminds me of a common discussion that we have around my house. It goes something like this: "Clean your room!" "Do I have to? Who cares? What difference does it make? Leave me alone!" This is what I hear when it comes to complying with these actuarial standards.

The answer is, "Yes, you have to." We've heard Craig talking about Exhibit 8 interrogatories and similar interrogatories about dividends in Schedule M, which require an actuarial opinion. If I were signing one of those opinions, I would want it to be backed up by the proper documentation. The public expects it.

Also, the American Society of Certified Life Underwriters (ASCLU) has a questionnaire that it is encouraging its members to use with the public. This questionnaire asks questions that are similar to the questions on Schedule M. The regulators and the public want to know how we set dividends, how we set nonguaranteed elements, how we change them, how we update them, and are we being fair to people as we do that?

What differences does it make? It helps us deal with our management, as Jack said. If you can't explain what you did, and you don't have a rational for it, you're not going to be heard in the management process.

"Leave me alone." Well, fat chance. Competition is making it more important that we document what we do and that we understand the risks we're taking. Regulation is requiring it too.

Which brings us to kind of the final word from mom on the subject, "If you just take care of these things when you get them out, you wouldn't have such a big job to do." You can make compliance part of your work process rather than leaving it for the end when you have to clean up the mess.

What are some of the things that we need to do? First, assess the resources we already have. What work that the valuation actuary has done is available to be used in product development? What kind of work is already being done to support the dividend opinion in Schedule M? What kind of documentation do you already do? I'm sure that all of you have ways of documenting things. How can those processes be modified to support the requirements of the Actuarial Standard of Practice?

I suggest that you define the contribution principle, or your redetermination policy up front. What does it really mean for your company? What is your theory of surplus? Do you use a revolving fund? What profitability measures do you use? What standards do you apply to each cell that you price? What do you require to be done in the aggregate? What kind of simplifications do you use? These are the kinds of questions you should ask yourself before you do a project, not at the end of the project.

You should really be careful to document exceptions to your normal practice, as well as exceptions to the standards. It's important for two reasons. One, most of the

standards do require documentation of any exceptions. But also, these are the areas that are most likely to be a problem for you in the future. When we make exceptions to the way we normally do things, those things haunt us later on. Why did we do that? Who did that? What are we going to do now? We don't understand them ourselves when they aren't documented. Documenting exceptions is good for you, as well as for compliance with the standards.

Plan your work. Put "completing actuarial reports" on your project list. Make it part of your goals and objectives. Get your management to understand the importance of this work, and get them to commit to it, and really make it something you're accountable for. Set deadlines for it. Get people assigned to help you where that's possible.

The first step should be collect everything and put it in one place. Even if you don't get that report written right away, you should set aside the documentation you'll need with copies of all the standards, all your company policy statements, any pricing runs that apply to your project. It will be there when you have the time to work on that report.

Craig talked about a skeleton report. That's an excellent idea. Set up a report for a new product with blanks in it, so that you can fill it in later as you develop products. And remember another point that Jack made: consider your customer. You have to have the details for your successor, but that's not going to be communicated to your management. We must find ways to summarize this information and make it meaningful.

MANAGEMENT NEEDS

So what is in it for management anyway? Many people have an interest in this process: board of directors, the executive office, the business head, investment professionals, the valuation actuary, and the audit staff. All these people have a role to play, and the compliance information that you produce as part of your product development process can be very useful to them. In a mutual company the annual dividend decision is arguably the most important action the board takes each year. I'm sure that those people would be very unhappy to be taking action without solid documentation backing it up.

What is the role of actuarial work in managing your company? Is what you do, viewed as an important part of managing your company's business? If not, could better documentation in an understandable form make it more important? Is your product development information actionable? The standards point out important elements which must be done to measure and communicate the current financial implications of future events. Following them can help make our product development information actionable.

Which should companies do? What are the consequences of different actions they could take? Following the standards really can affect what your companies do. A recent poll of valuation actuaries by the New York Department of Insurance revealed that cash-flow testing lead to many different kinds of actions: increasing reserves, decreasing reserves, even review and revision of new products.

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Management does not like surprises of this kind and the work that's laid out in the standards can certainly help us avoid a surprise to management. If we did a good job of compliance, imagine how these standards could affect new product development. We might be able to find less sensitive product designs: less sensitive to changes in lapse rates, or maybe changes in interest rates or changes in mortality rates. We could understand the financial risks that we're designing into products, and take corrective action if unfavorable experience emerged. We could investigate the financial impact of substituting a new product for an old one, analyze the effective replacements on our business and our sales plans. Quality like this requires time and effort, and it has to be balanced by significant results. I'm suggesting that there are significant results to be obtained from this kind of work.

Let me tell you little bit about the Prudential compliance process. What did Prudential management want to know? A few years ago we decentralized responsibility for actuarial work. Each business unit was made responsible for its own work. A principal actuary reports to the business unit head with respect to quality of actuarial work. We call that actuarial oversight. This structure forced us to look at standards and compliance more seriously.

