



## Editor's Notes

by Thomas Nace

As I write this column, I am deep into what has been commonly known as "March Madness." For some, this evokes the image and sound of sneakers squeaking their way across a basketball court as time on the clock runs down. For others, it means putting on a full court press, in order that the last interest scenario might be run and the final touches on the Actuarial Memorandum might be made, again as the sound of time winding down echoes like a ref's whistle.

For many, it is like a much-needed time out. Having survived the flurry of activity called year-end, it is time to take a breath and re-evaluate your game plan for the coming year. You now realize that all of the projects that you planned to get done over a 12-month period still have to get done, but now you have less than 10 months.

For others yet, somewhat closer to home, it means getting those last articles in hand and reviewed so that putting the next issue of the *Financial Reporter* in the hands of Section members on a timely basis becomes a mere slam-dunk.

There are many instances where "Madness" is not the name of the game, however. For example, March was the month when the NAIC Actuarial Life and Health Task Force (LHATF) meeting was held, as well as the American Academy of Actuaries' Committee on Life Insurance Financial Reporting (COLIFR) meeting. At the March LHATF meeting, AG-ZZZZ (reserving) was adopted.

Also at this meeting, the status of several hot projects was discussed. (See Don Maves' article in this issue on page 4). One of these topics was Variable Annuity Guaranteed Life Benefits (VAGLB). As it just so happens, we are fortunate to have in this issue an article by Jim Lamson discussing this concept and the latest developments.

One of the other topics discussed at the March meeting was a status on UVS — a Unified Valuation System. Dave Sandberg made the status report at the LHATF meeting and has also contributed an in-depth article

(continued on page 2, column 1)

## An Actuarial Analysis of FAS 133 (Part 2)

by Anson J. Glacy, Jr.

Part 1 of this paper, contained in the February 2000 edition of *The Financial Reporter*, described the basic objective and provisions of the Financial Accounting Standards Board's new standard on derivatives, Statement of Financial Accounting Standards No. 133, Accounting for Derivative Instruments and Hedging Activities. FAS 133 requires that all derivatives, including those embedded in non-derivative instruments, be recognized in the balance sheet at fair value.

The Statement dramatically changes the way hedging relationships are reported and creates earnings and capital volatility that may be unavoidable. The principles embodied in FAS 133 are complex and controversial, particularly as they relate to insurers using derivatives to hedge capital market risks. Part 2 of this paper presents a case study of how FAS 133 affects the accounting for perhaps its most interesting application in the life insurance industry: the equity-indexed annuity. Please note that this analysis does not constitute accounting advice and is not a substitute for a comprehensive assessment of how the Statement may affect your organization.



### Brief Recap of FAS 133

FAS 133 requires that all derivatives be recognized in the balance sheet at fair value. The Statement retains a type of hedge accounting that attempts to preserve the intent of a hedging relationship, but the qualification criteria for this treatment are complex and potentially onerous. FAS 133 defines derivatives based on distinguishing characteristics rather than by reference to specific types of instruments and consequently finds

(continued on page 11, column 1)

### In this Issue

Editor's Notes by Thomas Nace.....	1	CARVM Reserves for Variable Annuities with Guaranteed Living Benefits by James W. Lamson.....	15
An Actuarial Analysis of FAS 133 (Part 2) by Anson J. Glacy, Jr.....	1	Treasurer's Report by Larry Gorski.....	17
Chair's Corner by Mike McLaughlin.....	3	The Actuarial Opinion Model Regulation (AOMR) Takes Center Stage by Norman E. Hill.....	18
Highlights of the March 2000 NAIC Life and Health Actuarial Task Force Meeting by Donald P. Maves.....	4	A Call For Contributors.....	21
Financial Section Seminars in 2000.....	5	An Update on International Accounting Standards for Insurance by Bruce Moore.....	23
Blazing the Path for a Unified Valuation System by David K. Sandberg.....	6	Record Sessions for Financial Reporting Special Track on the Web.....	26
The "X" Factor — Are You Ready? by Larry Gorski.....	14	Own the past.....	27
		Writer's Haven by Shirley Hwei-Chung Shao.....	28

**Editor's Notes***continued from page 1*

to this issue of the newsletter on the same topic. The March LHATF meeting also saw presentations on the new proposed Actuarial Opinion Model Regulation (AOMR). Once again, we are attempting to stay current with all of the latest developments in these areas and thank Norm Hill for his role in authoring this article.

We are thankful to Bruce Moore for providing an overview of the current activities taking place in regard to International Accounting Standards. Bruce wrote an article on international standards for the *Financial Reporter* back in 1997. This update brings us current with the progress of the Academy Task Force on International Insurance Committee.

And as promised, we have Part Two of Jay Glacy's article on SFAS 133. You will remember that Part 1 appeared in the last issue of the *Financial Reporter*. In this article, Jay gets into some of the practical applications of SFAS 133. Note that the spreadsheet Jay uses to support the numerical examples in his article is being made available to the readers. This is being done in order to clarify the nature of the calculations that are required and to make the learning process associated with SFAS 133 more hands-on. We encourage you to take advantage of this option. See Jay's article for further details on how to get a copy of the spreadsheet.

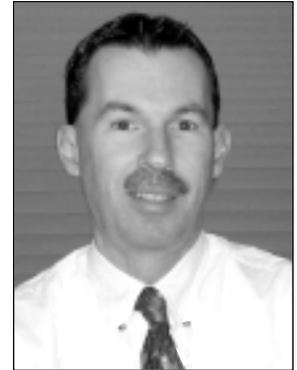
Also, in this issue we have Mike McLaughlin's article as Section chair, the Section's Treasurer's Report by Larry Gorski and a final preview of the Financial Reporting Section seminar in 2000.

Finally, the Society of Actuaries is interested in contributors of data for experience studies. A form for interested parties is provided.

In conclusion, depending upon your perspective, I hope that by devoting time and print to some of the many topics occupying the actuarial media these days, a greater level of understanding and less confusion will result. If I have been able to provide a little sanity in the process,

then I think I have achieved my purpose — a welcome break from all of the Madness!

*Tom Nace, FSA, MAA, is vice president with PolySystems Inc., Pennsauken, N.J. He can be reached at [tnace@polysystems.com](mailto:tnace@polysystems.com).*



*Tom Nace, Editor*

THE FINANCIAL REPORTER

Issue Number 42

May 2000

Published quarterly by the Life Insurance Company Financial Reporting Section  
of the Society of Actuaries  
475 N. Martingale Road, Suite 800  
Schaumburg, IL 60173

Phone: 847-706-3500

Fax: 847-706-3599

World Wide Web: <http://www.soa.org>

This newsletter is free to Section members. A subscription is \$15.00 for nonmembers. Current-year issues are available from the Communications Department. Back issues of Section newsletters have been placed in the Society library and are on the SOA Web Site. Photocopies of back issues may be requested for a nominal fee.

**Chairperson**

S. Michael McLaughlin, ASA

**Vice-Chairperson**

Michael V. Eckman, FSA

**Treasurer**

Larry M. Gorski, FSA

**Secretary**

Mike Lombardi

**Editor of Financial Reporter**

Thomas Nace, FSA

PolySystems, Inc.

6981 North Park Drive, West Bldg. - Suite #303

Pennsauken, NJ 08109

Phone: (856) 663-8711

Fax: (856) 663-8712

E-mail: [tnace@polysystems.com](mailto:tnace@polysystems.com)

**Council Members:**

John F. Bevacqua, FSA

James P. Greaton, FSA

Stephen J. Preston, FSA

David Y. Rogers, FSA

Barry L. Shemin, FSA

**Staff Liaison, Lois Chinnock**

Phone: (847) 706-3524

Email: [lchinnock@soa.org](mailto:lchinnock@soa.org)

**DTP Coordinator, Joe Adduci**

Phone: (847) 706-3548

Fax: (847) 272-8548

Email: [jadduci@soa.org](mailto:jadduci@soa.org)

Expressions of opinion stated herein are, unless expressly stated to the contrary, not the opinion or position of the Society of Actuaries, its Sections, its Committees, or the employers of the authors.

The Society assumes no responsibility for statements made or opinions expressed in the articles, or criticisms, and discussions contained in this publication.

Copyright © 2000 Society of Actuaries. All rights reserved.

Printed in the United States of America.

## Chair's Corner

by Mike McLaughlin

### Challenges and Shifting Roles, Part II

In March I was invited to give a presentation at the Chicago Actuarial Association's annual workshop meeting. This CAA workshop meeting tradition dates back many years. The CAA invites speakers selected mainly from among its members and holds an afternoon of meetings with a reception and dinner immediately following. There are three one-hour time slots for the formal program. In each time slot there are seven or perhaps eight concurrent sessions.

My name came up as a potential speaker for two reasons. First, I'm a member of the CAA. Second, they were short of speakers and getting a bit desperate. Anyway, I was asked to talk about Fair Value Reporting.

I prepared my slides and software demonstration a few days ahead of time. I had summary notes of the points I wanted to make, but I didn't write out all the words that I planned to say verbatim. So most of my comments in the presentation were extemporaneous. (At this point a few wise guys who were in the audience are thinking, we know, we know.)

Now there is good and bad in extemporaneous speaking. One good point is that the speaker has the opportunity to comment on ideas as they flow. That's also the bad point. Anyway, I was about three-quarters of the way through the talk when an irrelevant thought flowed in.

The prepared talk covered fair value reporting, a topic of keen interest to many members of our Section — whether and how soon fair value reporting was likely to be required in the United States and internationally, and how it might be implemented. At the time of the "irrelevant" thought, we were dealing with the use of stochastic modeling techniques to determine fair value of insurance liabilities.

Forget the details of that for now. I realized at that moment that much of the discussion was relatively new stuff. It isn't on the syllabus and in fact, it is gleaned in

large part from knowledge originating outside the traditional boundaries of the actuarial profession. Think for a moment about some of the new areas of work that we are all getting more involved in. Cash flow testing isn't so new anymore, but it has led us to a much greater understanding of investments and behavior of assets. Asset-liability management is now part of what most actuaries need to know. Risk management is a fast growing, although imprecisely defined, area of practice. Variable products are fast growing — it's essential to model equity performance to deal with variable product guarantees. Just a few years ago, we simply threw up our hands with equity modeling. Can you recall when we assumed consistent growth rates for common stocks at 9% per annum?

Now we have to model equity indexed contracts too. These are deferred annuity contracts with components of fixed income performance, equity performance, and minimum value guarantees. We know that a single best estimate scenario is flawed for both pricing and reporting purposes. Under the single scenario, no options or guarantees are exercised. So can we give them away for free? Of course not, because the options and guarantees come into play some of the time. We have the knowledge and the tools to deal with ranges of outcomes and we know how to make reasonable estimates of price and reserve.

As a profession we have come pretty far in the last few years. Topics presented at actuarial seminars now include hedge accounting; construction of economic scenario generators; models of policyholder behavior; studies of correlation of global interest rates and equity markets with currency risk; and the financial engineer's view of diversification of insurance risk.

All these new areas may seem unfamiliar and complicated, even a bit threatening at first. But the challenge presents opportunity. My extemporaneous comment to the CAA audience was that there will be an even greater need for our profession in the future than in the past. With or without fair value, we need to price and report on a wide range of products with lots of complicated options and guarantees. Soon, as

the financial services industry continues to consolidate, we will need to work on bank products as well, including installment loans, home equity loans, credit cards, and savings accounts.

Even for current life insurance products reported under U.S. GAAP, the best estimate for financial reporting purposes may no longer be the most likely single scenario. Instead we probably should consider a range of scenarios. Our property-casualty actuarial colleagues are quite comfortable with using ranges for financial reporting purposes. Canadian reporting rules rely on dynamic analysis. What are we Financial Reporting Section members waiting for? Given our knowledge and tools, I sometimes wonder whether we should still be using single scenarios for modeling anything anymore.

This is the kind of work we actuaries need to do. We need to continue to advance our knowledge through research, seminars, meetings, and discussions. We need to use the best tools that are available and build even better ones. We need to talk to other professions and academicians. We can do much of this individually and informally. But there's no question that an organized approach is important, too. The Financial Reporting Section and the Society of Actuaries must play a key role in organizing and shaping the roles we actuaries play.

And if we don't, remember there are other providers of professional services. The competition includes MBAs, risk managers, financial engineers, members of academia, and last but not least, the accounting profession. They are not sitting still, my friends. Take a look at the Financial Accounting Standards Board's Web site ([www.fasb.org](http://www.fasb.org)). You will see evidence of a great deal of advanced thinking about a wide range of topics, including present value methods (which was formerly actuarial turf) and of course, fair value reporting.

The issue seems plain to me. There's work to be done. Actuaries are just barely coping with the needs of the insurance industry at a time when it is morphing into a much larger financial services industry. We need more actuarial resources, both in quantity and suitability. We have to get

(continued on page 13, bottom)

## Highlights of the March 2000 NAIC Life and Health Actuarial Task Force Meeting

by Donald P. Maves

**T**he NAIC Life and Health Actuarial Task Force (LHATF) met on March 10 and 11 in Chicago.

### Accident & Health Working Group

This subgroup discussed the following projects:

#### Medicare Supplement Insurance

The group received a report from the American Academy of Actuaries Medicare Supplement Work Group. The purpose of this work group is to analyze the underlying causes of the trend toward steeply rising claim costs. The work group indicated that this report is preliminary and that it will continue to study claim data. However, it identified outpatient claim costs as one of the contributing factors of high claim costs and also noted that there are wide variations in claim costs by state.

LHATF discussed the creation of a subgroup of the Accident and Health Working Group to study and revise the current structure of Medicare Supplement standardized plans.

#### Health Reserve Guidance Manual

The manual is intended to be a source of guidance for appointed actuaries, but it will not supercede existing laws, regulations, and guidelines. Two subcommittees of this group have been formed to resolve issues relating to conservatism in reserves and the definition of premium deficiency reserves.

#### Disability Income Tables

Studies of morbidity data for three lines of business are in various stages of progress. The intent is to derive new valuation tables for group DI, individual DI, and credit DI.

The group DI study is not complete, although the Academy Subcommittee has submitted a preliminary report.

The working group voted to expose the March 3, 2000, draft of the Health Insurance Model Regulation. The model includes the new individual DI valuation table. The working group intends to act on the model at its June meeting.

The Academy subcommittee reported that a credit DI basic table had been finished. The next steps include development of a valuation table from the basic table, analysis of the impact of the new table, and exposure for comment.

#### HMO Rate Adequacy

Regulators intend to closely monitor reserve and capitalization issues because of increased frequency of managed care organization insolvencies.

### Life & Health Actuarial Task Force

The group discussed the following projects:

#### Unified Valuation System (UVS)

The main point of discussion was the viability analysis and report. Some regulators were skeptical of the value of a mandated written report, instead preferring face-to-face meetings to discuss companies' information and risk profiles. Other regulators thought that written viability reports were valuable but only if received on a timely basis. They would advocate eliminating other mandatory tasks in exchange for timely written viability reports. LHATF asked for sample reports to study at its June meeting.

The Academy numerical modeling group plans to produce a seminar in the fall to present its findings on valuation, covariance, and risk-based capital.

#### Policy Forms

LHATF noted that there is a high-level discussion in the NAIC of creating an umbrella organization for the review of life and annuity policy forms. This activity is a response to concerns that the

50-state approach is inefficient and puts life insurers at a disadvantage relative to other financial institutions.

#### AOMR

The Actuarial Standards Board (ASB) has revised two Actuarial Standards of Practice (ASOP) in response to proposed changes to the Actuarial Opinion Model Regulation (AOMR). The ASB has tried to accommodate small companies by relating the level of analytics required to the level of risk of the products and investments. Nevertheless, there is still opposition within segments of the industry to asset adequacy analysis. The official exposure for the revised ASOPs should occur by June.

#### Variable Life

New York adopted revised Reg 147 (i.e., its version of XXX) with applicability to variable life plans with secondary guarantees.

#### Equity Indexed UL

LHATF adopted guideline ZZZZ for the valuation of these products.

#### Nonforfeiture for Products With Secondary Guarantees

LHATF spent a lot of time discussing two issues: Should long term secondary guarantees have required cash values at all? If so, then at what level? LHATF members generally believe that the answer to the first issue is affirmative. The second issue triggered a long discussion about the viability of pricing these long-term guarantees aggressively. LHATF plans to study pricing issues thoroughly at its next meeting.

#### New Standard Nonforfeiture Law

LHATF spent considerable time discussing plans that have no stated method of calculating cash values except that it will be done in any manner that the company chooses. Two issues arose here also. First,

should this plan type be permitted? If so, should companies be prohibited from illustrating any values at all in sales material? Neither question was answered, but if LHATF ultimately answers the latter question affirmatively, then that may imperil the illustration of dividends on par policies. LHATF plans to discuss this issue quite thoroughly at its next meeting.

**Revisions to Guideline 9-A**

LHATF intends to create Guideline 9-C to deal with substandard annuities. It must resolve which substandard annuities would be subject to 9-C and the appropriate level of conservatism in such reserves.

**Variable Annuities with Guaranteed Living Benefits (VAGLB)**

The Academy committee intends to prepare a report for the next LHATF meeting. Topics covered in that report will include details of a general reserve

methodology, criteria for the Keel method to be used as a safe harbor, reserves for VAGLBs combined with minimum guaranteed death benefits, reserves for VAGLBs with significant interim benefits, and reserves for reinsurance.

**New CSO Mortality Table**

The Society of Actuaries committee has nearly completed the draft basic table and is on track to get a final valuation table done by the first quarter of 2001.

**Valuation and Nonforfeiture Over Age 100**

An Academy committee has just been formed and will begin research shortly.

**Products that Link Investment Returns to Specified Asset Pools in the General Account**

LHATF has not seen many of these products. The regulators are seeking

industry comments to determine the scope of this project.

**Nonforfeiture for Equity Indexed Annuities**

LHATF dropped this project.

\* \* \*

The next LHATF meeting will be held Thursday and Friday, June 8 and 9, 2000, in Orlando.

*Donald P. Maves, FSA, is Manager, Actuarial Services with PolySystems, Inc. in Chicago, IL. He can be reached at dmaves@polysystems.com.*

**FINANCIAL REPORTING SECTION SEMINARS IN 2000**

Our Section continues to provide high quality continuing education and professional development related seminars. This year your Section Council has planned 6 seminars we think will be of keen interest to members of our Section. Mark your calendars for the following dates in 2000.

Basic GAAP	June 5	Fairmont Copley Plaza, Boston*
Advanced GAAP	June 6 - 7	Fairmont Copley Plaza, Boston*
XXX Certification	June 21	Hotel del Coronado, San Diego
Reinsurance	September 12-13	Hilton Washington Hotel, Washington DC
Embedded Value	October 12-13	Chicago
Nontraditional products — Stat and GAAP financial reporting	November 16-17	Wyndham Palace, Orlando

\* These 2 GAAP seminars are in Boston. This is a correction to an earlier notice you may have received.

The Basic and Advanced GAAP seminars were given in prior years and are back by popular request. The other four seminars contain all new material. For more information on the XXX Certification seminar, see the article by Larry Gorski on page 14.

In prior years we have had a few seminars that were filled to overflowing. This year we plan to keep enrollment limited to maintain a high-quality learning experience for the participants. So enroll early. Watch your mail for flyers, or call the Society offices for pre-registration.

## Blazing the Path for a Unified Valuation System

by David K. Sandberg

*Editor's Note: There is a Robert Frost poem about two paths diverging in the woods and a choice being made that "made all the difference." The following describes a path that is and has been pioneered by many diverse individuals in order to see if it might make a difference. I think appreciation is appropriate to all those who have traveled thus far.*

### Initial Background

#### Building a Mission Statement

In January 1997, the Life Health Actuarial Task Force (LHATF) of the NAIC requested that the American Academy of Actuaries (AAA) initiate a thorough study regarding current approaches to reserving for life insurance, annuities, and health insurance, and make recommendations on any needed changes. The study began by addressing the broad objectives of a revised valuation system and was instructed by LHATF to not be constrained by past valuation practices. While starting with a clean sheet of paper it would also be important to consider practicality, the current state and direction of actuarial science and the impact on other elements of the regulatory framework. At the end of 1997, the Academy report provided the following:

- A review of the current system in the U.S.
- A review of current systems around the world
- A statement of Objectives and Desired Characteristics for a Valuation Framework

#### The Current System

The task force established a subgroup to report on advantages and disadvantages of the existing valuation requirements. The subgroup identified as advantages of the existing formula approach its focus on standardization and simplicity and the realization that it has produced adequate

reserves and risk based capital (based on those reserves) for many years. It is also the basis for tax reserves and facilitates automation of calculations and thus, the audit and examination process. In addition, asset adequacy testing has added a second perspective and discipline to the reserve setting process.

Disadvantages include the following five items:

- 1) Emerging experience is not reflected in the valuation process (except for some health claim reserves). Expenses are implicit; valuation interest rates are not based on actual earned rates; there are no lapses or company specific modifications (except when reserves are deemed inadequate in total); there has also been no assessment of the actual degree of mismatch between assets and liabilities; future flexible premiums are ignored; and finally, the process ignores all non-guaranteed elements. This severely limits the usefulness of the current valuation system for forward-looking kinds of information and for relating pricing expectations to current financial results.
- 2) The second disadvantage is an undefined commitment to conservatism. There are implicit margins in assumptions and in methodologies to provide for expenses and guaranteed and non-guaranteed elements, but no ability or framework to describe the level of adequacy in aggregate or between product lines. This creates inconsistencies and uncertainties across product lines, between primary and secondary benefits, and in reserving for multiple benefit products. In addition, this has undoubtedly reinforced the IRS belief that assumptions are too conservative and reserves are too high.
- 3) The system has led to a proliferation of requirements that do not adequately address emerging product designs. The current system requires increasing

amounts of manpower from both the Academy and regulatory resources for new product designs. These products require 1) research to define and measure the key risks of these products and 2) an even more complex process to translate the research into the current formula-driven, factor-based reserving structure. Consider the following stacking of requirements to fix past specific problems or new products:

- a) Asset Adequacy Testing
  - b) AVR, IMR & RBC
  - c) Universal Life, Variable Life, XXX
  - d) Actuarial Guidelines 33 & 35
  - e) Specific risks or concerns by individual states, sometimes as general bulletins and sometimes only expressed verbally, or in a product filing response written by staff preceding the current state regulators
  - f) Possible FASB 133 & Codification Developments
- 4) The focus on specific formulas and rules, in the absence of principles and professionalism, can reinforce an adversarial regulatory role and a focus on industry and regulatory legalism.
  - 5) There is no expectation for any kind of overall risk overview and assessment.

#### International Report

The task force decided that it would be appropriate to explore how other countries approach valuation and established the International Subgroup. The subgroup selected 14 countries to study, based upon their significance in world markets, geographic diversification, historical development, and approach to valuation. Key conclusions reached by the work group included:

- Reserve requirements fall into three categories: formula based with methods and assumptions prescribed by regulation; net premium based where some discretion is given the actuary in setting assumptions; and gross premium based.

- There is a growing trend toward more flexibility and discretion and less reliance on prescribed formula reserves.
- Emphasis on capital adequacy and financial condition are becoming increasingly important in a number of the countries studied.
- In all countries studied (other than the UK), there is only one reporting system. This compares with at least three systems in the US (GAAP, Statutory, Tax and increasingly, reports for a foreign country owner).
- In most countries, assets and liabilities are valued consistently.
- A focus of recent changes is to create regulations that provide flexibility to adapt to changes in the markets.
- Systems in Australia, Canada, South Africa and the LTK emphasize strong working relationships between actuaries and accountants.

The valuation systems of three countries (Australia, Canada and Singapore) exhibited characteristics that were worth noting. These countries have revised their valuation systems in the past 3 to 5 years and those revisions addressed many of the same issues that the task force later determined were important objectives to be captured in a new U.S. statutory valuation system. Each of these three countries now have capital adequacy standards that consider business plans, recognize the need for increased actuarial judgment, and continue to actively regulate valuation aspects of insurance.

## Framework of the Unified Valuation System

In light of the above findings, the task force recommended that a revised valuation approach be considered. The broad topic of valuation was felt to be best viewed in the context of its purpose and use. To do this, the task force set out a framework for the Unified Valuation System:

1. Provide information to policyholders, regulators, and others to assist them in making informed judgments about insurers' financial condition
2. Support financial analysis both at points in time and over time
3. Be built upon best estimate assumptions with explicit determinable margins
4. Address overall solvency, not just contract reserves; in particular, address resources consistently with obligations
5. Produce auditable and verifiable results and incorporate an actuarial "feed-back loop" in which assumptions and projected results are compared to emerging experience
6. Cover all insurance activities. Be holistic and consider the entire enterprise, rather than merely representing a sum of independent parts
7. Balance practicality, cost, and resource effectiveness in relation to the value of the information to the audience
8. Be consistent for all companies and among regulatory jurisdictions
9. Be flexible; e.g., be able to accommodate unidentified future needs
10. Utilize actuarial judgment in the development and interpretation of results in preference to prescribed methods and assumptions
11. Accommodate materiality issues

## Objectives of the Unified Valuation System

In responding to the spirit of the NAIC request, the task force wanted to approach valuation in the next century from the broadest perspective, not solely as a reserve calculation. The task force concluded that the determination of reserves met only some of the purposes of valuation. It identified three objectives of

valuation. These objectives derive in part from the Society of Actuaries' "Statement of Principles Regarding Provisions for Life Risks" that can be found in Volume XLVII of the *Transactions of the Society of Actuaries*. The focus of these objectives is on the policyholders and the viability of the company. Each objective had its own set of regulatory purposes and each addressed the needs of various audiences. Although each objective had some mechanisms currently available, additional mechanisms still needed to be considered.

One objective was the measurement of an insurer's viability by calling for an evaluation of the ability of a company to execute various business alternatives in terms of its available resources. Questions included:

- Can the company meet obligations as they become due?
- Are resources adequate to meet obligations of both existing business and new business in a variety of risk scenarios?
- Can resources support the business plan?

Another objective called for an early warning system with respect to solvency concerns. In other words, evaluate the adequacy of an insurer's resources relative to obligations by determining whether obligations, with respect to existing business, can be met when due with at least some defined (say 95%) probability of survival.

A last objective called for measurement of an insurer's financial condition and performance in terms of changes in resources relative to changes in obligations. The goal would be to show the change in resources since the end of the last fiscal period relative to changes in existing obligations related to existing business during the same period.

In summary, the valuation system should support a broad range of financial reporting needs and meet the following objectives:

1. Analyze the company's capacity to execute its plan of operations, monitor risk and maintain its ability to do business

**Blazing the Path for the Unified Valuation System**

*continued from page 7*

2. Evaluate the adequacy of resources relative to obligations
3. Measure changes in resources relative to obligations.

These objectives provided the basis for the task force report and future directions. They were intended to be broad enough that various approaches would work under each of them. Having defined the broad vision, the next steps moved towards clarifying practical questions and concerns.

**1998 & 1999 — Next Steps, Moving to the Pragmatic**

**Draft Model Law**

Dealing with principles and concepts early on helped achieve early consensus, but many were aware that the “devil would be in the details.” In order to get to the devil efficiently, the request was made by the LHATF to draft a model law. The objective was not to recommend a specific law, but to provide an example of the kinds of issues a model law would need to consider. Thus placeholders or options were included in the model law draft. Placeholders were included for setting the required level of capital adequacy, and options were provided for such items as the appointment of the reviewing actuary (whose role is to verify the work is complete and in compliance with the law and Actuarial Standards of Practice). A copy of this draft “chinese menu” version of a model law can be found at the Academy Web site [www.actuary.org/pubsta.htm](http://www.actuary.org/pubsta.htm) under Public Policy, Public Statements for 1998.

**Numerical Examples — “Show Me the Numbers”**

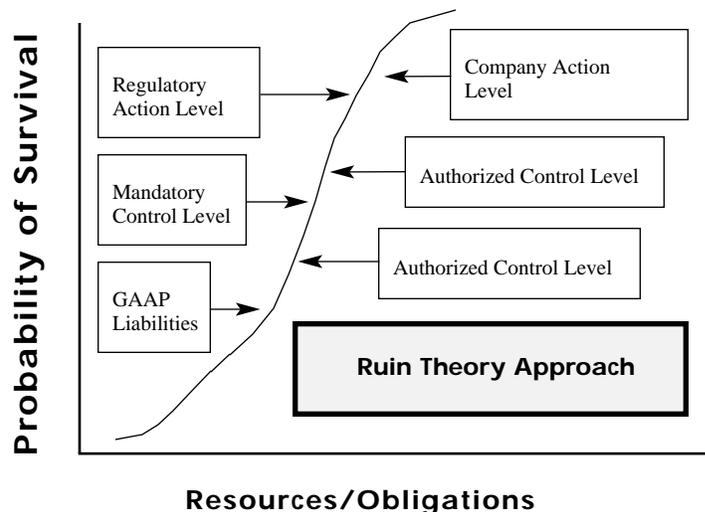
The next area of devilish details lay in the numbers themselves and the practical question of how an actuary would or could fulfill a required regulatory role. Beginning in 1998, a sub-group of the task force focused on illustrating how an individual product line could approach setting a capital adequacy level. Examples were prepared and reviewed for a 20-year level term product, a participating whole life product, a universal life product, a

group major medical block and a long-term care product. The term life example was presented at last year’s Fair Value Seminar and the UL and participating products were shared at last summer’s Actuarial Research Conference.

**Actuaries Role in a Principle-Based Valuation Framework**

As work progressed, the role of the actuary was built and articulated around the following concepts:

- The heart of insurance is to accept risk and to meet obligations. This is different than gambling or a zero sum game due to the value of diversification. The actuary’s role is to determine resources needed to accept risk and to meet obligations. In other words, how much capital does it take to maintain and accept new insurance risks? To answer this question, an approach based on ruin theory is used where the modeling approach tests if the assets are adequate at some level of defined level of probability such as 95 or 98%. This has also been described at times as an S-curve approach by the task force, as seen by the shape of the curve. (One minor point, the S-curve chart on this page shows GAAP reserves near a 50% probability of survival as a “best estimate” or “expected value.” This would certainly not be the case if the distribution were not normal, but more importantly confuses an average price with a 50% probability of failure as an enterprise).
- Insurance risk is based on events with probability distributions of varying degrees of credibility. Why not have the valuation process directly feed into and report on this process so that over time, the valuation data builds and evaluates



the credibility of the ruin theory framework?

- Evaluation of company risk needs to be forward-looking to assess traditional solvency at a point in time and to assess viability of the direction of future continuing business operations.
- The focus is on evaluating and projecting cashflows. This leads to what is called an indirect valuation approach for the liabilities and means the UVS process is independent of the accounting treatment of the assets. Whatever value is assigned to the set of assets backing the liabilities becomes the value of the liabilities funded by those assets.
- In essence, this expands the valuation actuary concept to include non-guaranteed elements and required capital and links the original pricing expectations into the valuation process.

**Simplifying the Change Process — Deferring the Earnings Question**

The introduction of the Risk Based Capital concept in the past 15 years has meant that reserves only affect required capital when the RBC levels are a function of the reserves. Thus, early in 1999, the task force decided to first focus on determination of capital adequacy levels and leave the earnings discussions for a later phase of the project. Earnings have both tax and performance implications that are complex and involve both accounting and legal considerations better addressed with more usage and greater familiarity with a ruin

theory approach to defining risk based capital. The current work has proceeded by assuming that current statutory formula reserves would continue as is. However, new and innovative products not currently defined by formula and the required capital determinations would be done through the UVS approach.

## Roadblocks, Shortcomings & Criticisms of UVS

The following concepts are the major criticisms that have been expressed:

- **Complexity** - Some feel that it cannot be done. Either the calculations are too extensive or the theoretical issues too unknown. Some key theoretical issues include covariance determinations, perhaps needing 1000\*1000\*100\*100 ... sizes for scenario matrices, statistical credibility issues for assumed distributions behind company data, and assessing a risk charge for modeling error and for mis-estimating the parameters of the underlying distributions.
- **Discipline** -What is to prevent the actuary from bowing to company pressure to lower required capital by playing with assumptions without the safeguards of minimum standards?
- **Too costly** - Some would say the current process is working well enough and that the additional work would add little, if any value, while being much more expensive.
- **Actuary** - is not qualified to address risks, or at best should only address some or most of the C-1 to C-3 range of risks.
- **Regulators** will not accept it.
- **Communication challenges** - Some call this a need for more precise language. Others view it as ignoring value-added marketing and for many, it is the reality of dealing in a political and agenda-driven world. This is meant generically, but it is a key roadblock to any project.

Consider a current challenge today: Statutory reserves are conservative. All of our professional literature uses

statements similar to this and so outside bodies see this as evidence that insurance must be underreporting tax revenues. Yet, the reserves are based on guaranteed elements only. In addition, what the reserves (and additional RBC) represent are a "fee" to the insurance company, charged by the regulators for the right to be an insurance organization and to ensure it will remain solvent. Thus, in reality, it represents an assurance of future taxable income streams that are less likely to disappear due to insolvency. Yet, the preponderance of "conservative statutory reserves" phraseology communicates a very different message.

## 1999-2000 Current Developments

### *Broadening the Involvement*

More recently the following steps have been taken to broaden the discussion and development of the UVS concepts and to address the perceived shortcomings:

- Presentations on UVS at the 1999 Fair Value Seminar and the 1999 Actuarial Research Conference, in addition to SOA meeting presentations.
- Discussions with the SOA leadership on how to best coordinate the work and roles of the actuarial bodies to develop and implement a UVS risk-based methodology. The SOA's role in research and developing tools for assessing risk is vital for supporting an ongoing UVS framework, is fundamentally consistent with the SOA mission, and is certainly consistent with the "big tent" directions recently initiated by the SOA. Therefore, modelers from the Academy and researchers involved with the SOA met in January to lay out the general concepts and approach for a UVS modeling seminar later in the year to be sponsored by both the Academy and the SOA. The seminar will focus on the quantification of risk to determine required capital for a multi-line company. The modeling project plan and approach will be shared with the SOA research coordination group to coordinate additional research topics and a theoretical critique of the modeling demonstration.

- The task force has continued to involve

health perspectives in developing both modeling and the viability principles. While the P&C practice has been invited to participate, they already have a framework which allows actuarial judgment in the determination of reserves and are focusing their capital assessment on developing additional dynamic financial analysis tools and methodologies. In fact, the modeling for the seminar will be based, in part, on a platform built for a P&C dynamic financial analysis model.

- A viability subcommittee has been formed to present to and discuss with LHATF in 2000 viability concepts and examples to illustrate the value of a comprehensive overview on company risks. In Canada, a similar concept has been in place for over 10 years. In addition, external events have served to broaden the discussion in the following ways:
  - The increasing awareness of companies that may have risks that are unlikely to occur, yet would have a material financial impact if they do occur. These high impact, low frequency risks could be such elements as seven day puts, or minimum death benefit guarantees. How should these risks be monitored and should they be reflected in the balance sheet or a disclosure statement? These risks need to be addressed and could certainly be addressed in a viability report or through some other disclosure process.
  - Nationally, the passage of the financial services reform bill has led to the Federal Reserve Board requesting background information on insurance solvency regulation. The ability to dialogue with banks and others about risk from a ruin theory perspective is very useful and increasingly necessary.
  - Internationally, there is a desire to formulate international capital standards for insurance and for other financial services industries. Some are concerned that companies might take advantage of capital differences through arbitraging national differences. This development

(continued on page 10, column 1)

## Blazing the Path for the Unified Valuation System

*continued from page 9*

is just as real as, though perhaps less prominent than the fair value discussions that are also taking place within the International Actuarial Association (IAA) and the International Accounting Standards Committee (IASC).

- Interestingly enough, many of the UVS participants feel that a ruin theory or S-curve approach will also be required to implement a fair value methodology (and has in fact been suggested by the IAA, linking the methodology to determine capital with that used to determine earnings). The seminar modelers expect that the next development from the fall seminar would be to extend the modeling concepts to fair value. Whether correct or not, external events are accelerating the interest in performance or income measurement and in linking it to the required capital framework.
- The increasing acquisition of U.S. insurance organizations by large European multinational insurers has led to extensive internal research to determine how to more objectively assess capital requirements across countries and lines of business.

### Personal Observations Going Forward Into the Next Millennium

First, some comments on criticisms of UVS.

- **Complexity.** It is important to sort out valid criticisms of the concept from criticisms that are really based on resistance to change or the uncertainty introduced by it. Imagine imposing our current statutory framework onto another country without reserve and capital requirements. Assume all agree it is the right decision. It would still be overwhelming and very complex because all of it is new. Yet to us, our familiarity with the current system takes much of the current work for granted,

and we are used to implementing marginal changes to an already familiar system. Certainly as we spend more time researching and becoming familiar with the concepts, more of the complexity can be dealt with on a marginal basis. What if only 60% of the risks can be modeled with effective tools and the rest is too complex? Fine, then make a safe, simple guideline for the 40%. This will focus attention on the missing areas and allow the profession to add additional refinement and sophistication on a marginal basis.

- **Discipline.** There are two tools to discipline the process. One is a professional standard along with the reviewing actuary concept. Actuaries are able to set professional standards and impose discipline on its members. The other tool is the use of the feedback loop via public disclosure. When a company prices a new product, those expectations are then built into the valuation process and the public financial results reflect the impact of emerging experience (as happens for FAS97 type products).
- **Too Costly.** First, some of today's work will no longer be necessary. In addition, while additional work is always more costly, what are the benefits? Ten years from now, whether UVS is implemented or not, valuation will still be complex and often involve significant overtime at year-end and additional resources throughout the year. But the key comparison will be how much value could or would have been added by a different valuation framework. In the business of making assumptions about risk and human behavior, data and robust models are invaluable. Finally, this has ignored the cost of capital to the consumer. If insurers are holding too much capital, both owners and policyholders return is lessened. If too little capital is being held, the return is reduced to owners and policyholders of other companies.

- **Other.** If actuaries are not qualified, then who is? A vibrant industry will not flourish without a trained professional body. Regulators want that resource and were the ones that came to the Academy asking for recommendations.

Finally, some final principles to consider:

- Staying focused on principles has made the UVS concept relevant to increasingly wider and diverse audiences. Its intent is to more fully establish the scientific and professional foundations of actuaries.
- This may suggest a change in focus from the "right" formula answer to understanding and communicating trends and estimates over a period of years. In other words valuation reveals not just how one is doing, but also reveals what one is learning about prior pricing expectations.
- UVS need not and will not be perfect, but its forward-looking focus should be more robust than the current system. I believe it is about pointing the rudder of our professional direction to a more valuable, growing, and dynamic role and it is about substituting facts and demonstrations for appearances and impressions of conservatism.

*David K. Sandberg, ASA, MAAA, is vice president and chief financial actuary at LifeUSA in Minneapolis, MN. He can be reached at [dave.sandberg@lifeusa.com](mailto:dave.sandberg@lifeusa.com).*

## An Actuarial Analysis of FAS 133 (Part 2)

*continued from page 1*

derivatives embedded in non-derivative financial contracts.

The Statement excludes traditional insurance contracts that compensate the policyholder as a result of an identifiable insurable event or of an adverse change in the value of a specific asset or liability for which the policyholder is at risk.

However, the FASB believes that some insurance contracts may contain derivative-like features, and these contracts receive specialized accounting treatment.

FAS 133 is effective for fiscal years beginning after June 15, 2000, but companies may early-adopt as of the beginning of any fiscal quarter. Most insurers will delay adopting FAS 133 until January 1, 2001, when adoption is required.

### The Equity-Indexed Annuity

Emerging within the past five years, the equity-indexed annuity (EIA) is a variant of a traditional deferred annuity and links a portion of credited interest to some external index (typically the Standard and Poor's 500 stock price index). The EIA thus replaces interest credits determined largely at the discretion of the insurance company with those defined through formula based on movements in the S&P 500. A wide variety of product designs are found in the EIA world, depending on the specific crediting formula employed. For example, a point-to-point design bases credited interest on the change in the S&P 500 over two discrete points in time, say five years apart. In this case, excess interest over and above that contractually guaranteed might be defined as some participation rate (like 75%) multiplied by the five-year percentage change in the S&P 500, but no less than zero. In contrast, an annual reset design bases excess interest on yearly changes in the S&P 500.

### FAS 133 Treatment of Equity-Indexed Annuities

According to FAS 133 paragraphs 10c, 12, 61h and 185, instruments containing

cash flows or other exchanges linked to the performance of an equity index are considered under FAS 133 to comprise two components: (1) a traditional debt instrument and (2) a series of forward options on the index. As such, the equity-indexed annuity is treated as a traditional deferred annuity combined with a series of forward-starting equity-indexed embedded derivatives. Since the economic characteristics of the embedded derivatives are not clearly and closely related to the economic characteristics of the host policy, they must be separated by bifurcation from the host policy and marked-to-market through income. As a result, FAS 133 will introduce earnings volatility for the EIA writer to the extent that it is unable to "hedge" these exposures with other assets that are also marked-to-market through income.

At inception of the policy, the carrying amount of the host policy would be determined by independently calculating the fair value of the embedded derivative and then assigning the remainder of the EIA deposit to the host. (This treatment is consistent with the fundamental GAAP principle that gains and losses emerge over time.) The host policy would then be accreted from its inception value to its guaranteed liquidation value at a constant interest rate. The guaranteed liquidation value would be a contractual surrender, death or annuitization value available at the policy maturity or other expiry date. This approach is consistent with FASB staff guidance contained in FAS 133 Implementation Issue B6, Embedded Derivative: Allocating the Basis of a Hybrid Investment to the Host Contract and the Embedded Derivative.

For financial reporting purposes, the hybrid instrument (the host policy and the embedded derivative) would be reported as a single item. Some observers believe that the total policy remains subject to the requirements of FAS 97, Accounting and Reporting by Insurance Enterprises for Certain Long-Duration Contracts and for Realized Gains and Losses from the Sale of Investments. FAS 97 calls for the use

of the retrospective deposit method for universal life-type contracts, whereby the account balance accruing to the benefit of the policyholder is defined as the policy liability. Therefore, if an EIA policy's carrying amount under FAS 133 is less than its corresponding FAS 97 carrying amount, an adjustment would be required.

A minimum interest guarantee in an equity-indexed annuity is considered to be an embedded derivative that is clearly and closely related to the economic characteristics of the host policy and thus does not require bifurcation. Similarly, the market-value adjustment, which may be found in some equity-indexed annuities, represents an embedded derivative that is also clearly and closely related to movements in interest rates and not subject to bifurcation. Finally, the S&P 500-indexed embedded derivative contained in equity-indexed annuities cannot be treated as a hedged item since (i) all derivatives must be recorded in the balance sheet at fair value and (ii) paragraph 405 of FAS 133 prohibits hedge accounting if the hedged item is measured at fair value.

Conceivably, these embedded derivatives, once separated from the host policies, could be designated as hedging instruments in other company hedging relationships.

### Valuation of the Embedded Derivative

For actuaries, the S&P 500-based embedded derivative contained in equity-indexed annuities poses a new and challenging valuation exercise. FAS 133 requires that this derivative be measured at fair value, which paragraph 3 describes as "the only relevant measure for derivative instruments." Fair value is defined as the amount at which willing and unencumbered counterparties could transact an instrument. Active markets with quoted prices give the best evidence of fair value and should be used as the basis for measurement. In their absence, estimates of fair value should consider prices for similar instruments and results of valuation techniques (like option-pricing

*(continued on page 12, column 1)*

## An Actuarial Analysis of FAS 133 (Part 2)

*continued from page 11*

models) consistent with the objective of measuring fair value.

While little valuation guidance exists in GAAP, of most relevance for an equity-indexed embedded derivative may be FAS 123, Accounting for Stock-Based Compensation. FAS 123 states that “the fair value of a stock option (or its equivalent) ... shall be estimated using an option-pricing model (for example, the Black-Scholes or a binomial model) that takes into account ... the exercise price and expected life of the option, the current price of the underlying stock and its expected volatility, expected dividends on the stock, and the risk-free interest rate for the expected term of the option.” Further, the FASB believes “it should be possible to reasonably estimate the fair value of most stock options and other equity instruments” and finds that only in “unusual circumstances” will the terms of a stock option or other equity instrument make it impossible to reasonably estimate the instrument’s fair value. (Appendix B of FAS 123 illustrates techniques for estimating the fair values of options with complicated features that may have relevance in the EIA world.) Finally, in estimating the expected life of a stock option, FAS 123 looks to “expectations ... about employees’ exercise behavior.”

In applying option-pricing concepts to the embedded derivative in an equity-indexed annuity, valuation actuaries will need to observe the following considerations:

- In option-pricing, one is not generally free to select the capital market assumptions to be used. Wise Nobel prize winners have demonstrated through arbitrage arguments how a “law of one price” prevails. Governing valuation assumptions (e.g., volatility) for S&P 500-based instruments are observable in the marketplace. Further, invoking what’s known as “risk-neutral” capital market assumptions has been found to greatly simplify the valuation exercise.

- Value under option-pricing theory derives only from how and when financial instruments turn into cash. So, in valuing the EIA embedded derivative, the policy is followed through to its ultimate liquidation via surrender, death or annuitization. This means that accounting-inspired accruals (like credited interest) will not play a role in the valuation.

- The valuation actuary will need to identify the portion of the liquidation value attributable to changes in the S&P 500 by removing amounts related to the guaranteed liquidation value from it.

Only this residual piece enters into the value of the embedded derivative.

- The two principal options in the indexed annuity (the company’s limited right to reset certain crediting features and the policyholder’s right to “put” the contract back to the company for cash) should be reflected through appropriate behavioral assumptions. Since policyholder behavior regarding equity-indexed policies is not yet well defined, this valuation assumption will demand considerable attention from the actuary.

- A Monte Carlo approach to the valuation, wherein movements in the S&P 500 occur in a randomized fashion, is most intuitive and straight forward, although other methods are possible. The valuation apparatus employed by the actuary may need to model correlated changes in interest rates if these are thought to play a role in inducing policyholder or insurer behavior.

### Character of the Embedded Derivative

In accepting an EIA deposit, an insurance company agrees to make equity-indexed interest credits throughout the life of the policy. (To complicate the valuation exercise further, some companies also permit policyholders to “transfer” at specific times in the policy’s life by electing a

different method of crediting interest.) Certainly, the company’s liability to the EIA policyholder extends beyond the interest credits to be made at the end of the current policy year. Proper valuation of the EIA embedded derivative recognizes the intertemporal nature of the liability. Intertemporal effects reflect how capital market events, the insurance company’s subsequent credited rate response to them, and the policyholder’s resulting lapse/no-lapse decision can change the size and timing of a policy’s ultimate liquidation value. Recall that option-pricing theory derives value only from how and when financial instruments turn into cash. Thus, proper valuation recognizes the multi-term character of the embedded derivative and its ultimate “payoff” in the form of surrender, death or annuitization benefits.

### Representative Accounting Depiction

The above discussion demonstrates that the application of FAS 133 to equity-indexed annuities is a complex undertaking. Besides the proper identification of the embedded derivative and its valuation at fair value, issues of coordination and consistency with prior FASB statements (like FAS 97 and 123, but not limited to them) come into play. Using a hypothetical product design of a five-year point-to-point liability with no deaths, premature surrenders or renewals, Table 1 displays a spreadsheet (<http://www.soa.org/sections/finrep.html>) developed to clarify the mechanics of EIA bifurcation. Note that the depiction sidesteps some of the difficult valuation issues discussed above (e.g., policyholder psychology, multi-term valuation) by modeling a single index term only. Also note that important considerations like DAC, Federal Income Taxes and general expenses are ignored for purposes of illustration.

The spreadsheet depicts the emergence of earnings over the five-year period in response to a saw-tooth-like pattern of S&P 500 performance. In addition to bifurcating the liability into its host policy

and embedded derivative components, the spreadsheet funds the liability with a combination of a zero-coupon bond and an S&P 500 call option, both timed to mature in year five. Together, the bond and the call option fully defease the EIA liability regardless of where the S&P 500 winds up. Since the call option and the embedded derivative mirror each other and the zero-coupon bond and the host policy are both accreted at a constant interest rate, accounting symmetry is attained and smooth earnings emergence can be expected.

However, the aforementioned FAS 97 floor disrupts accounting symmetry in year one, when an equity market downdraft depresses the fair values of both the call option and the embedded derivative by an equal amount. But since the total value of the hybrid instrument (the host policy together with the embedded derivative) is not permitted to pierce the FAS 97 floor, the spreadsheet depicts the loss resulting from the artificially elevated liability level. (See the explanatory calculations at the bottom of Table 1 on the Web site). This year-one loss will then lead to higher future-period earnings, as the flooring adjustment subsequently reverses. This asymmetry may be further exacerbated to the extent that the purchased S&P 500 call option fails to match the characteristics of the embedded derivative contained in the equity-indexed

Table 1

Illustration of GAAP Accounting: 5-Year Point-to-Point Liability						
Deposit	10,000					
Participation Rate	75%					
Zero-Coupon Bond Rate	7.00%					
<b>Capital Markets</b>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Index Growth		-10%	20%	-10%	20%	20%
Index Level	1,500	1,350	1,620	1,458	1,750	2,104
Implied Volatility	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%
Risk-Free Rate	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Dividend Rate	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%
<b>Calculation of Black-Scholes Option Values</b>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Minimum Guarantee (SNFL)	10,433					
Guaranteed Growth in Policy Value	4.33%					
Liability Option Strike	1,587					
Time to Expiry	5	4	3	2	1	0
d1	0.6145	0.2847	0.6190	0.1890	0.7702	
d2	0.1226	-0.1553	0.2380	-0.1221	0.5502	
Black-Scholes Price	384.39	238.94	354.97	182.34	287.40	517.11
<b>Balance Sheet</b>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Market Value of Option	1,922	1,195	1,775	912	1,437	2,586
Zero-Coupon Bond (HTM)	8,078	8,644	9,249	9,896	10,589	11,330
Total Assets	10,000	9,838	11,023	10,808	12,026	13,915
Market Value of Embedded Dx	1,922	1,195	1,775	912	1,437	2,586
FAS 133 Host	8,078	8,502	8,949	9,418	9,913	10,433
FAS 97 Floor	10,000	10,085	10,171	10,258	10,345	10,433
Total Liabilities	10,000	10,085	10,723	10,330	11,350	13,019
Equity	-	(247)	300	478	676	896
Pre-Tax Income		(247)	547	178	198	221

annuity. In this context, the important valuation considerations discussed above will be key to ensuring a reasonable pattern of EIA earnings emergence.

*Anson J. Glacy, Jr., ASA, is senior consulting actuary at Ernst & Young, LLP, in Hartford, CT. He can be reached at jay.glacy@ey.com.*

**Chairperson's Corner**

*continued from page 1*

bigger, and it's urgent. We can't stay a small, exclusive profession. The exclusivity of our profession does not keep salaries high. All it does is restrict the scope and volume of work performed by actuaries.

Once again, a challenge and opportunity is presenting itself. On past occasions our profession has been too small, too parochial, or perhaps both, to see the

needs of business and society as opportunities to provide valuable services. Once again, the need is there. Now that the "Big Tent" concept and the activities of the SOA's Strategic Planning Committee are familiar to most of our members, our perspective is broader. Once again our profession is being challenged. This time around, I think we're ready.

The next Chairperson's Corner will talk about how your participation can make a difference and how you can get involved.

*Mike McLaughlin, ASA, is a partner with Ernst and Young LLP in Chicago, IL.*

## The “X” Factor — Are You Ready?

by Larry Gorski

**D**o you have responsibilities involving statutory valuation? Are you an Appointed Actuary? Do you work in the reinsurance area? If you answered “yes” to any of these questions, you may be interested in attending an upcoming seminar.

The Financial Reporting Section is sponsoring a seminar on Regulation XXX and associated certification requirements. The seminar is scheduled for Wednesday, June 21, 2000 in San Diego. This is the day before the SOA Spring Meeting.

The seminar will focus on the regulatory actuarial certification requirements concerning the use of “X” factors, statistical methods for analyzing the appropriateness of selected “X” factors, and issues concerning reinsurance and the choice of “X” factors. Current drafts of relevant Actuarial Standards of Practice and Actuarial Practice Notes will be distributed and discussed. Ample time will be given to addressing questions from participants.

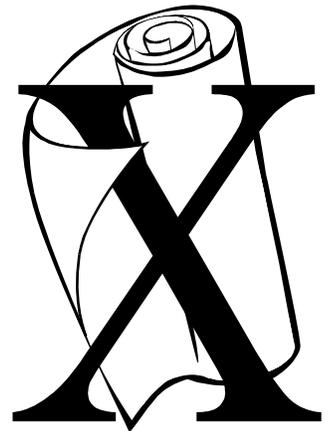
Scheduled presenters include Donna Claire, Jim

Van Elsen, Larry Gorski and Dan Towriss. Each presenter has been active in one or more of the following activities: development of the NAIC Model Regulation, the Actuarial Standard of Practice, the Actuarial Practice Note, and company implementation.

This seminar has been approved for 6 units of professional development credit.

For more details, see the SOA Web site (<http://www.soa.org>) and look under *Meetings and Seminars*.

**Larry Gorski, FSA, is life actuary with the Illinois Department of Insurance, and treasurer of the Financial Reporting Section. He can be reached at [Larry\\_Gorski@ins.state.il.us](mailto:Larry_Gorski@ins.state.il.us).**



### XXX Practice Notes - Call For Questions

A work group has begun preparing a Practice Note relating to issues under Regulation XXX. Practice Notes are to represent a description of current practices commonly employed by actuaries in the United States. The purpose of the Practice Notes is to assist actuaries who must comply with the many new and somewhat technical issues of Regulation XXX. As part of the Practice Note preparation, the work group is asking that you submit for consideration any questions or issues related to Regulation XXX where you believe it would be helpful to have a description of commonly used practices. Please send your questions and issues to Damien McAndrew at the American Academy of Actuaries.

## *CARVM Reserves for Variable Annuities with Guaranteed Living Benefits*

by James W. Lamson

**T**his article provides an update on progress made so far by the NAIC's Life and Health Actuarial Task Force (LHATF) and the American Academy of Actuaries in developing reserve requirements for variable annuities providing guaranteed living benefits. For those who aren't familiar with these product features, a brief description is in order.

Current product offerings in the annuity marketplace often attempt to shield the policyholder from the downside risk of market value fluctuations or long-term underperformance. While most equity indexed annuities accomplish this by providing a guarantee equal to the 3% interest accumulation of 90% of premiums paid, many variable annuities express minimum guarantees in a variety of other innovative ways. Since these guarantees provide benefits only to contract holders who are still alive, they are called "Variable Annuity Guaranteed Living Benefits" (VAGLBs).

### **Example VAGLBs**

In this article, two examples of VAGLBs are described — the Guaranteed Minimum Accumulation Benefit (GMAB) and the Guaranteed Minimum Income Benefit (GMIB). The former benefit guarantees that the deferred annuity account value will not be less than a minimum value at the end of a waiting period, such as 10 years. The latter benefit guarantees that if the contract is annuitized at the end of the waiting period, the income produced will not be less than a guaranteed minimum. For example, a contract might guarantee that, despite either long-term underperformance or drop in value of the assets backing up the variable annuity separate accounts, the account value at the end of the waiting period will not be less than the accumulation of premiums, less withdrawals, at a stated interest rate, such as 5% (i.e., a 5%

"rollup" of premiums). One simple type of GMIB would provide the contract holder an option to annuitize the account value at the end of the waiting period, and the income is guaranteed to be no less than that produced by applying annuitization rates specified in the contract to the 5% premium rollup described above.

Notice that in the examples, the GMAB benefit is automatic and applies to all contract holders, whereas the GMIB is an optional benefit and will only have financial value for those contract holders actually electing the option. A charge for these benefits is assessed against the account value and is typically expressed in terms of basis points, such as 100 or 150 annual basis points.

### **Risks Assumed by the Insurer**

An insurer issuing contracts containing VAGLBs takes on the risk that the performance of the separate account assets is less than that guaranteed by the VAGLB. This can occur through long-term underperformance as compared with the performance inherent in the VAGLB benefit determination (e.g., the 5% rollup assumed in the GMAB or GMIB benefit of above). Alternatively, however, it may occur because of market value drops occurring in the period preceding the end of the waiting period.

Some VAGLB designs incorporate benefit determination that involves one or more previous account values. For example, a "maximum anniversary value" benefit is one for which the VAGLB is based on the largest of the account values on all prior contract anniversaries. As you can see, the value of VAGLB guarantees can be substantial, but very difficult to determine in advance.

### **Regulatory Efforts to Date**

In January 1998, LHATF requested that the American Academy of Actuaries

appoint a VAGLB Work Group to recommend a reserve determination procedure for VAGLB benefits. Steve Preston and Tom Campbell, who you might remember co-chaired similar work groups for the development of Actuarial Guidelines XXXIII and XXXIV, were appointed to lead development of reserves for VAGLBs. The AAA VAGLB Work Group has done a tremendous amount of work thus far in developing a workable reserve methodology, but still has a way to go before finalizing its recommendations.

It is anticipated that LHATF will take steps toward adoption of a new actuarial guideline for the calculation of the Commissioner's Annuity Reserve Valuation Method (CARVM) reserves for variable annuities with VAGLB benefits. The Academy VAGLB work group plans to present its recommendations for such a guideline at the June 2000 meeting of LHATF.

The original charge of the VAGLB Work Group was to recommend methodology for reserve calculation for these benefits that could be accomplished under the CARVM reserve structure. It soon became apparent that using the same integrated CARVM structure as outlined in Actuarial Guideline XXXIV might prove workable. In other words, a benefit stream of "net amounts at risk" for the VAGLB could be added to the other benefits in a CARVM Integrated Benefit Stream to produce a single total Integrated Reserve. Then, the reserve for the VAGLB would be "solved for" as the excess of this reserve over the CARVM reserve obtained by ignoring the VAGLB benefits. This solved for reserve would be held in the general account of the insurer.

### **Consistency with CARVM**

It was determined that any simplified proposed methodology for integrating the costs of VAGLB benefits with other contract benefits in applying CARVM should be judged by comparing the

(continued on page 16, column 1)

## CARVM Reserves for Variable Annuities with Guaranteed Living Benefits

*continued from page 15*

resulting reserve for the VAGLB with a stochastically determined "benchmark." The benchmark was determined by running 1,000 stochastic fund appreciation scenarios, calculating the same type of "solved for" VAGLB reserve using rates consistent with the scenario and reflecting the charge for the benefit and then ranking the results. The simplified methodology is deemed to be consistent with CARVM if its "solved for" reserve falls within a reasonable percentile of the ranked stochastically determined VAGLB reserves.

The search for, and testing of, a simplified methodology for determining VAGLB net amounts at risk resulted in what has become known as the Keel Method. Since the Keel Method does not produce acceptable results for certain types of VAGLBs, the work group is developing a "valuation actuary" approach under which deterministic scenarios for projection of VAGLB costs must be developed by the actuary and for which there is a limited degree of flexibility provided for showing the adequacy of the method developed.

### Keel Method

After casting about for some time in the search for a deterministic method for calculating VAGLB net amounts at risk, a method was developed in 1999 based on statistically supportable mean returns and volatilities for the types of investments assumed to be made in a given class of variable annuity fund. Tim Hill, the member of the VAGLB Work Group that conducted most of the numerical testing during 1999, named the resulting methodology the "Keel Method" because a graph of the formula for calculating cumulative returns used to project account values to compare with the VAGLB benefit guarantee looks a bit like the keel of a boat. The formula is oriented toward producing expected long-term cumulative investment returns at a given statistical percentile assuming that such returns have a lognormal distribution.

The formula for the Keel Method projection of cumulative returns is shown below, along with a description of its parameters:

$$Index_t = Index_{t-s} \cdot e^{\mu s + N\sigma \sqrt{s}}$$

where:

$Index_t$  = the index at time  $t$

$\mu$  = mean fund index return  
(stationary over time)

$\sigma$  = fund index volatility  
(stationary over time)

$s$  = period in years between  
 $t - s$  and  $t$

$N$  =  $1 - p$  percentile of standard  
normal distribution

Through inspection of the formula, you can see that if you wanted to project cumulative fund performance that reflects an 83.33% confidence level of having "captured" the poorest cumulative returns, then you could use the index values produced by the formula (with  $p=0.8333$ ) to calculate account values (or their annuitized values) at the end(s) of VAGLB waiting periods, and subtract the resulting account value(s) from the VAGLB guaranteed benefit(s) in order to calculate the net amount(s) at risk.

### Results of Keel Method Testing

The Keel Method was tested for consistency with CARVM as outlined earlier. The results were very favorable for benefits such as the example GMAB and GMIB benefits described earlier in this article. However, it was determined that the Keel Method was not suitable for VAGLB designs that are "path dependent". What this means is that if the VAGLB benefit is a function of the growth of actual account values (which

depend on the path of projected cumulative returns), then the Keel Method does not produce suitable reserves. An example of such a path dependent design would be a "maximum anniversary value" VAGLB, as discussed earlier, or any other type of VAGLB where the benefit is based on prior account values.

### Keel Method Applicability

Since the Keel Method has been demonstrated to produce adequate reserves for VAGLBs that meet certain criteria (the most important of which is not being path dependent), the work group intends to recommend a "safe harbor" for use of the Keel Method. This means that if a contract does not contain any path dependent VAGLBs and meets a few other criteria, the Keel Method may be used without preparation of a demonstration of its consistency with CARVM.

### Valuation Actuary Method

The VAGLB Work Group intends to recommend that deferred variable annuities containing VAGLBs must have CARVM reserves computed according to a methodology that can be demonstrated by the issuing company to be consistent with CARVM as outlined above. Stochastic testing of the proposed methodology will be required.

As noted above, filing of products qualifying for the Keel Method safe harbor will not require stochastic testing. However, for all other products containing VAGLBs, the recommendations will require: a) discovery of one or more deterministic formulas to project VAGLB net amounts at risk; b) testing of the resulting "solved for" VAGLB reserves against those resulting from a large number of stochastically generated scenarios to test for consistency with CARVM; and c) filing, at the time of policy approval, of a demonstration that "solved-for" reserves produced using the deterministic formula are adequate in comparison to the stochastically generated "solved-for" reserves.

Whether or not the safe harbor Keel Method is used or if another deterministic formula is developed and a demonstration is filed, actuarial certifications as of policy approval and annually thereafter will be required, testifying to the qualifications for, and appropriateness of, the method used.

\* \* \*

If this update on the development of VAGLB reserve methodology has sparked your interest, please remember that information on developments at the VAGLB Work Group and at LHATF meetings is open to all members of the industry. Contact Damien McAndrews at the American Academy for information on contributing to the Work Group's efforts.

**James W. Lamson, FSA, MAAA, is managing principal at Actuarial Resources Corporation in Overland Park, KS. He can be reached at [JimLamson@arcval.com](mailto:JimLamson@arcval.com).**

## Treasurer's Report: "Wait Until Next Year"

by Larry Gorski

**B**y now everyone has recovered from the stresses and strains associated with financial statement preparation.

The dust has settled on the books of the Financial Reporting Section and it's time for our annual report. For the first time in several years, our Fund Balance has decreased. The Fund Balance decreased from \$298,094 as of December 31, 1998 to \$243,662 at the close of 1999. The decision to draw down the Fund Balance was thoroughly discussed by the Financial Reporting Section Council. The decision was made to fully participate in the celebration of the SOA's 50<sup>th</sup> anniversary at the annual meeting and to invest in

(\$26,250); and the cost of postage and mailing of the Section newsletter and monograph (\$25,194).

For the upcoming year, the Section has made financial commitments (\$77,938) with the bulk of the commitment (\$50,140) going towards the preparation of the GAAP textbook. Taking these commitments into consideration and Accounts Payable of \$47,836, the Section's Unrestricted Fund Balance as of December 31, 1999 was \$117,887.

The underlying reasons for the decrease in our Fund Balance were the expenses to date associated with the preparation of the GAAP textbook, the one-time costs associated with Section



the future by funding a new textbook on GAAP. The textbook will be a valuable educational resource as the SOA begins to implement changes in the educational and examination process.

Income for 1999 was \$135,425, while expenses were \$189,857. Membership dues (\$26,490) and seminar registration fees (\$89,384) were the major sources of income. The drivers of our Section's expenses were: printing of the newsletters, Section monograph, and seminar material (\$50,558); the costs associated with seminars and the annual meeting cruise (\$37,097), travel costs associated with the preparation of the new GAAP textbook and Section Council meetings (\$24,389); seminar management fees

monograph (\$52,926), and the excess of expenses (\$20,265) over revenue (\$9,590) for the annual meeting cruise. Of course, the last annual meeting was special, the SOA's 50<sup>th</sup> anniversary, and the Section expects to start receiving income from the sale of the GAAP textbook, so next year's Treasurer's Report should show a return to positive growth in our fund balance. So just like the Chicago Cubs, we will have to "wait until next year."

**Larry Gorski, FSA, is life actuary with the Illinois Department of Insurance, and treasurer of the Financial Reporting Section. He can be reached at [Larry\\_Gorski@ins.state.il.us](mailto:Larry_Gorski@ins.state.il.us).**

## The Actuarial Opinion Model Regulation (AOMR) Takes Center Stage

by Norman E. Hill

For a considerable number of years the common denominator in discussions concerning the Actuarial Opinion Model Regulation (AOMR) has been controversy and complaints. These objections have been voiced by both regulators and industry.

The AOMR began with the 1990 amendments to the Standard Valuation Law (SVL) and Model Regulation, providing for two separate actuarial opinions:

1. No statement of asset adequacy — Section 7 of the model regulation.
2. Statement of asset adequacy — Section 8 of the model regulation.

Opinions under Section 7 (labeled “Section 7 Opinion”) would be allowed only for small companies (under \$500 million assets) that met various statistical tests of product and asset mix and surplus strength. The asset adequacy approach was described in Section 8, and so the second type of reserve opinion was labeled “Section 8 Opinions.” This section of the Regulation included descriptions of seven scenarios for interest assumptions in cash flow testing. Since these patterns had previously been included in New York’s Regulation 126, the seven formulas were referred to as the “New York 7.”

Most people accepted the requirement that all Section 8 reserve opinions must include full cash flow testing. This meant detailed projections of all elements of cash flow, such as interest, maturity, calls, and repayment/prepayment receipts from assets, and premiums, claims, and expenses generated from insurance liabilities.

Complaints about the AOMR came from several sources:

1. Industry — the required wording called for actuarial certification of compliance

with the “state of filing.” Many actuaries complained of substantial variances in state reserve requirements and their inability to keep up with constant changes in requirements. Mostly, these came from larger, widely licensed companies, including many licensed in New York (generally considered the toughest regulatory state).

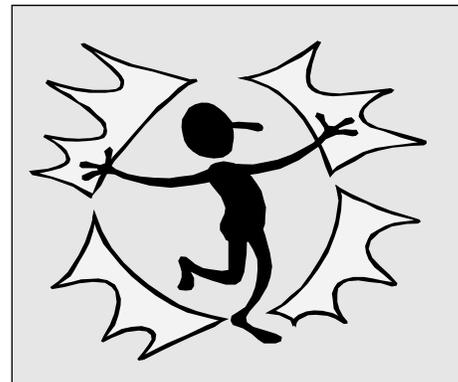
2. Regulators — their primary objection was that a Section 7 reserve opinion was mechanical. The actuary was attesting only to compliance of reserves with minimum statutory standards, not to reserve adequacy. Also, a second objection was that exemption criteria allowing small companies to file under Section 7 were too weak and did not cover many new types of innovative products and invested assets.

### Attempted Modification

Throughout most of 1996, an American Academy of Actuaries Task Force studied state reserve requirements. This group was named the State Variations Task Force. They were to research establishment of a comprehensive regulatory compilation that would describe in detail each state’s law, regulations, bulletins, and circular letters (written or unwritten), dealing with reserve requirements. In addition to the compilation, they were to make recommendations for its on-going maintenance, whether kept at the NAIC or some other suitable central location. The hope was that such a central depository would aid state regulators in evaluating reserve opinions from companies domiciled in other states.

In late 1996, this same task force made recommendations to modify AOMR, including the following changes:

1. Change asset adequacy opinions to compliance with state of domicile requirements.



2. Restrict Section 7 reserve opinions to companies under \$100 million assets, instead of the current \$500 million threshold.
3. Tighten exemption requirements for allowing Section 7 opinions, so as to measure reserves for Universal Life and participating life policies.
4. Further tighten exemption requirements to measure the extent of CMO invested assets.
5. Expand exemption requirements to measure liabilities for long-term care and non-cancelable disability. These products were normally not connected with the need for cash flow testing. However, several regulators wanted these included in measurement criteria, because of the lack of reserve standards.

The Academy’s approach fulfilled the desire of at least one regulator. He wanted a “package deal” to present to the industry — relieve the valuation actuary of the burden of certification of compliance with each state’s reserve requirements, in return for tightening exemption requirements for Section 7 opinions.

This proposal met with heated objections from many small companies, such as:

1. Not enough consideration was given to additional costs to small companies for asset adequacy testing. At this stage, most people in the industry tended to equate such testing with cash flow testing. This change could place extreme burdens on their scarce resources.
2. Wording in the proposal implied that cash flow testing for small companies would be relatively easy.
3. The rationale for including exemption criteria for participating life was unfounded.
4. The criteria for measuring the extent of CMO invested assets were far too broad, since only certain CMOs in segments known as "high tranches" exhibited volatile repayment patterns.

During the December meeting of the NAIC's Life and Health Actuarial Task Force (LHATF), these objections were part of a heated debate. One long-standing complaint about all Section 7 opinions was raised again; namely, that its reliance on mechanical calculations gave professional and indirect legal sanction to poor actuarial work.

The ACLI supported small company objections to the Academy's proposal. They did, however, request that regulatory desire for a "package deal" be eliminated, so that the goal of domiciliary state wording in reserve opinions could be considered separately. As a result, this proposal was not adopted by regulators and was sent back to the Academy for further study.

At this point Arnold Dicke, FSA, then an Academy officer, made a conceptual point that carried substantial weight in subsequent discussions. The extent of reserve testing and asset adequacy testing should be consistent with each company's "risk profile," i.e., the risks and volatility of its products and assets in term of C1, C2, and C3 components.

In the meantime, after the December debate, the State Variations Task Force returned to its original charge. Eventually, they concluded that a central source for

reserve requirements would be very unwieldy and time consuming for regulators to study. Therefore, no final recommendation in this area was made to the NAIC.

### Recent Developments

Over the next few years, regulators and the Academy Task Force wrestled with various issues of a revised AOMR:

1. One new proposal for allowing a Section 7 opinion would require a Gross Premium Reserve (GPR); i.e., a projection of future cash flows at an appropriate discount rate. This rate should reflect projected asset performance, but not be tied directly to the incidence of each year's interest, maturities, repayment defaults, etc. The discount rate should not be mechanically tied to current yields from asset portfolios. For example, high yielding junk bonds should not result in higher discounts and artificially low GPR liabilities. Instead, the discount rate should reflect the degree of risk, so that it would actually be lower for riskier portfolios and liabilities.
2. Debate ensued over the degree of required conservatism in GPR assumptions. Should there be margins in assumptions, and, if so, how should they be expressed? Should each component have a margin, or should one over all margin be included? Some degree of regulatory support was reached for adding a final margin of 7½ % to the initially computed GPR. This would be considered a margin for "moderately adverse" conditions.
3. A proposed approach for allowing reserve opinions based on state of domicile was tied to new NAIC statutory codification requirements. The opinion would refer to separate reserve calculations based on codification standards. Basically, this called for reserves that conformed to NAIC models. A host of questions and controversy arose over this proposal:

- (a) Should all models be followed, even if not widely adopted by the various states?
  - (b) Should such codification reserves be shown, but without actuarial certification?
  - (c) Should such reserves be shown in total, or in various, defined segments?
  - (d) Instead of totals, should only the difference between the company's reserves and codification reserves be included in the opinion?
4. Other Section 7 exemption criteria were developed as follows:
- (a) For long-term care and non-cancelable disability, regulators added one for a new product, equity-indexed or equity-linked annuities.
  - (b) Participating life was removed from any exemption criteria.
  - (c) Maximum exemption limits on CMO invested assets were limited to those with high "flux scores" (measuring the extent of asset volatility) determined by the NAIC to be over 7.
  - (d) The \$500 million asset threshold was retained.

These various proposals all seemed to lack the necessary degree of regulatory support and enthusiasm. Some members of LHATF called for abandoning the entire AOMR project.

### Current Proposal

During 1999, still another proposal was structured. This newest approach to amending the AOMR seemed to enjoy considerable support among industry and regulators. It contained several fairly radical changes:

1. Under certain conditions, the state of domicile rather than state of filing would be allowed as the basis for actuarial reserve opinions. These conditions included either of the following:

## The Actuarial Opinion Model Regulation (AOMR) Takes Center Stage

*continued from page 19*

- (a) The domiciliary state makes available a complete written list of its valuation standards.
- (b) By the previous March 31, the company requests that the filing state rely on its domiciliary opinion and the filing state makes no objections by October 1.
- (c) The company submits for specific products a comparison of nationwide reserves on domiciliary state standards versus NAIC codification standards.

However, any Insurance Commissioner could still request a given company to report on compliance with his own state's reserve requirements.

- 2. All companies, large or small, would file reserve opinions based on asset adequacy.
- 3. The extent of asset adequacy testing would largely be left to actuarial judgment, by requiring the certification to state compliance with revised Actuarial Standards of Practice (ASOP) 7 and 22.

debate since 1996, several prominent actuarial regulators had made the same point.

- 5. To be consistent with actuarial judgment described in the above #3 and #4, the New York 7 scenarios for cash flow testing were removed from the AOMR draft.

### Implications

There are two very significant implications of these latest proposals. Actuarial judgment would play a greater role in setting reserves. Mechanical compliance with statutory limits on assumptions and methods could no longer form the sole basis for an actuarial reserve opinion. Also, each company's risk profile of liabilities and investment assets would play a dominant role in determining reserve levels.

### March 2000 NAIC Developments

When the latest proposal was discussed, small company objections were still vehement. The NALC representative

survey of its own small company membership indicated that most of them were similarly opposed. This trade organization did not change its long-standing support of the Section 7/Section 8 split opinions.

### Summary

The Actuarial Opinion Model Regulation has been controversial throughout its life. At this point, it is uncertain whether the newest proposal for an update can work its way through the torturous process of review and discussion by regulators and all industry segments, large and small. However, revised ASOPs 7 and 22 will probably be adopted. Even under the current AOMR, more actuarial reserve opinions may deal with asset adequacy testing and risk profile considerations, without automatic ties to company size.

*Norman E. Hill, FSA, is executive vice president and chief actuary at Kanawha Insurance Company.*

---

***“There are two very significant implications of these latest proposals. Actuarial judgment would play a greater role in setting reserves. Mechanical compliance with statutory limits on assumptions and methods could no longer form the sole basis for an actuarial reserve opinion.”***

---

- 4. These two ASOPs are being redrafted to include specific statements that cash flow testing is not automatically required in all cases. Asset adequacy is not synonymous with cash flow testing. During the years of discussion and

objected to the additional expense and work inherent in asset adequacy opinions. They stated that if LHATF approved these revisions, they would fight it at higher NAIC levels and also on a state-by-state basis. Also, the ACLI reported that its

## A Call For Contributors

For 50 years, the Society of Actuaries (SOA) has performed a variety of services that have benefited the public, insurance companies and other organizations in the financial services industry, and the professionals that practice in them. Some of the most valued services have been the analysis and publication of experience studies of mortality, morbidity, voluntary termination, and investment performance and other research based on these data.

These projects have helped insurance companies and other organizations to:

- Assess and reduce risk
- Design innovative products
- Manage assets

- Determine appropriate levels of liabilities for future contingent events, and
- Analyze revenues and costs.

Because of the importance of these studies to many audiences, we encourage insurance companies to become data contributors, particularly to our individual life and annuity mortality studies.

At this time, for example, the SOA is spearheading the development and analysis of mortality experience to help create a new individual life insurance valuation table to replace the 1980 CSO. Also, the SOA is developing a brand new study that would combine mortality and underwriting data.

A large pool of contributors is very important for these studies, because the

broader the base of experience data included, the more comfortable regulatory and private sector actuaries can be that the information is representative of the industry.

A company that contributes data receives material from the SOA that allows it to compare its contributed experience in the identical formats used for the aggregate experience of all companies contributing to the study.

Please mail back the form on page 22 to Jack Luff, at of the Society office, or call him at (847) 706-3571, if you would like to become a data contributor or would like further information.

### *Society of Actuaries Selected Current and Pending Experience Studies*

**1. Annual individual life insurance mortality.** Your company's data is needed for the 1999 and 2000 single-year mortality studies and our comprehensive 1995-2000 study.

**2. New valuation mortality table.** The 1990-95 SOA basic tables that will become available later in 2000 are expected to form the basis that the SOA will use in support of the NAIC's Life and Health Actuarial Task Force (LHATF) in the development of a new statutory valuation table for individual life insurance to replace the 1980 CSO. It is anticipated that these tables will lead to lower statutory reserves and possibly lower premium rates — recognizing the decreases in mortality rates over the last two decades and reflecting a multi-dimensional analysis of the underlying data. We seek supplementary mortality data on smoker/non-smoker distinct bases, data at issue ages above 70 and attained ages above 85, and data on preferred risk (and residual standard class) bases. Data on all years of experience through 1999 policy anniversaries are being sought. It is anticipated that SOA's experience table will end at an age significantly above age 100. The

SOA's report to the LHATF is targeted for March 2001. The data formats for this and the first project are very similar.

**3. Lab test and other more detailed experience.** A brand new study will combine mortality data with laboratory test results and personal history from life insurance applications. Such a study could lead to significant improvements in the life insurance underwriting process and a new generation of innovative products. The planning process is currently nearing completion and you should be hearing more about this unique study soon. One of the goals of the study is to try to find valuable new correlations among the many types of information that will be collected. The Task Force has taken into consideration the very strict requirements concerning the maintenance of insured privacy in developing this innovative study.

**4. Lapse experience.** The SOA and LIMRA International have jointly sponsored studies of contract surrender rates on large deferred annuities in the "hot money" 1980s, a more general deferred annuity study of experience

in the 1992-94 period, and a study of termination rates on universal life insurance policies. The SOA and LIMRA are discussing mutual sponsorship of future experience studies. Possibilities for analysis include full and partial withdrawal rates by distribution channel and type of product, 1035 exchanges, and qualified/non-qualified status.

**5. Annuity mortality.** The mortality experience underlying the Annuity 2000 Table is not as extensive as many would like. In addition, studies of mortality on deferred and immediate annuities and settlement options and studies of the rates of annuitization of deferred contracts may be initiated in the near future.

**6. Asset credit risk.** Our asset credit risk studies have been groundbreaking. The SOA and the American Council of Life Insurance (ACLI) have jointly sponsored a study of credit risk on life insurance companies' private placement bonds. This has become an ongoing study of this experience.

### Mail Back Form

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

**Please indicate one or more experience studies to which you would like to contribute data or those studies about which you would like further information.**

Yes, we would like to contribute data	We would like more Information
---	--------------------------------------

- |          |       |   |
|----------|-------|---|
| 1. _____ | _____ | Annual individual life mortality            |
| 2. _____ | _____ | New valuation mortality table               |
| 3. _____ | _____ | Lab test and other more detailed experience |
| 4. _____ | _____ | Lapse experience                            |
| 5. _____ | _____ | Annuity mortality                           |
| 6. _____ | _____ | Asset credit risk                           |

**The name, address, telephone number, and e-mail address of your appropriate contact person (or persons):**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone: \_\_\_\_\_

E-mail: \_\_\_\_\_

## An Update on International Accounting Standards for Insurance

by Bruce Moore

The International Accounting Standards Committee recently released an Issues Paper on Insurance. Its Insurance Steering Committee has been working for almost two years on a project that will ultimately produce an Accounting Standard for Insurance. The actuarial professional has been heavily involved in that effort, primarily through a special Committee of the International Actuarial Association focused on this issue. The result of this project will have broad implications for the insurance industry, including ultimately U.S. insurers as well. The IASC released its Issues Paper in December 1999, with a comment deadline of May 31, 2000. A copy can be obtained from the following Web site: [www.iasc.org.uk/frame/cen3\\_113.htm](http://www.iasc.org.uk/frame/cen3_113.htm).

This article reviews the background of that project, the processes by which the actuarial profession and others are providing input to that, and some of the more important issues.

### Background

A number of important trends during the 1990s have influenced the development of International Accounting Standards. The internationalization of capital markets has led to a need for accounting standards that could be used for multinationals to access capital outside their home country. The increasing use of complex financial instruments such as derivatives has led to a need to reexamine accounting standards at both an international level and individual countries. (FASB is actively reexamining the accounting for financial instruments now).

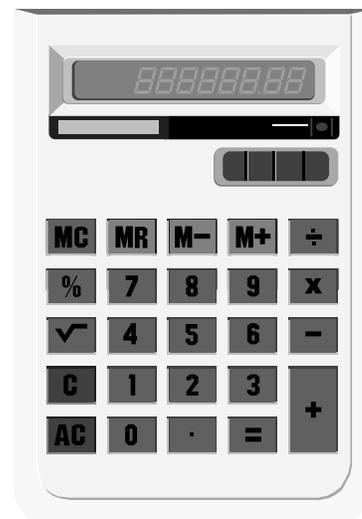
The convergence of banking and insurance and other financial services industries has also led to a need for more consistent accounting between financial services industries. The deregulation of insurance markets and the ever-increasing market share of multi-national insurers has led to a need for a common standard for insurance for both general purpose

financial reporting and for regulatory purposes.

This globalization of capital markets and the trend of large multinational companies to list their shares on several international stock exchanges (and report different earnings according to the accounting regime dictated in each) prompted the International Organization of Securities Commissions (IOSCO) in 1994 to challenge the International Accounting Standards Committee (IASC) to develop a set of consistent accounting standards that could be used in those circumstances and to have the task completed by the end of 1998. The IASC accepted this challenge by undertaking a major drive to strengthen all of the international accounting standards. The first step was to review and update all standards generally applicable to all industries by the end of 1998. Industry-specific standards such as insurance were to be handled after that date. In some areas, compromises had to be made to meet the December 1998 target. For financial instruments, the standard adopted (IAS 39) has many similarities to FASB 115. But there is also an on-going project by another multinational accounting working group to revisit accounting for financial instruments with a goal of moving toward full fair value accounting.

The actuarial profession also noted the increasing importance of international activities and as a result, formed the International Forum of Actuarial Associations (IFAA) as a section of the International Actuarial Association (IAA) in 1995. In 1998 the IAA restructured itself and took over the role of the IFAA. North American actuarial leaders such as Paul McCrossan and Walt Rugland played important roles in these developments. The IAA now serves as the primary voice of the actuarial profession on international matters.

The IAA had its first interaction with the IASC in working together on an accounting standard for employee benefits, which was



part of the broad overhaul of IAS. The IAA got involved a bit late in that process, and it was a challenge to reach a workable compromise with the accountants on some issues. Having learned from that experience, the IAA geared up its efforts on the insurance accounting standard much earlier in the process.

The initial meeting of the IAA insurance accounting committee took place in April 1997. The IAS Steering Committee on Insurance had not yet been formed. But an IASC Discussion Paper on financial instruments had just been released in March of 1997, with a clear intent to move toward fair value accounting for all financial instruments, and a conclusion that insurance policies should generally be considered to be financial instruments.

The IAS Steering Committee on Insurance was formed in late 1997. Its members are from public accounting firms and insurance companies, representing countries around the world. The actuarial profession has been an active contributor to its work. Paul McCrossan represents the IAA as a non-voting member at the meetings. The IASC manager for this project, Peter Clark, occasionally attends the IAA Insurance Accounting Committee Meetings. In addition, there is very active exchange of ideas via e-mail. The IAA

(continued on page 24, column 1)

## An Update on International Accounting Standards for Insurance

continued from page 23

Committee had provided input on earlier unpublished drafts of the IAS Issues Paper. In addition, a number of actuarial position papers have been shared with the Steering Committee.

There have been a number of other IAS issues affecting the actuarial profession, and the IAA Committee on International Accounting for Insurance has been busy with those as well. (The IAS standards for employee benefits are handled by a different IAA committee). These issues include such areas as provisions and contingencies. A separate IAS project on discounting, an area of obvious importance for insurance, has recently started. Sam Gutterman is the actuarial representative on that committee. Wayne Upton of the FASB staff, a person well known to most U.S. actuaries involved in financial reporting, is also actively involved in both the insurance accounting project and the discounting project.

The IAS Insurance Steering Committee started its work in 1997 and met several times in 1998 and again in 1999. This work culminated with a publication in December 1999 of the Issues Paper covering the broad high-level issues of insurance accounting. The comment deadline is May 31. The next step of this Committee will be to review the comments received and release a Draft Statement of Principles for comment, followed by a similar process for a final Statement of Principles and finally an Exposure Draft of the Standard.

The target effective date for a new Insurance Accounting Standard is 2004. Throughout this project, an assumption stated by the IASC is that by the time the new insurance standard is in place, a new standard requiring fair value accounting for substantially all financial instruments will also be in place.

### Developing Responses to the IASC Issues Paper

As noted above, the International Actuarial Association is taking the lead

on this for the actuarial profession. The interaction over the past two years has been intense, and there are many parts of the Issues Paper where the impact of earlier actuarial input is clearly evident.

In January of this year, there was a joint meeting of representatives of the IASC Steering Committee and representatives from the IAA Committee to discuss key issues. The IAA Committee on Insurance Accounting is now conducting an intensive effort to develop an official actuarial response to the IASC. This process is very open, with most of the work shared via e-mail with over 150 committee members and interested parties. There was a three-day drafting session in London in early April, with an additional final review planned for May in Jerusalem. The IAA responses will provide specific comments on the preliminary views or questions raised in the Issues Paper, with more in-depth papers on a number of key issues of concern to actuaries (e.g., impact of the cash value floor for liabilities, the role of the actuary, reflecting the issuer's credit risk in fair values, catastrophe and equalization reserves).

There has been a lot of activity outside the actuarial profession as well. In the U.S., the NAIC has a committee preparing responses to the IASC. The Association of Investment Management and Research (AIMR) also has a committee preparing responses (with a broader than just U.S. perspective). FASB helped stimulate insurance industry interest in this by publishing its Preliminary Views on Reporting Financial Instruments at Fair Value with the same May 31 comment deadline. While many U.S. insurers have shown little interest in International Accounting Standards (which are not intended to replace U.S. GAAP for U.S.-based securities issuers), similar issues raised in the FASB document do get their attention. On the actuarial side, the American Academy of Actuaries has a Working Group on International Accounting Issues and recently formed a separate task force chaired by Burton Jay

to address fair value issues raised in both the IASC and the FASB documents. The Casualty Actuarial Society and the Society of Actuaries also have committees working on this and on the broader research and education efforts that will be necessary in moving toward a reliable system of fair value accounting over the next few years.

In Canada, the actuarial and accounting professions have been actively reviewing the IASC issues paper and are considering preparation of a joint response to the IASC. The Canadian insurance industry associations are also actively reviewing this. Outside North America, there has also been active review, including strong interaction among accounting and actuarial professions in a number of countries — the UK, Australia, The Netherlands, Japan and Germany being notable examples. It is anticipated that most of these efforts will lead to separate national association comment papers to the IASC, with the actuarial papers generally supporting the IAA committee's position and pointing out additional specific areas of concern to that country.

There has also been a lot of insurance industry activity in response to this. Parallel to the case with banking, there is strong resistance by some major insurers to having fair value flow directly into income statements and balance sheets, and that will likely be reflected in their responses.

### The Issues

The IASC's Issues Paper is a very impressive document, and reflects a lot of progress over the last two years. It is essentially a review from first principles of how insurance contracts ought to be accounted for. The issues document itself is more than 200 pages, with an additional 200 pages of appendices. We cannot cover all the issues here but will highlight some that are of interest, and particularly those where the actuarial and accounting professions appear to have differing opinions at present.

1. The project is defined to cover insurance contracts, not insurance companies. Insurance contracts are defined broadly and include contracts where payment is in services (e.g., managed care organizations), and a number of other types of contracts not normally issued by insurance companies.
2. The actuarial positions throughout argue that given the assumption that fair value will be used for financial instruments, the predominant asset class held by insurers in most jurisdictions, liabilities should be accounted for on a fair value basis as well.
3. The Issues Paper suggests “unbundling” of insurance contracts in some instances. This includes unbundling the investment deposit from the risk and service features, along the lines of the treatment of investment contracts under FAS 97, as well as the unbundling of implicit derivatives à la FAS 133. The actuarial response argues that both types of unbundling are extremely difficult to do well in practice, are unnecessary if all components are accounted for on a fair value basis, and consequently should not be done.
4. The Issues Paper makes a distinction between “general insurance” contracts, defined as those where both sides have the option to not renew at the next policy anniversary and where there are no price guarantees to the policyholder, and “life insurance” contracts, defined as those with price guarantees over the life of the contract. More descriptive terms for this would be short-term and long-term contracts. In any case, the actuarial response points out that there is no clear separation into two types of contracts. Many “short-term” contracts involve some restrictions, by law or by custom, on the insurers’ right not to renew or its right to adjust prices. The fair value of the contract should include allowance for experience after the next renewal on an expected value basis.
5. The Issues Paper adopts a concept proposed by the actuaries of providing for risk margins in determining the fair value of insurance liabilities. This is a recognition that the fair value of a contract, often termed the “exit value” at which the holder could sell the contract, is not necessarily the expected value of the future payments under the contract. In illiquid markets, of which insurance is certainly an example, the buyer of the contract will often require a risk margin be added to the expected payments to provide an incentive for purchasing the cash flow stream.
6. The concept of a deferred acquisition cost asset is rejected as not qualifying as an asset under the IASC basic framework.
7. The unearned premium reserve for short-term contracts is replaced by a provision for unexpired risk — the present value of future claims to be covered by premiums already received but not yet earned.
8. Catastrophe and equalization reserves are rejected in the issues paper, although it is noted this was a split decision. The actuarial response will likely point out that there is no uniform actuarial view on this issue as well.
9. Property/Casualty loss reserves, and by implication the unexpired risk reserve, will be discounted.
10. The Issues Paper suggests that there is a case for the policy cash value as a floor unless fair values are adopted. This is an area of strong actuarial disagreement, but also an area where the accountants’ views seem to be fairly firm. The firmness of the accountants’ position is apparently the result of extended discussions of the recognition of the “embedded value” in demand deposits in bank accounting. The actuarial response will point out that the circumstances are very different for life policies. This is a crucial issue, as the combination of a cash value floor and the elimination of DAC would take us back close to the pre-GAAP accounting systems used in the US in the 1960s on the liabilities side, with fair value accounting on the asset side.
11. Future dividends will be allowed for determining fair values, based on policyholders’ reasonable expectations of what they would receive given the assumptions underlying the projections. Unallocated surplus will be reported as equity, including portions that will ultimately be allocated to policyholders.
12. On an issue familiar to many, the actuaries argue that deferred tax provisions for insurance should be discounted.

There is extensive discussion of what disclosure would be desired, including such areas as the impact of regulatory solvency requirements, the impact of changes in assumptions on results, and the impact of the market value margins on the total liabilities in earnings. In general, the actuarial position is in agreement with extensive disclosures.

The actuarial response also describes our standards processes in many countries today and indicates the actuarial profession’s readiness to develop standards to make sure that the actuarial work under the new standard for insurance is reliable, consistent and auditable.

***Bruce Moore, FSA, MAAA, is partner at Ernst & Young, LLP in New York, NY. He can be reached at [bruce.moore@ey.com](mailto:bruce.moore@ey.com).***

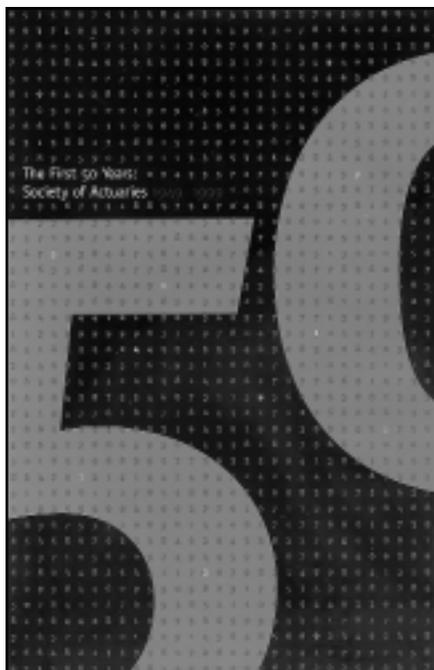
## **Record Sessions for Financial Reporting Special Track on the Web**

### ***Atlanta May Meeting, 1999***

- Session 21PD Performance Management (and Anxiety)  
*Presenters explore the pros and cons of various methods with which companies measure financial performance by line of business, by function and for the company as a whole.*
- Session 22PD XXX Update  
*Regulation XXX adopted in 1995 has been revised and it will play a major role in the pricing and valuation of life insurance products, particularly term insurance. Panelists cover a history of the 1995 version, summarize changes in the revised regulation, cover outlook of state adoption and variations, and assess the impacts on product design and valuation.*
- Session 34PD General Accepted Accounting Principles: Implications for Mutual Insurance Holding Companies and Demutualizations  
*Panelists from the U.S. and Canada describe their GAAP experience and address the theoretical and practical issues faced by companies moving to a stock company environment.*
- Session 59PD Current Issues for Mutual Company GAAP  
*Panelists discuss problematic aspects of applying GAAP to their products, challenges in producing GAAP financials and ways in which companies are integrating this new reporting basis into their management process.*
- Session 60PD Organization of the Actuarial Function  
*Panelists discuss alternative methods of organizing the actuarial department, keeping in mind that the actuary working in a life insurance company must support the organization's objectives while serving in an ethical and professional capacity.*
- Session 61PD Insurance Company Failures of the Early 1990s - Have We Learned Anything?  
*Panelists look back at the settlements of three major life insurance companies that failed in the early 1990s and how different policyholders fared. They also discuss the changes in regulation designed to prevent or lessen the impact of future insolvencies.*
- Session 64IF Underwriting Issues: Processes in Foreign Jurisdictions  
*Panelists discuss what to do when a company is going global and your responsibility is to lead the charge in developing products, which includes assessing the areas that impact risk assessment, underwriting and other issues in other lands.*
- Session 71PD Use of Reinsurance in Mergers and Acquisitions  
*Panelists discuss the advantages and disadvantages of different types of reinsurance used as a financing medium in mergers and acquisitions.*
- Session 75 CS Cash-Flow Testing Issues for Equity-Indexed and Variable Products  
*Presenters identify issue and challenges faced by the valuation actuary when performing cash-flow testing. Solutions and sources of information are discussed.*

### ***San Francisco October Meeting, 1999***

- 33PD The Risk-Based Capital C-3 (Interest Rate Risk) Project  
*This session outlines the NAIC Life Risk-Based Capital Working Group's work on modifications to the C-3 component of the statutory risk-based capital formula and the impact on the work of the valuation actuary.*
- 58PD Guaranteed Separate Account Products - NAIC Reserving Proposals  
*Panelists discuss items regarding NAIC model regulations that contain requirements for statutory formula reserves, including products subject to regulations, reserving methodologies, assumptions, and required actuarial certifications.*



## Own the past

**T**he *First 50 Years: Society of Actuaries 1949-1999* tells the intriguing and human story of the far-sighted professionals who joined to form what would become the largest actuarial organization in the world. Against the backdrop of a half-century of social, economic, and cultural change, archival material and rare photographs show the evolution of the organization into the worldwide and influential body it is today. And, interviews with 26 past presidents of the SOA paint a vivid picture of the development of a professional society.

This 281-page “coffee table” history is lavishly illustrated in full-color and fully indexed. It includes its own pull-out timeline giving readers an accurate understanding of the world the organization inhabits.

Don't miss your chance to own a piece of history. Order today by completing and returning the short order form below.

(01-53-0401)	Price	Quantity	Amount
	\$75.00	_____	_____
			Subtotal _____
			50% per book surcharge for nonmember overseas orders _____
			7% GST for Canadian orders _____
			IL residents add 8.25% sales tax _____
			Total _____
<hr/>			
<b>The First 50 Years: Society of Actuaries 1949-1999</b>			
<hr/>			
<input type="checkbox"/> Check enclosed payable to Society of Actuaries <input type="checkbox"/> Visa <input type="checkbox"/> Mastercard			
VISA/Mastercard No. _____		Exp. _____ / _____	
Signature _____			
Name _____			
Company _____			
Address _____			
City _____		State _____	Postal Code _____
Country _____			
Phone _____			
<b>With payment enclosed, send to:</b> Society of Actuaries P.O. Box 95668 Chicago, IL 60694 U.S.A.		<b>With credit card number, send to:</b> Books & Publications Department Society of Actuaries 475 N. Martingale Road, Suite 800 Schaumburg, IL 60173-2226 U.S.A.	

## Writers' Haven

by Shirley Hwei-Chung Shao

**N**ame the place in the U.S. that has the most writers per square foot, and was home to Ernest Hemingway (the latter is a give-away).

Tom Herget, Editor of the book, *U.S. GAAP for Life Insurers*, chose this city to conduct a 3½ day writing session in March. As the loyal readers of the *Financial Reporter* may recall from the February issue, our Section is committed to the tremendous task of writing a U.S. GAAP textbook for life insurance companies. The book is targeted to be completed in May for an October publication.

All nine writers were able to get away from their busy schedules to help maintain/increase the writers' ratio in this city. Some argued that actuarial writers should count for more than one writer in the determination of this ratio, while others may argue that actuarial writers is an oxymoron.

Inspired by the writing atmosphere in the city, a lot was accomplished. The writers worked in the same room — a room without a view — from early mornings into the evenings. This was particularly challenging with the spring break festivities going on right outside. They reviewed project status, exchanged ideas, debated issues and mostly wrote furiously.

This book addresses GAAP principles for various products including traditional, universal life, deferred and income-paying annuities, variable products, individual health, credit insurance, and



**Back:** Ed Robbins, Jay Zellner, Eric Schuering, Brad Smith, Frank Buck, and Dan Kunesh

**Front:** Mike McLaughlin, Tom Kochis, Tom Herget, and Dave Rogers

group contracts. In addition, it reviews investment accounting, reinsurance, and purchase accounting, etc. The text focuses on principles based on existing accounting literature. This book will be a good source to learn in a comprehensive way how to apply U.S. GAAP.

Immersed in such a big production, the writers did not get much chance to see the sunset for which this city is famous (another clue), let alone enjoy the beaches. To compensate for this, a deep sea fishing trip was arranged. Unlike Hemingway, these writers did not turn out to be good fishermen. We had to supplement the fresh-from-the-ocean dinner plan with frozen foods.

This textbook will be formally introduced at the SOA's annual meeting this

October. There will be a session on this book plus an authors' autograph reception on Monday night. Look for the next *Financial Reporter* issue for more information on these special events and on how to order the book!

Last clue: This city is the southmost city in the US where you can find the Southmost Bar, the Southmost Shoe Shine, the Southmost Ghost House, etc. It appears that the Southmost Textbook is born!

**Shirley Shao is on the Project Oversight Group (responsibilities include picture taking, etc.) of the U.S. GAAP for Life Insurers textbook. She is vice president and associate actuary at Prudential Insurance of America in Newark, NJ.**



475 North Martingale Road, Suite 800  
Schaumburg, IL 60173-2226  
847/706-3500  
[www.soa.org](http://www.soa.org)