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APPOINTED ACTUARY UPDATE: IS THE U.S. ON THE RIGHT TRACK?

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- 1992 year-end results
- Anticipated 1993 problem areas
- Actuarial standards of practice
- Practice notes
- Lessons from Canada and the U.K.
- Smaller company aspects

MR. FRANK J. BUCK: Before we get to the main part of the program, I would like to set the scene by sharing with you the preliminary results of a cash-flow-testing survey that Deloitte & Touche has recently sent to a number of life companies in the U.S.

RESPONSES TO THE DELOITTE & TOUCHE 1992 CASH-FLOW-TESTING SURVEY

We have received replies from 87 companies, five of which were exempt because of size (Table 1).

TABLE 1
Early Responses

Size	Amount Received
< 20 million	0
20-100 million	5
100-500 million	19
500 million to 2 billion	29
Over 2 billion	34
Total	87

The percentages shown on the following tables will apply, therefore, to the 82 companies, each of which has assets in excess of $100 million.

WHAT WAS TESTED?

A wide range of products was tested ranging from deferred annuities, tested by 84% of companies, to long-term disability tested by 14% (Table 2).

WHAT WAS THE EFFECTIVE DATE OF TESTING?

Forty-three percent tested as of December 31, and 57% tested as of another date. Of those companies that tested as of another date, we asked them what they had done to satisfy themselves that the numbers as of December 31 were still reasonable. Ninety-five percent said they reviewed a relative mix of assets/liabilities; 68% looked at the relative yield curve changes; 48% looked at the changes in yields; 43% looked at changes in crediting rates; 50% looked at changes in asset quality; and 16%

at changes in crediting rates; 50% looked at changes in asset quality; and 16% looked at convection or duration. So, not a lot of testing had been performed (Table 3).

TABLE 2
What Was Tested

Deferred annuities	84%
Interest sensitive life	71
Immediate annuities	52
Term	48
Participating products	36
Nonparticipating products	32
GIC	23
Structured settlements	20
Deposit administration	18
LTD	14

TABLE 3

When	
December 31	43%
Other date	57
How Adjusted	
Relative mix of assets and liabilities	95%
Relative yield curve changes	68
Changes in yields	48
Changes in crediting rates	43
Changes in asset quality	50
Convexity/duration	16

THE SCENARIOS TESTED

Ninety-nine percent tested the New York 7. There was one company that did less than the New York 7. One company just did three of the seven scenarios; 45% looked at inverted scenarios; 23% looked at stochastic; and 21% did other types of scenarios, which were deterministic in one form or another. These were usually a variation on the New York 7 (Table 4).

TABLE 4
Scenarios Tested

"New York 7"	99%
Inverted	45
Stochastic	23
Other	21

ADEQUACY

Fifty-four percent found that all scenarios were favorable; 42% found most scenarios favorable. Of that 42%, 45% did the tests at the company level; 25% at the segment level; and 28% at the line-of-business level (see Table 5). Only 4% of the companies, that's three companies, put up extra reserves. And, only one company put up significant reserves because of the testing.

TABLE 5

Adequacy	
All scenarios favorable	54%
Most scenarios favorable	42
At What Level	
Company	45%
Segment	25
Line of Business	28
Extra Reserves?	4%

OPINIONS

The question we asked of companies that were in a state that did not pass the regulations, was, were there different opinions in other states? Thirty-three percent actually wrote different opinions, and 67% just wrote one opinion. Of those where the reserves were less than minimums in other states, 47% modified the opinion and 53% ignored that fact (Table 6).

TABLE 6
Number of Opinions

One opinion	67%
Different opinions	33
Reserves less than minimums	34
Modified opinion	47
Ignored minimum	53

SENSITIVITY TESTING

We also asked about what sort of sensitivity testing had been done. About one-third had looked at the mortality assumption and did some sort of sensitivity test on it. About 50% had looked at the persistency and the dynamic persistency. Twenty-five percent tested expenses and a few others had tested premium persistency, but not very many (Table 7).

TABLE 7
Sensitivity Testing

Mortality	35%
Base persistency	52
Dynamic persistency	52
Expenses	25
Base premium persistency	17
Dynamic premium persistency	14

ASSETS
On the asset side, we asked how companies had projected the assets. Some 66% did a seriatim projection of assets, and the others did some sort of a variation by grouping them together or modeling them.

Option pricing was used by only 9% of the respondents (Table 8).

TABLE 8

Assets	
Seriatim	66%
Grouped	8
Modeled	13
Grouped & Modeled	12
Option Pricing?	
Yes	9%
No	87
No Answer	4

COLLATERALIZED MORTGAGE OBLIGATIONS (CMOs)
We asked about CMOs. Eighty-three percent of the companies had CMOs; of those, only 27% projected them on a seriatim basis; 9% were modeled; 6% used an outside consultant; 10% ignored them altogether; and 16% either treated them as a coupon bond or as a mortgage-backed security (Table 9).

TABLE 9
CMOs

No CMOs	17%
Seriatim	27
Modeled	9
Outside consultant	16
Ignored	10
Coupon bond	10
Mortgage backed	6

RESULTS
We asked what companies were going to do as a result of cash-flow testing. Many of them seem to be doing a lot of things, more than I expected. Seventeen percent are going to realign investments and also develop new reinvestment strategies. A similar number are going to develop new products; 10% have decided to change their crediting strategy; 9% are going to segregate their assets; and 5% are going to change their reserves (see Table 10).

FUTURE USES
And finally, what do people plan to do with cash-flow testing in the future? One hundred percent plan to use it for regulatory compliance, which is good news; 79% for asset/liability matching; 30% for planning and budgeting; 40% for pricing; 17%

for value-added reporting; and 9% are going to use it for GAAP reporting, which is interesting (see Table 11).

TABLE 10
Results of Testing

Realign investments	17%
Develop new reinvestment strategy	17
Develop new products	16
Change crediting strategy	10
Segregate assets	9
Change reserves	5

TABLE 11
Intended Uses of Cash-Flow Testing

Regulatory compliance	100%
Asset/liability management	79
Planning/budgeting	30
Pricing	40
Value added reporting	17
GAAP reporting	9

So that's just a brief survey. I thought that would set the scene quite well. We now have three speakers. The first speaker is going to be Bob Dreyer of Erie Family Life. He represents the small companies group. Bob is senior vice president and chief actuary of Erie Family Life, a position he's held for about ten years. He is responsible for all the in-house actuarial functions. Prior to Erie Family Life, he started his career, not very far from here, with Metropolitan where he was for six years. Then he was a consultant at Milliman & Robertson for 18.5 years. He is currently the chairperson, and on the organizing committee, of the Smaller Insurance Company Section of the Society of Actuaries.

Our second speaker is going to be Susan Ende who is going to give the point of view of the large company. Susan is an actuary at MetLife. She has held various pricing and financial positions in pensions and personal insurance. She has been in the corporate actuarial area since 1989 and has coordinated valuation actuary work at MetLife, including cash-flow analysis. She is also a member of the Life Insurance Company of New York (LICONY) Committee to revise New York Regulation 126.

The third speaker is Bob Callahan. Bob needs no introduction from me. For those of you who don't know, Bob is chief actuary of the New York Insurance Department, responsible for Regulation 126 and various other things.

MR. ROBERT H. DREYER: My primary contribution to this panel discussion is intended to be a discussion of the position taken by one actuary who did not do cash-flow testing in forming an opinion for his company's 1992 annual statement. During that discussion, I hope to highlight a few of the problems that face actuaries in smaller company situations. While I have spoken on smaller company issues several times in the past, this is the first time that I can do so in my role as chairperson of the Smaller Insurance Company Section of the Society of Actuaries.

As a starting point, let's consider our professional requirements. In 1988, the Actuarial Standards Board (ASB) adopted Actuarial Standard of Practice (ASP) No. 7 "Performing Cash-Flow Testing for Insurers." This was revised and readopted in July of 1991. One year prior to that revision, the ASB had adopted ASP No. 14 "When to Do Cash-Flow Testing for Life and Health Insurance Companies."

I have always acknowledged the potential value of cash-flow testing, and expected to implement it for 1992. However, as the project progressed, I became unsure as to whether or not it could be completed in time. (In a small company with only one actuary and a new associate, there is not much time left for such projects after you handle those things a marketing-oriented management considers to have the highest priority.)

As a result, I decided to take another look at ASP No. 14. I found three particular sections that I felt could justify a decision to form an opinion without relying on cash-flow testing.

In Section 1.1, ASP No. 14 says that the standard "gives guidance to the actuary in determining whether or not to perform cash-flow testing." Right up-front the standard strongly suggests that cash-flow testing is not necessarily required, that there may be other alternatives. The ASB has not put us in a straitjacket, as some actuaries seem to think.

In Section 3.3, we find the phrase "certain risks, even though large, can be identified and analyzed without cash-flow testing." The fact that some "big" risks don't need to be cash-flow tested, provided further encouragement. As I will explain later, my company doesn't have any risks that I would classify as "big," at least not in comparison to those of some other companies.

Finally, in Section 5.6 is the sentence, "There are practical limitations on the amount of cash-flow testing which is needed to support an actuarial opinion." For us, like most small companies, the practical limitations include time, personnel, systems, and lack of appropriate experience data. The way that the standard refers to these practical problems at least implies that "none" might be an acceptable amount of testing.

For 1990-91, we only had to worry about our professional requirements. In 1992, we were faced with the specter of regulatory requirements, also. Erie Family Life is licensed in 12 eastern states plus the District of Columbia; we are only soliciting business in nine of those states at this time. Our situation with regard to statutory cash-flow-testing requirements was determined by the actions taken by four of those states.

Our home state of Pennsylvania did not adopt the new law and regulations in time for 1992. Recognizing the potential problems this could cause some companies, the actuarial supervisor agreed to accept opinions on either the old or the new basis.

Virginia adopted the law and regulations for 1992, for all Virginia companies, but specifically exempted any foreign companies whose home state did not require cash-flow testing for 1992. The state of Maryland also adopted the new law, but with an effective date of 1993. None of the other states where we are licensed took action for 1992, except Illinois.

Illinois not only adopted the law and regulations, effective for 1992, but also the life actuary mailed a letter to all chief actuaries, further specifying what he personally expected from them. When I learned this, I felt like that golf shot you hit cleanly over the top of a tree only to be deflected by the last branch on the way down. Fortunately, Illinois is one of those states in which we are not presently doing business, nor have we ever sold anything in that state.

After discussions with the head of our law division, it was decided that I should proceed with my plan to file on the same basis as in prior years, and attach a supplemental letter which would:

- Describe the statutory situation in our various states;
- Explain that we did no business in Illinois;
- Indicate that we planned on doing cash-flow testing in the future, and had, in fact, already started the project; and
- Outline the reasons why I had determined that cash-flow testing was not necessary for me to form my opinion in 1992.

Against this backdrop of professional requirements and statutory regulations, let's take a look at how I supported my conclusion that cash-flow testing was not necessary for us in 1992. To start with, here is a thumbnail sketch of what Erie Family Life looked like at the end of 1992.

Our assets amounted to $339.3 million. Of this, 11.2%, or $38 million, was capital and surplus. Our insurance in force was $6.3 billion, and our only source of business was the 920 property/casualty agencies of the Erie Insurance Group. We have accomplished solid growth over our 26-year history, but we are still just a small niche player in the marketplace.

In our 920 agencies, some 2,000 agents are licensed to sell life insurance. Needless to say, life insurance sales are secondary to most of them. They sold a total of 24,813 life and annuity policies in 1992 (an average of one policy per month per agent).

Very few agencies had gross income from their life and annuity business in excess of $40,000. These figures are important, because they have a bearing on the types of business we write, as I will explain later.

Turning to ownership, you see that the Erie Insurance Exchange owns a controlling interest of 52.2% of our stock. In addition, Erie Indemnity Company, the attorney-in-fact which manages the Exchange, owns another 21.6%. That leaves 26.2% in the hands of private investors. Last year's 10K listed 7.4% as being owned by company directors and officers. While actual data are not available, most of the remainder is owned by people who have a direct connection with the Erie Insurance Group.

Clearly, there is very little exposure to the general investing public, and the audience for my opinion is limited largely to what can be considered a special-interest group. We sell six basic product lines:

1. Traditional Life -- Our most popular plans include high minimum, low-cost, nonrenewable level term insurance, a nonreentry annual renewable term (ART) plan, decreasing mortgage term insurance, and a student-type plan sold by agents rather than through mass merchandising.
2. Universal Life -- We started selling our first universal life product in 1987, and targeted it at the small size market. We will be adding a second generation product, geared to higher amounts and larger accumulations, sometime this winter.
3. Group Life -- This is primarily a convenience line, with coverages on our employees and agents accounting for approximately 60% of our in force.
4. Individual Annuities -- This is a major line for us, but it is aimed, primarily, at the small IRA market. Nonqualified sales have slipped, as a result of Pennsylvania's new annuity premium tax, but they are still significant in number, although not in size.
5. Structured Settlements -- These are marketed only through our parent's claims personnel; while we provide substantial value, it is unlikely that we could stand up against the severe competition among the larger companies in this market. Our mortality exposure is almost nonexistent.
6. (k) Deposits -- This is another product which is available only within the corporate family; more than 25% of our employees' contributions go into a money-purchase group annuity, one of the five options that are available to them.

Regarding the relative size of each line with respect to last year-end's reserves, I'd like to highlight the fact that individual annuity reserves account for nearly two-thirds of our liabilities. I can guess what you are thinking now, "How can a company with two-thirds of their reserves in annuities not need cash-flow testing?" Let me explain.

Remember the type of agent I just described? Our annuities are not sold in a competitive market such as is typical for most brokered annuities. We do not offer aggressive interest rates, or other features designed to grow market share. Therefore, we don't attract the high rollers who want to shift for as little as 50 basis points.

Our annuities are sold in a unique atmosphere of a family/client/agent/company relationship. Our average deferred annuity account is only $9,000, and our average single premium annuity is less than $15,000. We offer a fair, but not aggressive, rate of interest. Our policyholders bought their annuities based on factors other than just our interest rate. They expect the fair treatment and good service Erie Insurance has come to be known for. They are not likely to move to another funding vehicle if we have to lower our interest rates. Therefore, our block of annuities is more stable than that of most other companies.

After individual annuities, structured settlements and traditional life insurance are a distant second and third. Our only interest-sensitive life product, universal life, accounts for less than 6% of our reserves.

As to interest requirements, our structured settlements carry guaranteed interest rates ranging from 6.50-8.75%, and average about 8%. Against this, we had a statutory net investment earnings rate in 1992 of 10.01%, a margin of some 200 basis points. Of the remaining reserves, only $3.9 million (slightly more than 1%) have guarantees greater than 4.50%. The 4.50% guarantees apply only to the first five years of accumulations under deferred annuity contracts. After that, the guaranteed rate drops to 4.00% for the second five years and 3.50% thereafter.

The new valuation law provides for the exemption of smaller companies, subject to some strictly defined tests. The tests have different criteria, depending on a company's size. Erie Family Life, with our $339 million in assets, was in "Category C," ($100-$500 million) for 1992. At our present growth rate, however, we will be too large to be eligible for an exemption by 1994.

The first test in the law is the ratio of capital and surplus to cash and invested assets. For Category C companies, this ratio must be at least 5%. Ours is more than double that requirement.

The second test is the ratio of annuity reserves to assets, which for Category C companies must be less than 50%. This is where we lost our chance for exemption. This came as no surprise to us, because we had followed the early drafts of the model law. It would have been inconsistent with our style of operation to cut back on annuity sales, or to sell off a significant block of that business, merely to avoid the new reporting requirements, onerous as they may be.

To complete the picture, Category C companies must have a ratio of noninvestment-grade bonds to capital and surplus of less than 50% in order to be exempt. Our ratio for 1992 was 61.4%. An interesting fact is that this ratio was down sharply from 1991's ratio of 72.1%. So we were doing our homework with respect to potential risk-based capital (RBC) requirements.

For the last three years, the opinion that I signed for our annual statement has included the following phrase: "Based on a review of the Company's products, markets, investments and overall financial situation, I have determined that cash-flow testing was not necessary for me to render the following opinion." I also prepared file memorandums explaining how I had arrived at that conclusion. An analysis of these four key factors is important to an understanding of how I reached by conclusion. Since we sell only through property/casualty agents, we have to keep our product line simple; they are mainly part-timers when it comes to life insurance, and don't have a lot of time to learn complicated applications. We do not get involved in reentry term, second-to-die, variable plans, guaranteed investment contract (GICs) or other products that require complex sales knowledge. Our products are straightforward and easy to understand, without fancy guarantees or current promises aimed at grabbing market share. Those plans, which are our most competitive, are on an indeterminate premium basis, so we have added protection in case of adverse experience.

We have two markets: our parent company, to whom we sell structured settlements, group life and a 401(k) money-purchase group annuity, and the clients of our parent's property/casualty agents. The latter are mostly in suburban and rural markets, not the big city brokerage markets. They are family-oriented -- many agency owners have their children and even grandchildren working in their agency. Their sales tend to be family-oriented, also – most clients own several Erie policies. (The word *Family* in our name was not chosen lightly.)

Our agents are taught to field underwrite their property/casualty business. This training tends to carry over to their life business, also. The business we receive is generally of a very high quality, and it is rare that we get applications that are being "shopped."

Our agents are also trained to be service-oriented, and to promote this as a part of the value of their product. As a result, we can price our products realistically, without the need to be extremely price competitive. There are not many companies that have a better block of in-force business, overall; just ask our reinsurers.

Our investment strategy has been formulated and guided by a 30-year veteran who has just recently shed the role of chief financial officer to take over as chief executive officer for all of the companies in the Erie Insurance Group. His financial abilities in handling the assets of the Erie Insurance Group, which totaled $3.5 billion at the end of 1992, has contributed immeasurably to the success of our companies. Since the investment function is combined for all companies, the life company receives economy-of-scale benefits by participating in a portfolio that is ten times its own size.

With the advent of RBC, we embarked upon a program to reduce our exposure to noninvestment grade bonds through carefully timed attrition. This program has met with substantial success. Our ratio has dropped from 72.1% at the end of 1991 to 61.4% at the end of 1992. While doing that, our statutory net investment earnings rate actually increased from 9.72-10.01%. Against this portfolio, our most aggressively priced block of business, the structured settlements, has a required interest rate of only 8%, and our average crediting rate on existing business is about 6%.

Finally, I took into consideration our overall financial condition; not just ours, but that of our parent. At 11.2% of assets, our $38 million of capital and surplus is more than adequate by almost anyone's measure. Furthermore, we have substantial margin between our investment earnings rate and our required interest. Finally, there is the possibility of further reductions in crediting rates for interest sensitive products, and premium increases for indeterminate premium products, should they be needed.

Our parent, the Erie Insurance Group, is a highly regarded, but closely held, A++ property/casualty insurer, with consolidated corporate assets of roughly $4 billion. It started Erie Family Life 26 years ago to provide life products for its other policyholders, through its property/casualty agents, and is not about to turn its back on an operation that has proven to be so successful. The Erie Insurance Group is large enough to easily weather any conceivable problem that might befall us, be it excessive losses, liquidity needs, or whatever.

In addition to the documentable information I have presented, I believe that my history with Erie Family Life is also an important factor. As a consulting actuary, I started working with the company in 1967, when it was developing its application for a charter and license. I have been involved in the development of every product the company has ever issued, and the preparation of the actuarial items for every annual statement. I left consulting in 1983 and became the company's first chief actuary, the position I hold. This relationship has provided me with an intimate knowledge of the company, which puts me in the best possible position to understand and evaluate the potential risks it faces.

In summary then, I felt that I could offer my professional opinion on the status of Erie Family Life, for 1992, without reliance on cash-flow testing. I realize that some may think that my approach results in a qualified opinion, but our outside auditors and their actuary did not have any problem with it. I believe I have appropriately applied all of the applicable professional standards, and that I have satisfied the intent of the valuation laws.

Shifting gears, now, I want to make a few comments about a related issue that is troubling many actuaries: what to do about failed scenarios. As I had expected, based on the June 1993 output from our cash-flow-testing system, Erie Family Life does not have to face this issue at this time. Unfortunately, there are other companies, many of them small, that are not as lucky. The problem of failed scenarios has been discussed in several venues of late, but no clear-cut answers have emerged.

The reflex answer that I have heard from many sources, particularly regulators, is "put up additional reserves." Barring the situations where a company comes under the RBC sanctions, or projects losses in the first few years, I disagree with that response.

The objective of cash-flow testing, as I see it, is to assist management in the successful fulfillment of its duties. It should not be viewed as penal in nature. If a company fails one or more scenarios down the road, it should force management to understand why, and to devise corrective action. If the company simply puts up additional reserves, it may not take the time to properly investigate the reasons for the failures.

Consider the following illustrations. A plane is flying from City A to City B, along a preplanned route. Halfway there, the navigator realizes that the crew has drifted off course. There are two choices. The plane can return to the original route and continue on to City B, or the crew can set a new course and take the shortest route to the destination. The pilot's choice seems obvious; just ask Pythagoras. Why doesn't ours?

The regulators' solution of setting up additional reserves would be the same as the pilot electing to return to his original course before continuing. To the pilot, that would waste time and fuel; to the insurance company, it would tie up funds that might be put to better use. Also, if the navigator does not find out why the plane was off course, and correct for the cause, the problem could occur again. The same holds true for the management of an insurance company.

Putting up immediate reserves is a quick-fix that could be more harsh than the situation warrants. In most cases, the failed scenarios will not have a sufficient likelihood of occurrence to produce any real need for immediate additional reserves. Should the regulators win the battle and force us to put up additional reserves, we need to develop methods for discounting them, not just for interest, but for the likelihood that the failed scenarios might occur. I am not suggesting that this will be easy, but I do think it is justifiable, and consistent with other actuarial practices.

In summary, I do not see immediate reserve infusion as an appropriate solution to the problem of failed scenarios. I agree with the regulators' objective of early detection of troubled companies, but this would be like taking a howitzer to kill a mouse in your kitchen. RBC requirements, despite their obvious and some not so obvious flaws, present a better solution to that problem. In addition, they provide a measure of flexibility, both to management and the regulators, that is not present in a straitjacket rule that would require additional reserves based on a few failed scenarios.

MR. BUCK: The next speaker is Susan Ende of MetLife who will put a somewhat different perspective on the position, I'm sure.

MS. SUSAN M. ENDE: The topic for this session poses the question, "Appointed Actuary-- Is the U.S. on The Right Track?" I will address this issue as viewed from the large, mutual, multiline perspective. From that standpoint we have a few years head start on those of you who only began this process in 1992 as a result of the passage of the NAIC Model Law and Regulation. First, I will give you some background into the evolution of the appointed actuary's role at MetLife. Next, I will discuss how the process currently works at MetLife focusing on the key issues and problems we have encountered. Finally, I will provide some insights on where we at MetLife see the process going.

HOW DID WE GET STARTED?

MetLife, as a domestic New York insurance company, has been required to file annual statements of actuarial opinions since the early 1980s and the passage of the Dynamic Valuation Law. These were required in order to use the more favorable valuation interest rates on our annuity business. However, the concept of an appointed actuary who evaluated reserve sufficiency in light of the underlying assets was not emphasized until the passage of New York Regulation 126 in 1985. When Regulation 126 was passed, MetLife's actuaries first viewed the reserve sufficiency analysis as another year-end reporting requirement. In the beginning, we viewed the appointed actuary role only from a regulatory perspective. The bulk of our energies went into developing the process -- specifically developing the modeling capability. We developed our own cash flow model as opposed to purchasing a vendor package. For a company the size of MetLife with our gamut of products in individual, group and pensions, this was the best course of action. Cash-flow testing was performed once a year at year-end for each of the New York 7 deterministic scenarios, the results of which showed reserves to be adequate, and the opinion was filed. That was basically the end of the process until the following year-end. The most significant thing to note here is that while the results of the cash-flow testing were reported to senior management, it was just that, a report, a retrospective look. Little emphasis was placed on the prospective look, that is, the future implications shown by the cash-flow-testing results. If that had remained the case, then MetLife, in my opinion, would have missed the boat. The key to being on the right track is integrating the appointed actuary into the actual decision making on asset/liability management.

EVOLUTION OF THE APPOINTED ACTUARY ROLE

I believe certain key events made the evolution of the appointed actuary role inevitable.

What events triggered the evolution of the appointed actuary's role? A few come very quickly to mind:

1. The economy, particularly the interest rate environment. Interest rate cycles resulted in changing times for the insurance industry. In the 1980s companies were forced to respond by offering new, more risky, interest sensitive products. Such products, in order to offer more competitive rates of return, required active asset management. Insurers began to take more asset risk, for example acquiring more commercial mortgages or investing in junk bonds. This risk-taking required a much more in-depth understanding of the financial side of the business, particularly as related to changes in interest rates. Cash-flow testing came to be viewed as an indispensable tool for understanding the financial side.
2. The failures of several large life insurers resulting in regulators tightening up their oversight function. In addition, senior management started to inquire as to whether the actuaries and others at these companies were really caught off guard; that is, how do we take a prospective look? The appointed actuary's opinion came to the forefront as a way to evaluate risk exposure.
3. RBC and the increased emphasis on capital planning. The prospective nature of the appointed actuary's work came to the forefront as a critical tool in understanding capital developments.

The result at MetLife was that the actuaries began to view the appointed actuary's role not only in terms of a year-end reporting requirement, but also as we came up the learning curve, our emphasis shifted from a mechanical process to an analytical focus. We came to understand that the appointed actuary's role extended beyond the opinion that he or she had a year-round role centering on capital planning and asset/liability management.

To What Point Has MetLife's Appointed Actuary's Role Evolved?
Once we came to understand that, if the appointed actuary's role was to be really meaningful and effective, it had to extend beyond the actuarial opinion and memorandum, we embarked on an extensive campaign within MetLife to educate the non-actuaries as to the value of cash-flow testing. First, we had to get the buy-in of the investment side of the house. Second, we had to educate senior management and the board of directors on the business value of cash-flow analysis and the appointed actuary's opinion. Although we encountered many skeptics, particularly on the investment side of the house, overall we have succeeded, and the appointed actuary plays a critical role in both asset/liability management and capital planning.

At MetLife, we feel that we are on the right track because our appointed actuary work has been integrated into the business planning cycle. While I do not want to diminish the importance in any way the regulatory aspects of the appointed actuary's role, at MetLife, the business role of the appointed actuary is equally important. We have organized the cash-flow-testing process with this business aspect in mind and our 1992 cash-flow analysis reflected this culture.

THE PROCESS AT METLIFE
Let me talk a little bit about the cash-flow-testing process at MetLife. First, let's discuss the key players. The appointed actuary cannot operate in a vacuum. This

holds true for both large and small companies. In order to be successful, the investment professionals and the pricing or line actuaries must be involved. For a company our size, involvement of corporate actuaries, line actuaries, and investment professionals meant bringing together many diverse groups from many diverse locations. It was recognized early on in the process that some central coordination was needed. We established an appointed actuary coordinator. This coordinator, the role I held for a number of years, is responsible for bringing the whole process together most importantly by keeping the lines of communication open. The coordinator sets standards regarding everything from the basic asset/liability assumptions, to modeling, to documentation, to the number of scenarios tested, to sensitivity analysis, to format of the actuarial opinion and memorandum. In addition, the coordinator is responsible for reviewing the work performed by the line operations, aggregating all lines to gain the total company perspective, the actual filing of the opinion and presenting results, interpretations, and recommendations to senior management.

Another key responsibility for the coordinator is to ensure that the cash-flow-testing assumptions and results are consistent with the business financial plan over the short term.

Very briefly, the other major roles at MetLife are:

- Lines of business – responsible for all liability cash-flow projections and liability models; performs the cash-flow testing; prepares an analytical report for the coordinator. We feel that it is critical to have the initial analysis come from the actuaries and other professionals who price and manage the various books of business. They should be in the best position to evaluate the reasonableness of the results, spot trends and make recommendations on asset/liability actions.

- Investment departments – responsible for all asset assumptions, calls, prepayments, defaults; responsible for asset cash-flow projections.

- Actuarial department – responsible for maintaining and upgrading the corporate model which combines the asset/liability cash flows and calculates present value (PV) of surplus; responsible for developing the interest rate scenarios.

- Internal audit – responsible for overseeing the proper documentation of the process and the results.

WHAT DO WE CASH-FLOW TEST?

For 1992, we cash-flow tested $95 billion of reserves. For compliance with New York Regulation 126, we tested $67 billion of single premium life (SPL) and annuity reserves; for the states that had passed the NAIC Model Regulation, we tested $28 billion of additional individual and group life insurance reserves. One issue that we had to deal with was whether it is necessary to cash-flow test participating life insurance. There seems to be mixed opinions on this issue. When we look to the actuarial standards, No. 14 in particular, we find other methods of analysis, i.e., gross premium tests, demonstrating that a product is risk-controlled, or that there is sufficient conservatism in the reserves and market-value (MV) analysis. Certainly a participating life insurance policy, where the level of dividends can be modified to reflect deteriorating investment, mortality or expense experience, is much better risk-controlled than an interest guarantee annuity. Based on this we concluded that from a regulatory perspective cash-flow testing of participating life insurance may not be required. However, we felt that from a business perspective it was. Remember, a key role of the appointed actuary in MetLife's culture is to make recommendations to senior management on portfolio management. Therefore, we view cash-flow testing as a valuable management tool. For our participating life business, cash-flow analysis provides additional insights on our dividend crediting philosophy and asset/liability management. We did not perform cash-flow testing on approximately $15 billion of nonguaranteed separate account business and health insurance products.

Another issue to consider in the process is, at what level is cash-flow testing performed? At MetLife we determined that it was appropriate to test at the asset portfolio level. For example, we manage our shorter-term GICs and our long-term-annuity guarantee products together to capitalize on the synergies and to effectively manage duration. While we could prorate assets between the two products and run separate cash-flow tests for each of the GICs and the long-term annuities, the results would be meaningless, from a business perspective.

When do we do cash-flow testing at MetLife? We have found that it is most beneficial to perform midyear cash-flow testing for several key reasons. Midyear testing fits in well with our business planning cycle. Performing cash-flow testing once a year is inadequate from a planning, capital management perspective. For a company the size of MetLife where we have successfully integrated the role of appointed actuary into asset/liability management once a year is not enough. In fact for 1993 we have performed quarterly cash-flow testing on our GIC and annuity guarantee products. At midyear we can get a preview of year-end – this is critical; it gives us time to react should we discover any unacceptable developments. Let's face it, no one wants to find a problem with reserve sufficiency in January or February. Strengthening reserves should always be the last resort if the appointed actuary plays an integral role in business decisions. We have the luxury of time to analyze. We can review the results, perform sensitivity tests on key assumptions, and analyze the impacts of proposed asset or liability actions. This is the key to filing an acceptable opinion. Cramming all the work into January and February we found did not leave adequate time for analysis. At midyear we run more than the deterministic scenarios. Since 1992, we have run 100 random scenarios for both our statutory and GAAP (our management reporting) reserves. Our random testing has shed insight on the deterministic scenarios: we have found that scenarios five and seven, the declining scenarios of the New York 7, are extreme and in both years outside the boundary of the random scenarios. At year-end we rerun the statutory deterministic scenarios. We run the New York 7 plus six variations that we feel cover key exposures for our business.

How do we interpret the results? Or better yet, how do you interpret the volumes of information that the cash-flow testing model produces? From a statutory standpoint, reserve sufficiency is analyzed in aggregate – with annuities and life insurance being aggregated, separately. Once the line operations have performed the cash-flow runs and prepared their analytical reports, the coordinator rolls up all the results. Let me emphasize that the analysis and interpretation of the results of cash-flow testing require actuarial judgment. We first evaluate the analytical reports prepared in the lines of business. These reports focus on explaining the results, that is, the line where actuaries explain the changes in margin from the prior period to the current period. We look to be able to explain the changes based on what actually happened over the period in light of asset/liability changes. That is, the results have to make intuitive sense based on the portfolio managers' actions over the period and the changes in interest rates. Then we focus on two key results: the present value of surplus (market basis) and at the pattern of surplus accumulation (year by year) under random and deterministic scenarios.

Since one of our primary goals is to use the results of cash-flow testing to make recommendations to senior management on asset/liability actions to enhance profits or mitigate risk, we needed to develop a user-friendly way to present and interpret the results. After many attempts, we have developed the concept of a "performance profile." This is simply a graph which plots the present value of future surplus against interest rates for five deterministic scenarios: the level, pop-up, pop-down, +/- 100, and 300 basis points (see Chart 1).

CHART 1
Hypothetical Performance Profile

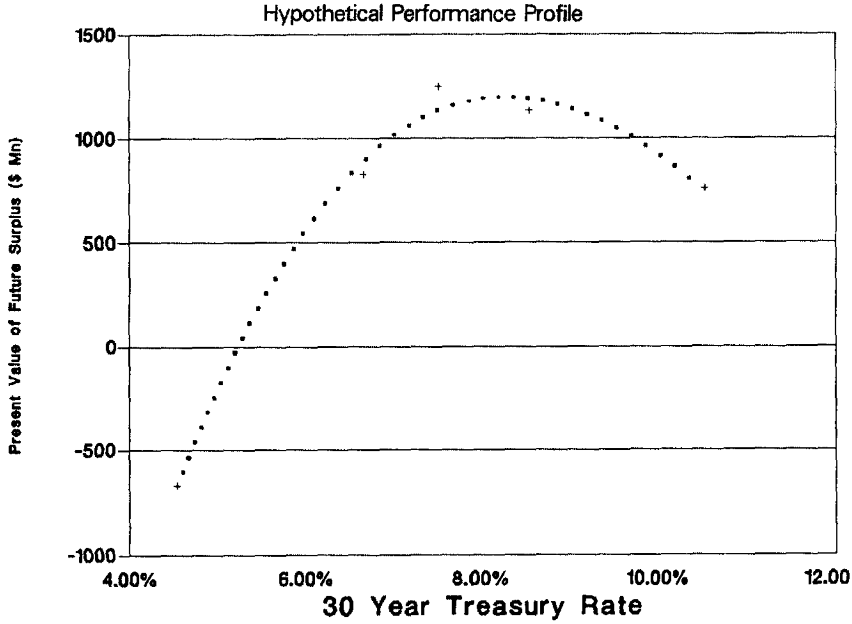
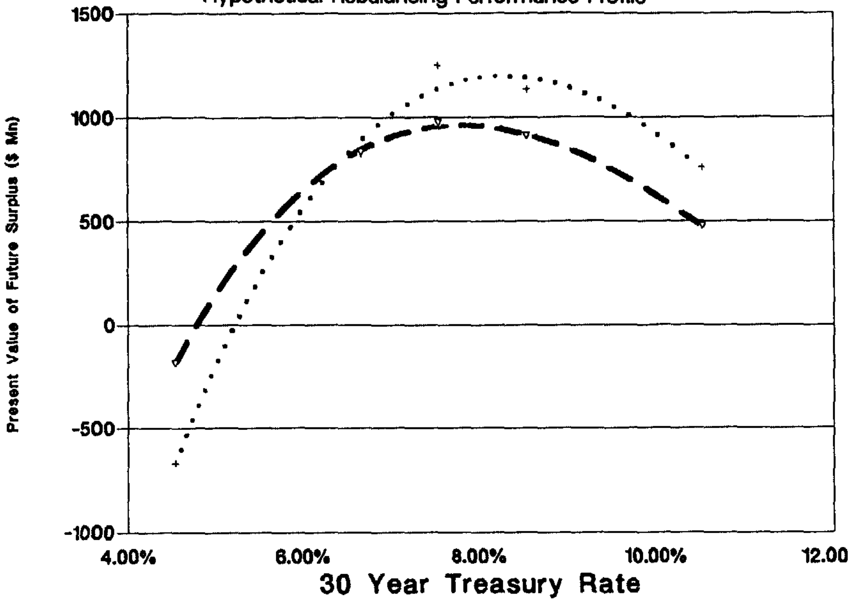


Chart 2 illustrates a hypothetical performance profile. As you can see it is a very simplistic way to begin to understand cash-flow-testing results and one that is more readily understandable by nonactuaries. What does the performance profile tell us about the business?

First, it gives some indication of the financial strength, how much margin there is ranging from high to low point. Second, at a glance it can tell you how vulnerable the portfolio is to interest rates. Third, it can give you some indication of the duration match of the assets and liabilities through looking at the slope of the curve. Looking at this hypothetical profile we see that the assets are shorter than the liabilities since the curve is steeper on the left. Suppose we decide to do further analysis and explore what will happen if the assets are lengthened. We can simulate some trading, rerun these scenarios, and plot a rebalanced performance profile, and we can see that lengthening picks up margin in declining rate scenarios at the expense of losing margin in the rising rate scenarios. Such an analysis points out the costs/benefits of an action for senior management and facilitates decision making.

CHART 2

Hypothetical Rebalancing Performance Profile



While all of this in theory may sound good, you may ask, does this process work? To be on the right track, the appointed actuary must be able to influence the business decisions of senior management. Reserve strengthening should be the last resort. Is this the case at MetLife? I'm pleased to report, yes. Actual asset/liability actions have been taken as a result of discussing cash-flow-testing results with senior management, particularly our investment associates. For example, based on our 1992 results and performance profile, senior management lengthened some of our long annuity guarantee portfolios to mitigate any exposure to drops in rates. Based on where rates have dropped since year-end that was a very prudent move.

What do I see for the future? At MetLife we see a continued expansion of the appointed actuary's role. With dynamic solvency testing looming on the horizon, the integration of the role with corporate planning and capital management will be complete.

My conclusion: Is the U.S. on the right track? I say, yes, as long as all companies look at the appointed actuary role not only from a strictly regulatory role but also from a business role.

MR. ROBERT J. CALLAHAN: I'm the chief life actuary on the New York State Insurance Department and have worked on the NAIC Life & Health Actuarial Task Force, and have played a prominent role in the valuation actuary movement on both the New York state level and on the national level.

My outline is entitled "Outline or Update of Valuation Actuary," whereas this topic is "Appointed Actuary Update." However, I have chosen not to correct that error because already people are looking for another term other than Appointed Actuary.

In Table 12 I show evolving progress, when the copy came back to me I thought, well, that should be evolving process, and then I thought, no, I think progress is really the better word because we have seen progress over the years, from the time back in 1975 when an actuarial opinion (AO) with a good and sufficient opinion (G&S) was required from the NAIC Annual Statement (AS) which most states have adopted.

One of the things you may notice is that I have used a lot of different acronyms. You'll also notice that I use an acronym in two different senses. However, in 1982 the New York law (NYL) was amended to require an actuarial opinion and memorandum (AOM) for the use of a higher set of valuation interest rates for annuities and guaranteed interest contracts (GIC's); and that if a company did not give an opinion as to the assets supporting the liabilities (A-L), the company had to set up higher reserves. In 1986, we issued Regulation 126. In 1990, the NAIC Standard Valuation Law (SVL) was amended to require asset adequacy analysis (AAA). Then in 1991, the NAIC issued an actuarial opinion and memorandum regulation with respect to the asset adequacy analysis. The NAIC required the opinion for all life insurance (L), annuities (A), and health insurance (H) contracts. In New York, we require a special opinion and memorandum in addition to the opinion required by the NAIC. The opinion attached to the annual statement is on a more general basis than this special opinion in New York that only refers to annuities and guaranteed interest contracts.

TABLE 12
Evolving Progress

1975	AS	AO	L,A,H	G&S
1982	NYL	AOM	A,GIC's	A-L G&S or Higher Reserves
1985	NYL	AOM	A,GIC's	A-L G&S
1986	NY	Reg. 126		
1990	NAIC SVL	AOM	L,A,H	AAA
1991	NAIC Reg.	AOM	L,A,H	AAA
1991	Initial Preparation and Review of 1992 AOM			

There have been various organizations behind this movement, and it's been going on for a number of years: the American Council of Life Insurance, the Society of Actuaries, and the American Academy of Actuaries, the Standing Technical Actuarial

Committee that advised the NAIC Life & Health Actuarial Task Force for a number of years, and then an ad hoc group that was created to advise the NAIC Life & Health Actuarial Task Force, and finally the NAIC Life & Health Actuarial Task Force itself. This, of course, required an educational process to go from statutory formula reserves to an opinion from the actuary as to asset adequacy analysis. There have been Society of Actuaries panels, papers and valuation actuary symposia every year. New York Regulation 126, when it was issued in 1986, was also an educational tool, in addition to being a regulation. We used it for that purpose. We put in there a great deal of detail because at that time a lot of the actuaries needed to have some guidance and some information.

Donna Claire, who's the author of Regulation 126, is here in the audience. While there have been many who felt as though we should replace the statutory formula reserves with the opinion of the actuary, we are actually on a dual track. Part of this is because a lot of regulators who are not actuaries don't trust the actuaries, and frankly, a lot of regulators who are actuaries don't trust the actuaries. We felt as though we ought to have some period of experimentation and do it both ways for a while, and so we have.

Now, is it an audit of the statutory formula reserves? The statutory formula reserves are the minimum reserves. If it was an audit, should we have an actuary outside of the company come in and do an independent study or should the company staff actuary prepare this opinion and memorandum? Frankly, I feel the way this was originally set up was that this was an opinion of the company wherein it used an actuary. Whether that actuary was a member of the company's staff or a consultant, that person could be considered as an officer of the company. He or she could be considered as part of the management of the company rather than independent of management, reporting to management. By going the dual route there were no offsetting savings in administrative expenses and many of the small companies felt as though they would be burdened by the additional administrative expenses.

Now, to get the show on the road, we had to make certain compromises. We carved out a small company exception from the asset adequacy analysis or from the cash-flow testing. Thus we have a Section 7 opinion. In the Section 7 opinion, we specifically deleted the requirement that the reserves make good and sufficient provision for the liabilities. We later also deleted the reference to sound actuarial principles as when the people at the ASB started to write the opinion, they felt as though there were certain circumstances, even for a Section 7 opinion, that the actuary may need to do cash-flow testing. When we pointed out to them that there was supposed to be a specific exemption from cash-flow testing for the companies meeting the criteria, they pointed out to us that we used the phrase that the reserves were based upon sound actuarial principles. Now the reserves are no longer based upon sound actuarial principles.

There are three actuarial standards of practice of the ASB, in particular: ASP No. 7 gives reference to how to do cash-flow testing; No. 14 gives guidance when to do it; and No. 22 addresses the statutory statements of opinion based on asset adequacy analysis by appointed actuaries for life or health insurers. A lot of appointed actuaries have had to do a Section 8 asset adequacy analysis, and they needed guidance before a lot of regulations were issued.

Frankly, the actuarial standards of practice are quite general, and they need some additional detailed analysis. You have practice notes that represent current practice. They're written by somebody who did what the note says and got away with it. The writers have concluded that since no regulator has questioned them that they are correct. In many instances, the regulators have not reviewed all of the memorandums. These standards of practice are guides. The practice notes point this out. They are not regulations. Furthermore, the practice notes point out that they are not ASB ASPs. They further point out that they are not definitive statements of generally accepted actuarial practice. When Regulation 126 was written we didn't have ASPs. Our regulation referred to generally accepted standards of practice, and generally accepted standards of practice are just that. It's what the practicing actuaries were doing in the field and what they've been able to get away with. The practice notes also point out that they are not binding on the appointed actuary. The appointed actuary does have the freedom to use other procedures.

In ASP No. 22, with regard to the instructions for the appointed actuary, the ASB says, hey, you'd better follow the regulations. Be aware of the Actuarial Guidelines. It's almost like saying, beware of the dog. But, you have to have knowledge of the Actuarial Guidelines. It goes on to basically say you don't have to follow them. All you have to do, if you don't follow them, is to disclose your method and discuss it.

Is the actuarial opinion and memorandum a solvency tool? I say yes. Is it solvency testing? Practically all the actuaries now say it is not solvency testing. We're only testing the adequacy of reserves. We're not testing total company surplus. And yet, many of these organizations that were behind the valuation actuary movement looked upon it as a solvency tool. In our legislation for New York in the memorandum of support we have looked upon it as a solvency tool, as a help. On the NAIC level the people there have financial standards and accreditation for solvency. They have included in this asset adequacy analysis. It is part of solvency regulation, even though practically every actuary out there will say it is not solvency testing.

We go currently, for this actuarial opinion and memorandum, for closed blocks of business with the one exception. We take into account unit expenses, which assume ongoing business. Other than that, we do not take into account new business.

I have already mentioned that NAIC financial regulation standards are an accreditation program. If you want to have the states adopt a law or a regulation then the best thing to do is to have it put on the required standards, as the states do want to become accredited. The outline says 20 states became certified as of June 1993. There have been two states certified in June 1993. As of September 1993, there are 22 states certified. Some of the proposals were that a company that's in a nonaccredited state must be examined by an accredited state. In turn, beginning with next year, accredited states are not to accept examination reports from nonaccredited states. Our superintendent made the suggestion before Congress that companies be prohibited from selling insurance in other states. New York and, I think, Florida were the first two states accredited, and now New York is no longer considered accredited. Standards continually are being added. In some cases, when a state gets accredited, there's an understanding that certain things will be put upon the books within a certain period of time. There was that understanding with New York, but there have been problems, and the legislature has refused to pass some of the accreditation bills.

Next we go into listing states. Tables 13 and 14 show the top six states by number of domestic companies and by population. Table 15 shows the top six states by number of actuaries employed by the state. These include FSAs and ASAs and, in some cases, an individual who's a member of the American Academy of Actuaries, but the indications are that he or she is working in the life insurance area.

TABLE 13
Top Six States by Number of Domestics

	Domestic			1990 Population (millions)	
	Potential	Filing	Licenses		Rank
AZ	670	268	1,390	3.7	24
TX	250	252	932	17.0	3
NY	98	96	184	18.0	2
IL	90	91	722	11.4	6
LA	90	75	748	4.2	21
DE	58	56	611	0.7	46
ALL	2,237	1,197	N/A	248.8	N/A

TABLE 14
Top Six States by Population

	Licensed	New Law	NAIC ACCR	LHATF	1990 Population (millions)	Rank
CA	602	1	1		29.8	1
NY	184			1	18.0	2
TX	932	1	1	1	17.0	3
FL	731	1	1		12.9	4
PA	544				11.9	5
IL	722	1	1	1	11.4	6
ALL	N/A	21	22	13	248.8	N/A

Prior to the 1992 annual statement filing, California issued a letter that called for all those domestic- and foreign-licensed companies in their state that met the criteria to do a Section 8 opinion. California also put out guidelines of things it wanted to see; and called for a year-by-year analysis of surplus.

Walt Rugland, writing on Society of Actuaries' stationery, objected to this as being a routine filing. He said that it was intended to be a report to management, available to the regulator, and after the regulator reviewed it, it was supposed to be returned to the company. I double-checked this. The law does not refer to the opinion as a report to management. The law refers to it as a memorandum. Any actuary, in doing his work, should prepare a memorandum to substantiate that work. The law says it should be submitted to the commissioner upon request. The law does not say it must be returned to the company. However, the regulation does refer to it as a report to management, available to the regulator, and that it should be returned to the company after the regulator reviews it. At the time the regulation was enacted there were those of us who said that we in our state intend to deviate from the model. I will tell you in New York I do intend to request it. John Montgomery (Chief Actuary & Deputy Insurance Commissioner of California) then modified his request and called for a year-by-year excess of assets over liabilities or vice-versa. He also said that this was the first year, and the department wanted to see all of them. He said that it was not a routine filing, and that the department intended to return them to the companies. A number of other states, though, requested memorandums generally on a selective basis, and recently Larry Gorski, the Actuary of Illinois, said that he does intend to return them, but not this year. He wants to see two years before he returns the first year.

TABLE 15
Top Six States by Number of FSAs and ASAs
Employed by the State

			Life Actuaries			
	Dom Filing	Licensed	FSA	ASA	OTHER	TOT
NY	96	184	18	11	1	30
NJ	12	393	7	2		9
CA	52	602	5	1	2	8
TX	252	932		5		5
FL	33	731	1	3		4
GA	27	638		3		3
PA	46	544	1	1	1	3
ALL	2,237	N/A	39	35	11	85

Generally speaking, the regulators are not sticking to just the companies domiciled in their own state. They are requesting memorandums from foreign-domiciled companies licensed in their state (see Table 16).

From the beginning I've asked, is this a memorandum for regulators or an actuarial report to management? While the law would seem to indicate that it's a memorandum for regulators, the actuarial opinion and memorandum regulation calls it a report to management.

TABLE 16
States Requesting 1992 Actuarial Opinions and Memorandums

Colorado	27 D-F	Minnesota	120
Connecticut	12	Oregon	1 Dom
Delaware	All Dom	Texas	15 Dom
Illinois	25 D-F	Virginia	8
Louisiana	Exam Cos	Washington	4

Dom = D = domestic
F = foreign

Before, I mentioned whether this was solvency testing or not. Many actuaries say it is not solvency testing. We need new work to be done regarding solvency testing. The American Academy of Actuaries September 1992 Report advocates that regulators should require each insurer to obtain an annual report on surplus adequacy by a qualified actuary – qualified actuary now, appointed actuary, just plain actuary.

The Society of Actuaries' Dynamic Solvency Task Force accepts the AAA opinion or position. The task force refers to it as a report to management, again available only as needed to the regulators.

Here are the recommendations of the task force: expense report, research, appoint a task force to draft a handbook, and appoint a task force on seminars. This first one, expense report, must make sense to people. I know it makes sense to me because I do feel that the expense of doing these things should be a consideration. However, the task force's recommendation was to expose the report for comments, acknowledging that there is research that needs to be done, that they need to appoint a task force to draft a handbook and a task force to conduct seminars to educate all those actuaries.

The task force members, in turn, listed 11 of their assumptions. I just pulled out five of them here, namely, that it was assumed that it would apply to all U.S. insurers including Blues and HMOs, and that it would include new business, with the business projected. Now while I say each year, it's for each N period of time, that the minimum statutory reserve and the RBC would be projected. They also said this is a report to management available to the regulator. They also said that all assets of the company, including surplus, should be taken into account, and that it should apply to all companies regardless of size. A lot of them didn't like the carve-out that we made before for small companies, and this says it will apply to all companies regardless of size.

Regarding the role of the actuary in matters of solvency, you have a report in the *Financial Reporter*, by Stephen Radcliffe, who will take office as the president of the Society, and by John Harding, the President of the American Academy of Actuaries. Basically Radcliffe was against placing the actuary between management and the regulators. I really don't mean that he is antimanagement. He is against putting the actuary between management and regulators. He is for the actuary reporting to management and then management being responsible to the regulators, and I say wasn't that the way we intended it years back? He further says the actuary cannot serve two masters, and I fully agree with him. My experience with regard to the actuary rendering the Regulation 126 opinion was that whether he was a staff actuary or a consulting actuary, he aligned himself with the management of the company.