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RESERVES FOR STRUCTURED SETTLEMENT AND SIMILAR ANNUITIES

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In the last year or so, there have been two new NAIC guidelines, IX-A and IX-B, on this subject. New York Regulation 126 also has undergone fairly substantial changes and the transition period for including new business is upon us (1990 for New York and 1993 for IX-A and IX-B).

This session will cover:

- o Substandard reserves
  - -- Guidelines IX-A
  - -- New York Regulation 126, Section 95.12(h)
  - -- Mortality study implications
  - -- Appropriate mortality for GAAP
- o Interest rates (IX-B and 95.12[f] and [g])
  - -- "Excess benefit" reserve option
  - -- Graded interest rate option
- o Implications for cash flow testing
  - -- The "pairing" of assets and liabilities requirement
  - -- Earning more than the valuation rate
  - -- Future grading of reserves versus current requirements
  - -- Reinsurance
- o Proposed Illinois cash flow testing requirement for 1991
- o Taxes
  - -- Effect of the Applicable Federal Interest Rate (AFIR) on pricing
  - -- Implications of IX-A and IX-B on tax reserves (moving to the new basis)
- o Pricing/return on investment
- o Handling the phase-in period for in-force business
- o GAAP considerations
  - -- Level of mortality required for FAS 60 purposes
  - -- Are level interest rates required for certain only annuities?
  - -- Is a DAC asset (and amortization thereof) required?

MR. WILLIAM T. BRYAN: My company, SAFECO, has been in the structured settlement annuity business since 1980. At year end 1989, we had almost $1.8 billion of settlement annuity reserves and about 25,000 contracts in force.

Springtime in the Northwest is a time when we look forward to the arrival of the one-footed wonders. Capistrano has its swallows, but Seattle has its slugs. Some communities celebrate with annual slug festivals.

Let me tell you about one such downtrodden individual, Sammy the slug. Sammy the slug was oozing along my sidewalk one morning when he was suddenly squished by a jogger's NIKES. My homeowners insurance company graciously agreed to compensate Sammy for his new wafflelike appearance and a benefit of $1,000 a year for life was agreed upon. Because of his impairment, the benefit package was shopped around.

The company with the lowest price for the structured settlement rated Sammy, age two, by assuming that his life expectancy would be that of a five-year-old, otherwise healthy slug using the 1990 CST (Commissioners Slug Table).

In arriving at the statutory reserves for this policy, four different valuation techniques were examined: standard reserve, rated-up age, constant mortality percentage, constant extra deaths (per 1,000).

As Table 1 shows, the life expectancy for a five-year-old slug is 2.59 years. The table can be modified two ways to come up with 2.59 as the life expectancy for a two-year-old.

TABLE 1

Basic Slug Table				Constant Multiple q_x = 2.54		Constant Extra q_x = .181	
Age	q_x	l_x	e^{o}_{x}	q_x	e^{o}_{x}	q_x	e^{o}_{x}
0	.10	1000		.254		.281	
1	.05	900		.127		.231	
2	.07	855	4.47	.178	2.59	.251	2.59
3	.10	795		.254		.281	
4	.15	716		.381		.331	
5	.20	608	2.59	.508		.381	
6	.25	487		.635		.431	
7	.30	365		.762		.481	
8	.35	255		.889		.531	
9	1.00	166		1.000		1.000	
10		0					

One way is to multiply each q_x by 2.54. Another is to add 181 deaths per 1000 at each duration. Each of these produces a 2.59-year life expectancy for a two-year-old.

Table 2 shows the initial reserves just prior to the annual $1,000 payment for each method.

Standard reserves assume that no impairment exists. The advantage is that it is conservative and easy to administer. The disadvantage is the surplus strain when the substandard premium is collected.

TABLE 2

Attained Age	Standard Reserves	Rated-up Age Reserves	Constant q_x Factor Reserves	Constant Extra q_x Reserves
2	3994	2725	2720	2681
3	3541	2372	2301	2468
4	3106	2012	1918	2247
5	2725	1591	1631	2050
6	2372	1000	1411	1865
7	2012	0	1238	1673
8	1591	0	1101	1426
9	1000	0	1000	1000

The rated-up age uses standard reserves for a five-year-old. The advantage is it is easy to administer and the initial reserve is adequate. The disadvantage is that the reserve drops off too quickly. This method implies that the extra mortality increases with duration, both as a percentage of standard and as number of extra deaths per 1,000, which may be unrealistic.

The mortality percentage reserves use a constant percentage extra mortality. The advantage is the reserves don't run out in five years. Disadvantages are that it is complex to calculate and administer, and the ultimate mortality rates may be overstated.

The extra mortality reserves use a constant addition to the mortality rate. Advantages are: it grades to standard over time, it is a safe harbor, and it is the prescribed method in New York Regulation 126 and NAIC Actuarial Guideline IX-A. A disadvantage is that it is complex to calculate and administer (these last two can be made easier by tabling the factors/constant extra q_x).

Prior to 1988, there was virtually no guidance on how to value substandard settlement annuities. New York Regulation 126 addressed the problem in 1988 and allowed any of the above methods, provided the reserve graded to standard in 20 years.

In April 1988, the NAIC decided to expand Actuarial Guideline IX to include substandard reserves and created Actuarial Guideline IX-A. The early drafts were similar to Regulation 126 with the grading to standard in 20 years.

Industry input, led by Steve Smith and supported by an unpublished paper by Abraham Gootzeit, were persuasive in getting the final version of IX-A and later Regulation 126 to endorse the constant extra deaths per 1000 method with no artificial grading to standard (since it automatically grades over the life of the annuitant). The revised IX-A was adopted by the NAIC at its June 1989 meeting. Regulation 126, Section 95.12(h) was also modified in 1989 to agree with IX-A.

Guideline IX-A states that 1990 and later issues must meet the standard for December 31, 1990 and later valuation and that all business must comply by December 31, 1993.

New York Regulation 126 requires compliance for 1987 and later issues by December 31, 1988 and for all in force by December 31, 1990, three years earlier than specified by guideline IX-A.

We have seen how the various methods work for Sammy, but how do they work for humans? Look at a 10-year-old who is rated up 40 years (as a 50-year-old).

Graph 1 shows standard reserves for a 10-year-old and a 50-year-old. Note how the rated-up age reserve quickly falls off.

The constant extra death reserve starts below the other two but crosses the rated-up age curve in 15 years and remains fairly level for over 50 years before asymptotically approaching the standard curve.

A similar thing happens with a 50-year-old rated up 20 years (Graph 2). The constant extra death reserve exceeds the rated-up age reserve in the fifth year and proceeds to close in on the standard reserve.

Before leaving this subject, I want to talk about underwriting and its impact on reserves.

Many companies, including SAFECO and First Colony Life use M.D.s to underwrite these cases. There are many good reasons for this.

1. The medical problems, such as mental retardation, and brain and spinal cord injuries, are often quite severe and complex in nature and would never be seen on an application for life insurance. Hence, a life underwriter would be unfamiliar with it.

2. There are no industry mortality studies to use for guidance.

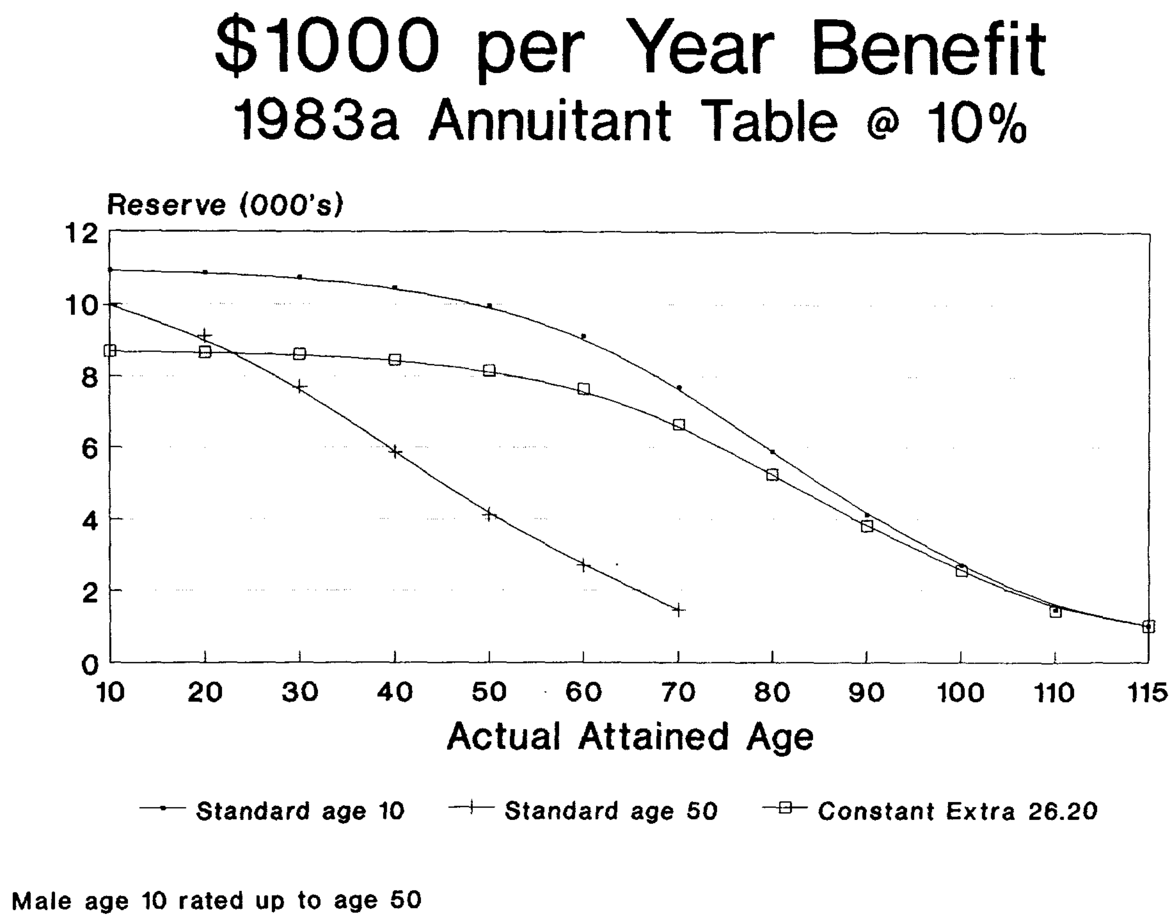
3. Often there is no long-term mortality experience in clinical literature so that judgmental extrapolations must be made from small, short-term, often skewed or biased experience studies.

4. As an experiment, we once let medical directors and underwriters rate the same cases. We found that the underwriters consistently had a much higher age rate up, which is less conservative.

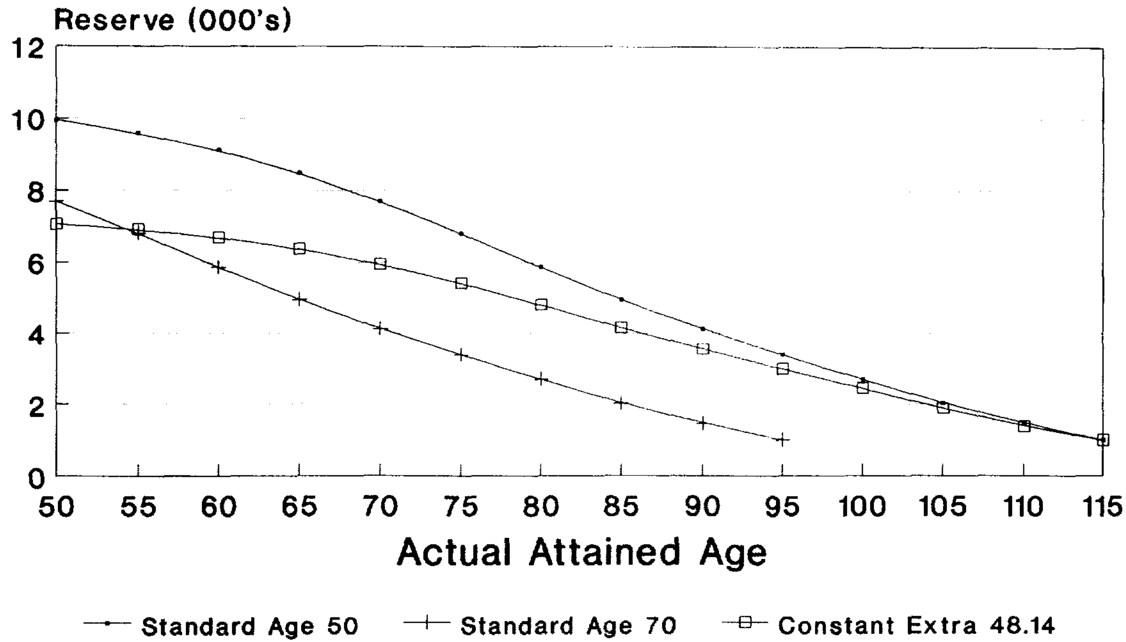
In Mr. Teitelbaum's *TSA* XL paper, "The Effects of Mortality on Individual Annuities," he gives the range of quotes on five actual cases. In the most extreme example, an eight-year-old was rated up 0, 10, 29, 37, 53, 57, and 61 years by seven different companies.

Shopping is quite prevalent for substandard business. We place less than 5% of our quotes. There is some concern that, industrywide, the underwriting on many of the cases actually placed may be too aggressive. How would the reserve be affected?

GRAPH 1


$1000 per Year Benefit
1983a Annuitant Table @ 10%
Reserve (000's)
12
10
8
6
4
2
0
10
20
30
40
50
60
70
80
90
100
110
115
Actual Attained Age
Standard age 10
Standard age 50
Constant Extra 26.20
Male age 10 rated up to age 50

$1000 per Year Benefit
1983a Annuity Table @ 10%



Male age 50 rated up to age 70

Let's look again at the 10-year-old rated up 40 years to age 50. Suppose the "correct" rate-up is really 20 years to age 30.

Graph 1 compares the "correct" constant extra death (CED) reserves to the CED reserves actually held and the 40-year rated-up age reserves. The CED reserves all grade to standard so errors are corrected over time. If a rated-up 40-year reserve was used, it is greatly inadequate.

To help us assess the adequacy of our underwriting and the underlying mortality, the Society of Actuaries is conducting a structured settlement annuity mortality study. All companies will be asked to submit data to the Medical Information Bureau (MIB's) Center for Medico-Actuarial Statistics which will do the calculations. Each participant will receive industry results as well as a confidential summary of their experience for comparison purposes. Data should be submitted by mid-September with results expected in early 1991.

One difficulty in determining actual deaths is the reporting lag. Often deaths are not detected until the certain period has expired and contingent payments begin. For example, we use the following guidelines for annuitants who have a life contingent benefit:

During Certain Period
Annual Benefit Action Taken:
Under \$11,999 of benefits a year -- nothing;
\$12,000 to \$49,999 a year -- letter every 3 years;
\$50,000 plus a year -- letter annually.

During Life Contingent Period
Annual Benefit Action Taken:
Less than \$9,999 a year -- letter annually/inspection five years;
\$10,000 to \$99,999 a year -- inspection annually;
\$100,000 plus a year -- inspection every six months.

Allstate uses a Social Security tape listing deaths to match against annuitant Social Security numbers. First Colony Life has an inspection done if the expected reserve release exceeds a certain threshold, say \$5,000.

In doing actual-to-expected ratios, the company may want to split the deaths and exposures to correspond with its checking procedure at least once to test the efficacy of checking. The method used for figuring expected deaths can greatly influence interpretation of the results.

For the 10-year-old rated up 40 years to age 50, the initial expected deaths (per 1,000) are 26.6 on constant extra death (CED) basis, but 4.1 on rated-up to age 50 basis. If, on a block of such contracts, the first-year actual deaths are six, the actual to expected ratio is 146% using rated-up age, but only 23% using constant extra deaths. With CED as the valuation standard, it's important that it not be the sole basis for expected deaths, particularly in the early durations. It gives a nice overall reserve pattern, but will most likely do a poor job of predicting year-by-year deaths. Industry studies and input from underwriting professionals should assist in refining a proper expected basis for substandard annuities.

For GAAP purposes, practices vary from use of pricing mortality coupled with rated-up age to using valuation mortality with constant extra deaths. First Colony Life uses rated age mortality graded into CED mortality at the earlier of attained rated age 85 or 35 years after issue.

It is my belief that Actuarial Guidelines IX-A and IX-B are interpretations of the Standard Valuation Law and hence acceptable to use for tax reserves. As a company moves to the new methods, the tax implications need to be considered, including the timing of the change and whether current reserves are stronger or weaker than these standards.

I'm sure you're all wondering how Sammy is doing. I'm happy to report that he's adjusted well after his injury and in fact has been able to supplement his income as a model. You've probably even seen him on waffle packages.

MR. ROBERT E. TRANSON: My company, Allstate, has been in the structured settlement annuity business since 1983. At year end 1989, we had almost $1.4 billion of settlement annuity reserves and about 25,000 contracts in force.

I would like to spend most of my time highlighting the major points of Guideline IX-B as they pertain to structured settlements. I'll then briefly discuss tax reserves with respect to the interest rate assumption and finish with some comments on reinsurance.

Actuarial Guideline IX-B clarifies the Standard Valuation Law methodology for valuing single premium immediate annuities, deferred annuities and structured settlements. Section 95.12 (a) through (g) of New York Regulation 126 parallels IX-B and, as I go through this presentation, I will point out the differences between the two.

It is important to note that the guideline is a clarification of the Standard Valuation Law. As such, I believe reserves developed using this guideline should qualify for tax reserve purposes. In applying the Standard Valuation Law, an annuity is defined as a series of annual payments over five or more years and increasing at a rate less than or equal to 15%. An immediate annuity is defined as an annuity where payments start within the first 13 months; deferred annuities start after 13 months. A lump sum is anything not defined as an annuity. A lump sum type of contract might be one paying $X every five years for 25 years or a contract established as a four-year "college fund." In the first case, the payments are not annual and in the latter case, the payments are less than five years. Guarantee duration is defined as the years from issue to first payment. The guarantee duration is important in determining what rate of interest one should use to value any particular benefit.

To illustrate, the 1989 Plan Type A valuation rates are listed below. The 20-year certain and life in example A would be valued at the immediate rate of 8.75% as payments begin immediately. Since the annuity in example B is deferred six years, the valuation interest rate would be 8.25%. In example C the first lump sum would be valued at 8.75%, the second at 8.25% and the last two at 7.25%.

1989 Plan Type A Rates

Guarantee Duration	1-5	Valuation Rate	8.75%
	6-10		8.25%
	11-20		7.25%
	21+		6.25%

Examples:
A) \$1,000/month 20-year certain and life thereafter
B) \$1,000/month 20-year certain and life, deferred six years
C) \$10,000 lump sum in years 5, 10, 15, 20

Guideline IX-B requires you to characterize the benefits as annuity benefits and lump sum benefits. Once these benefits have been separated into their respective groups, Guideline IX-B specifies three valuation alternatives: carve out, graded interest, or other.

In the carve-out approach, the lump sums are carved away from the annuities and each stream is valued separately. Again, the annuity component can only include contracts with annual payments over five or more years. In a contract-by-contract valuation, payments in the current year cannot be more than 115% of the payments in the prior year. A group valuation approach is available where benefits from all contracts are combined for a particular issue year and payments in the current year are limited by 110% of payments in the prior year. Plan Type A valuation interest rates are used to value the annuity payments.

At Allstate, we use the carve-out methodology and find the group valuation approach more practical than the contract-by-contract approach.

In valuing the lump sum component, you use the Plan Type A valuation interest rates with the guarantee duration being the number of years from issue to the first payment or first installment. New York Regulation 126 requires that you use the Plan Type B interest rates for this component, which will generate larger reserves. Regulation 126 also specifically states that you cannot include the lump sum payments with the prior year's payments when determining whether or not the current benefits are 115% (or 110%) of the prior benefits. While Guideline IX-B does not address this, it seems reasonable to follow this rule under Guideline IX-B as well.

Table 3 shows a simple carve-out example for a contract paying \$10,000 a year for 40 years, \$10,000 every five years and \$15,000 in each of years 9, 10, 11, and 12. I have only shown the first 14 years for illustration purposes. Lump sums are generated whenever the current year's payments are greater than 115% of the prior year's payments. It is interesting to note that even though the "true" annuity portion is \$10,000 a year, a portion of the "lump sums" can also be "carved" into the annuity component due to the 115% cap.

TABLE 3

Actuarial Guideline IX-B
[Regulation 126 -- Section 95.12 (a) -- (g)]

Carve-Out Example:

$10,000/year 40-year certain
$10,000 lump sum every five years
$15,000 college fund in each of years 9, 10, 11, 12

Year	Annual Payments	Annuity Payments	Lump Sum Payments
1	10,000	10,000	0
2	10,000	10,000	0
3	10,000	10,000	0
4	10,000	10,000	0
5	20,000	11,500	8,500
6	10,000	10,000	0
7	10,000	10,000	0
8	10,000	10,000	0
9	25,000	11,500	13,500
10	35,000	13,225	21,775
11	25,000	15,209	9,791
12	25,000	17,490	7,510
13	10,000	10,000	0
14	10,000	10,000	0

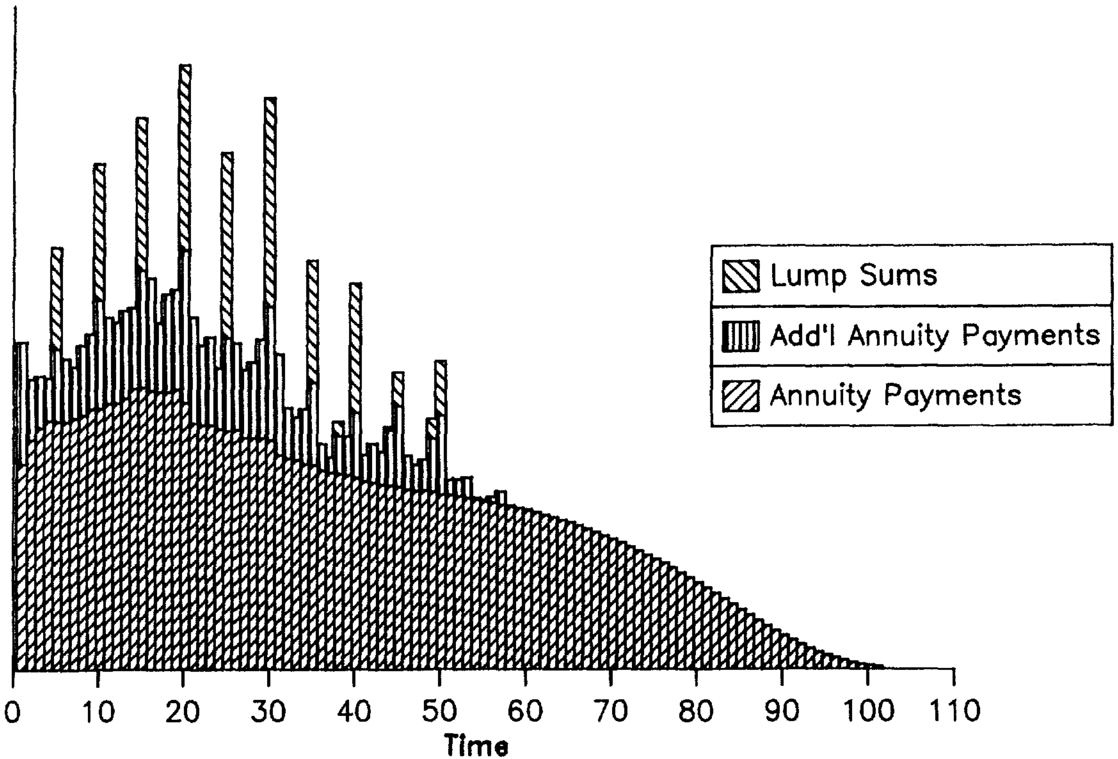
In this example, the annuity payments would be valued at the immediate Plan Type A rate for that issue year. The $8,500 lump sum would be valued at the 1-5 year Plan Type A (or B) rate. You have the option of stopping your carve out at this point or continuing to create level "lump sum" installments. If this is done, you will end up valuing these four lump sums at the 6-10-year rate versus valuing the 9- and 10-year lumps at the 6-10-year rate and the 11- and 12-year lumps at the 11-20-year rate. You have to decide how much work is justified by the slightly lower reserves.

Graph 3 is a single issue year's worth of benefits for us. Using the group approach, benefits fall into three components: "true" annuity payments form the bottom section, lump sum payments that can be "carved" into annuity payments are in the middle, and lump sums on top. Here you can see the characteristic pattern of the structured settlement business, i.e., an underlying pattern of benefits that will remain level or increase slightly for up to 30 years before falling off with mortality in combination with large spikes of benefits every fifth year. For all years of issue combined, the spikes level out after five years of new business. However, neither Regulation 126 or Guideline IX-B currently permit combining issue years, which is unfortunate.

An alternative to the carve-out approach is the graded interest approach. Here, the reserves for each contract are the greater of the "level interest rate reserve" and the "graded interest rate reserve." A "level interest rate reserve" is calculated for each

GRAPH 3

STRUCTURED SETTLEMENTS
Projected Benefits for a Single Issue Year



contract by computing the present value of future benefits using the appropriate Plan Type A rates, even in New York.

The first step in calculating the "graded interest rate reserve" is solving for X% which will equate the present value of future benefits at issue for each contract to the "level interest reserve" at issue using X% for the first 20 contract years and the over 20-year Plan Type A rate thereafter. This calculated rate (X%) is capped by 115% of the "level" interest rate.

The "graded interest reserve" is then calculated using the X% and the 21+-year Plan Type A rate. A group valuation may be used for determining X% instead of a contract-by-contract valuation. In this case, you assume all contracts issued during a given year are issued as a single contract. It would appear that the group valuation here again is easier to apply and a more practical approach.

The third valuation alternative is the infamous "other" which is simply any other method producing reserves as great as those described and approved by the Commissioner.

Graph 4 compares the difference between the graded interest and the carve-out approaches. I have used my carve-out annuity example from earlier; that is, $10,000 a year for 40 years, $10,000 lump sums every five years, and $15,000 in each of years 9, 10, 11, and 12, and normalized each to a starting graded interest reserve of 100. The rates used here are based on the 1987 valuation interest rates. The carve-out reserve will make use of all of the Plan A rates for the various lump sums. The graded interest reserve will equate a split pattern of 8.26% for 20 years and 6% thereafter to a reserve at issue calculated using 8%. The carve-out reserve is 2% higher at issue than the graded interest reserve but crosses over around duration 8. After that point, the graded interest reserve is always higher, reaching a maximum difference at time 20 where the interest rate is split. The graded interest rate reserve is about 14% higher than the carve-out at that time.

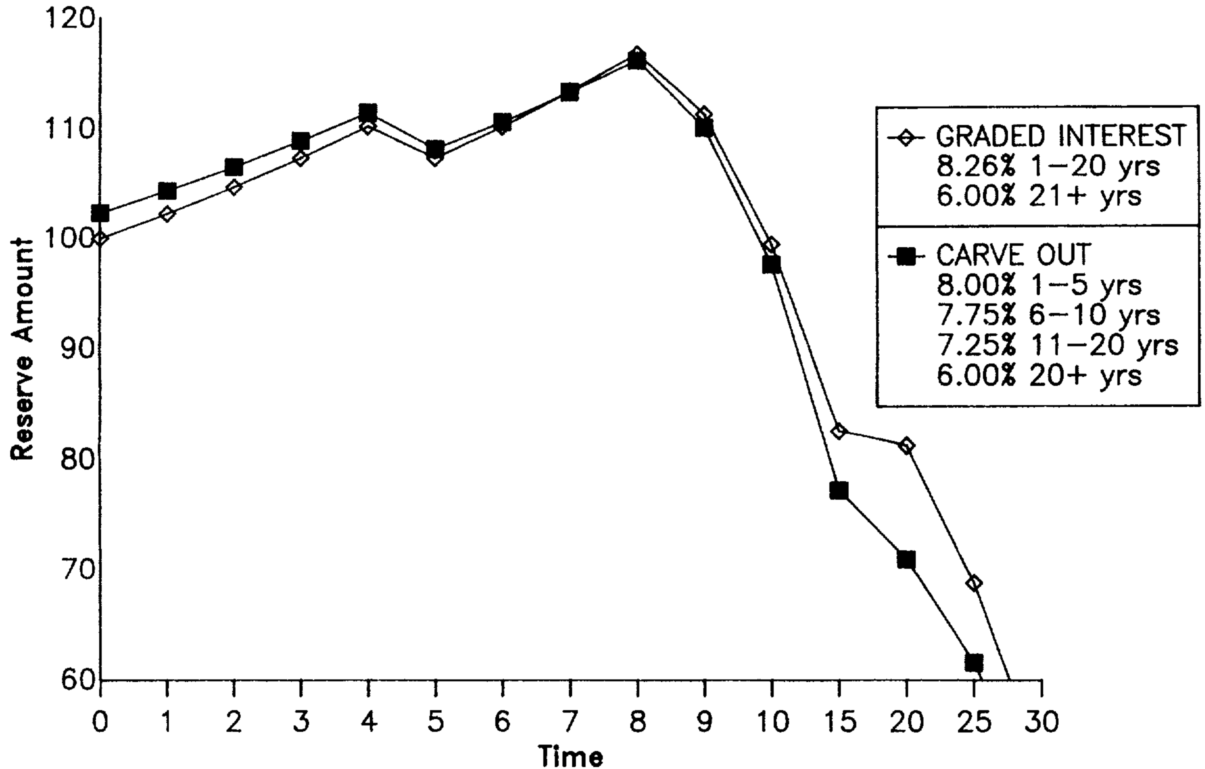
You must comply with Guideline IX-B by 1990 for 1990 and later issues and by 1993 for all issue years. In contrast, New York requires compliance with Regulation 126 by 1990 for all issue years.

Per Guideline IX-B, the examiner should request that the insurer perform cash flow projections under various interest scenarios to demonstrate that the assets are sufficient for the liabilities. The date of acquisition and the yields of the supporting assets should be compared with the date of issue of the liabilities and the valuation interest rates. The examiner may request a new valuation using the date of acquisition of the majority of the supporting assets as the date of issue of the remaining payments. These requirements are also addressed in section 95.15(b) of Regulation 126.

As an aside, use of warrants or futures may lock in a yield that bears no resemblance to the interest rate level in the year of purchase of the assets. I believe that cash flow results, if accurate, tell the story and not the date of asset purchase. While declining interest rates are the biggest concern in such a long liability as structured settlements and are generally thought about when considering these paragraphs of Guideline IX-B,

GRAPH 4

STRUCTURED SETTLEMENTS
Carve Out vs. Graded Interest



the guideline would seem to allow one to consider reserve weakening should assets roll over in higher interest rate environments as legitimately as reserve strengthening in declining rates. I'd check with your local regulator first on the higher interest scenario, however.

Next, I'd like to briefly discuss the asset/liability management issue. For this, I will return to Graph 3 showing a projection of benefits from one of our issue years. As I mentioned earlier, benefits only begin to decline after approximately 30 years. At that point, the reserve you will be holding will not be that much different than the reserve at issue. At a minimum, you are looking at reinvesting at least twice and, as I'll soon show, you should probably assume it will be necessary to restructure your assets more frequently than that.

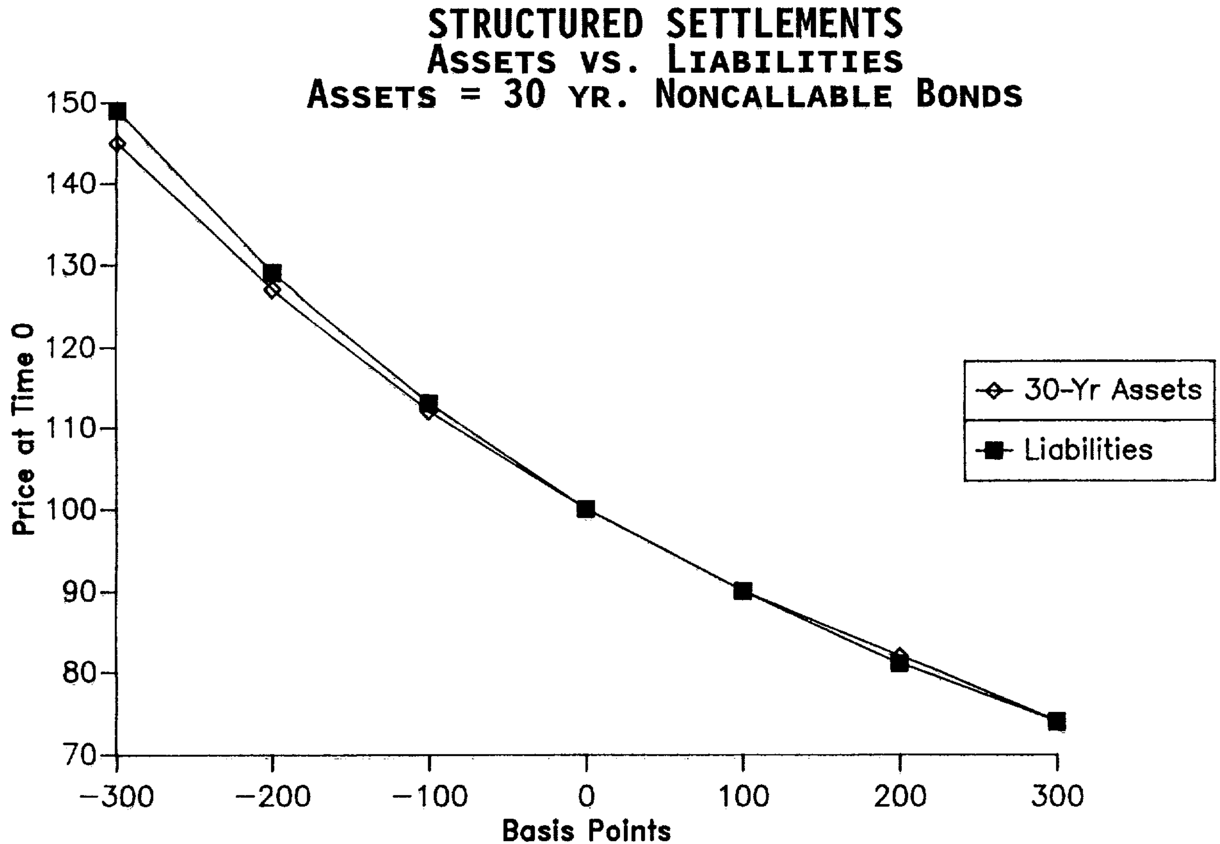
At contract issue, you may be able to buy assets that will provide fairly good matching for your liabilities. Graph 5 shows the cash flows from 30-year noncallable bonds against the cash flows from an issue year's worth of liabilities under various interest scenarios. There is some mismatch when interest rates fall though most profit margins should be able to cover that small shortfall of assets. Asset duration in this example is 10.5 years while liability duration is 11.0 years. This should be considered near utopia since in reality, these assets do not exist in the quantity and yield to sell the structured settlement product. But even if they did, you still have a problem.

Graph 6 depicts the story 20 years later. The duration of the liabilities is still very long while the asset has shortened up quite a bit. The duration of the asset is now 6.5 years while the liabilities have a duration of 9.5 years. This graph makes us painfully aware that we must continually manage our assets and liabilities. In fact, we review our asset/liability match quarterly, looking at it on a New York Regulation 126 basis and on a GAAP basis.

I don't think that all of the profit margins and the long-term interest rate assumptions being used in the structured settlement business are sufficient to cover the duration shortfall that occurs in the assets over time. GAAP accounting ties our hands in that capital gains and losses must be realized when they happen versus rolling them into the new asset purchases. We can only hope that our assets roll over at the same interest rate level at which they were bought. Federal income taxes are real money out the door if capital gains are realized. We're looking at futures and warrants to extend duration and improve convexity.

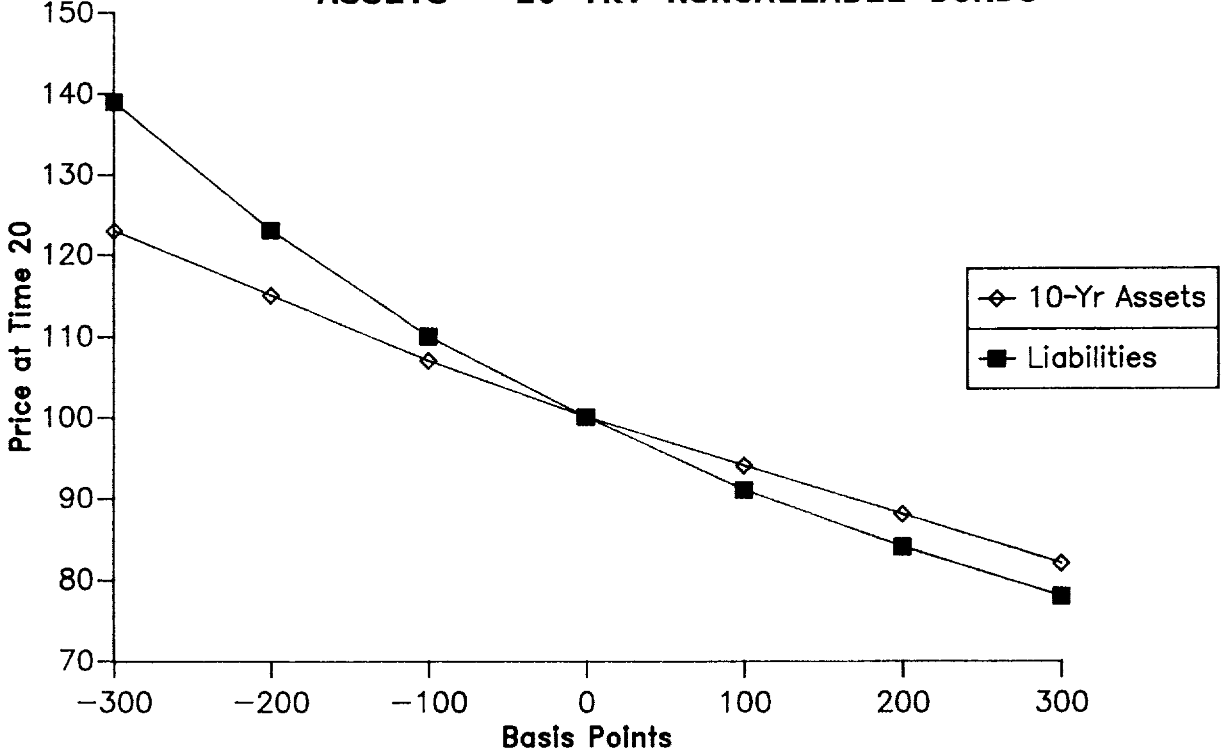
I'd like to move on to tax reserves now. In valuing reserves on a statutory basis, you have the option of using a group approach or a seriatim approach. However, you must use a seriatim approach when calculating tax reserves. Section 807(d) of the Internal Revenue Code prohibits tax reserves from being greater than statutory reserves. When using a group statutory approach and a seriatim tax approach, the actuary is left with somewhat of a problem in that some of the statutory reserve may not be associated withany one policy. The only reasonable approach I think would be to compare tax and statutory reserves in total versus by contract.

GRAPH 5


STRUCTURED SETTLEMENTS
ASSETS VS. LIABILITIES
ASSETS = 30 YR. NONCALLABLE BONDS
Price at Time 0
150
140
130
120
110
100
90
80
70
−300
−200
−100
0
100
200
300
Basis Points
30-Yr Assets
Liabilities

GRAPH 6

STRUCTURED SETTLEMENTS
ASSETS VS. LIABILITIES
ASSETS = 10-YR. NONCALLABLE BONDS



The Internal Revenue Code has specific sections for the valuation of contingent (807[c][1])) and noncontingent (807[c][3]) business. Tax valuation interest rates for the contingent business equal statutory; noncontingent valuation rates are the greater of statutory and "the rate of interest assumed by the company in determining the guaranteed benefit." Depending on the valuation year, the above rates may be subject to the applicable federal rates. Statutory does not separately define interest rates for contingent and noncontingent business. Again, you must decide what the appropriate basis of comparison is in checking that section 807(d) isn't violated. Do you compare tax against statutory on a total reserve level? On a contingent/noncontingent level? On an interest rate level?

The Applicable Federal Interest Rate (AFIR) concept was first applied in 1988. Tax valuation rates must not exceed the AFIR. Table 4 shows the Plan A rates over the last three years along with the associated AFIR rates. I have drawn a box around those areas where the AFIR comes into play. As you can see, the AFIR impact on 1988 and 1989 issue years was relatively minor but 1990 is a different story with 8.37% being greater than any of the Plan A rates.

TABLE 4

Applicable Federal Interest Rate

	1988	1989	1990
AFIR	7.77%	8.16%	8.37%

Plan Type A			
0-5	8.75%	8.75%	8.25%
6-10	8.50	8.25	7.75
11-20	7.75	7.50	7.25
21+	6.25	6.25	6.00

Before I finish, I'd like to comment on some reinsurance considerations. Per Guideline IX-B, the statutory valuation interest rate for an assumed block of business should reflect the majority of the supporting assets. For instance, if transferred assets under an assumption or coinsurance arrangement are in cash, the statutory rate for the year in which the transaction takes place would be the appropriate valuation rate. We have discussed valuation of reinsured blocks of business with the Illinois Department of Insurance and this is in line with their thinking on the matter.

The appropriate mortality assumption follows Guideline IX-A in that valuation of the liabilities should be based on "relevant hospital records, treating physicians' reports, and/or independent medical evaluations, etc." For example, if an initially severely substandard case was evaluated to be less substandard or even standard at the time of the transaction, the longer life expectancy would be reflected in a higher price and a correspondingly larger reserve. The reverse would also be true.

In assuming a block of in-force business, tax reserves should be based on the reinsurer's assumptions. A ceding commission is generated to the extent tax reserves are greater than the purchase price. You must capitalize and amortize the ceding commission over the "useful life of the reinsurance agreement." In the case of an assumption agreement, you would look to the underlying contracts for determining the "useful life." These rules are set out by the Supreme Court in the June 1989 Colonial American Life case ruling. In assuming new business, tax reserves are still based on the reinsurer's assumptions though it is questionable as to whether the reinsurer can use a basis other than that of the ceding company. The concept of establishing and amortizing a ceding commission is not applicable for new business. Here, the IRS views the payment of the ceding commission more as a sharing of expenses than as the purchase of an asset and concludes that it is currently deductible.

MR. STEVEN A. SMITH: My company, First Colony Life, has been in the structured settlement annuity business since 1978. At year end 1989, we had almost $2 billion of settlement annuity reserves and about 14,000 contracts in force.

MORTALITY STUDIES

As Bill Bryan pointed out, there can be a significant difference between actual to expected mortality ratios on the rated age basis and the new constant extra deaths mortality basis required by NAIC guideline IX-A. In Bill's example, the mortality ratio was 146% on a rated-up in age basis but only 23% on a constant extra death basis. Those ratios may seem far out, but probably not by as much as you would think.

During the period 1986 through 1988, First Colony Life's rated age actual mortality on substandard cases was about 150% of rated age current population mortality and about 220% of rated age valuation mortality, but only about 60% of constant extra death valuation expected mortality. These ratios were based on a total of 69 actual deaths, so the results presumably have some credibility. Our ratios for the period are high, however, because we had one large death with a significant amount of reserves released.

One of the points that I want to make or reinforce with regard to mortality studies for substandard business is that care will have to be taken in interpreting the mortality ratios required by NAIC Guideline IX-A and Regulation 126, Section 95.12(h). A mortality ratio under 100% for annuities is bad, not good. The implication is that reserves might be insufficient.

There are at least three reasons why I feel that our mortality ratio of 60% on a constant extra death basis does not necessarily mean that reserves are inadequate.

First, what is important to an immediate annuity reserve is the mortality assumption used to discount future benefits. The constant extra death method produces a fairly rapidly decreasing mortality assumption in the early durations. If actual mortality exceeds constant extra death valuation mortality at the early durations, I conclude that reserves are conservative indeed.

Second, most contracts have a significant certain period which significantly reduces the effect of mortality on reserves in the early durations.

Finally, and most importantly, there is this. Reserves on the rated age and IX-A constant extra death bases are very close to each other initially, with rated age reserves generally being slightly higher initially, but falling far below the IX-A reserves after 15 or 20 years. Since our rated age valuation mortality ratio was 220% and our IX-A reserves are close to rated age reserves, it seems clear that we are not underreserved.

Since the industry typically quotes substandard cases at a standard price at a rated-up age, our experience of 150% and 220% on the pricing and valuation rated age bases respectively means, at least for our 1986-1988 experience, that we have not made gross errors in pricing substandard business: actual mortality is higher than rated age mortality. We have not rated up the age too far.

On the other hand, if mortality ratios are below 100% on both the rated age and constant extra death bases, then reserves may well be inadequate.

Now I'd like to share some additional First Colony Life mortality experience with you. For our standard business, mortality has been at only 94% of current population mortality (without allowance for future improvement) and 128% of statutory valuation mortality. If there is mortality improvement, then mortality ratios will likely be even lower than 94% of population mortality in the future. Our experience here is based on 121 actual deaths, so the data is statistically significant.

This strongly suggests that a company using out-of-date population mortality or current mortality without significant allowance for mortality improvement is way off the mark on its mortality assumption. What I think is happening here is that when a "regular population life" gets a significant amount of extra money from a structured settlement, he lives better and has better medical care. Consequently, he exhibits mortality that is significantly lower than standard population mortality. Our experience indicates that this is particularly true for standard cases during the first few contract years. That is, we seem to be getting some antiselection, at least in the early durations.

Another possible reason for antiselection is the widespread use of quote disks. Brokers can easily select against the company if a fair price is not used for each type of benefit.

Finally there is the effect of paid for dated back contracts: for many contracts, by the time a contract goes in force, a number of months may have elapsed from the "effective date," so there is no chance of death between the "effective date" and the "paid for date" as had been assumed in pricing.

I conclude from our mortality experience that, for pricing and GAAP reserve purposes, it is important to assume better than current population mortality, allow a sufficient initial mortality margin and provide for future mortality improvement. First Colony Life does all three.

GAAP CONSIDERATIONS

Since I just finished talking about mortality, I'm going to talk next about a potentially critical item: the GAAP mortality assumption for substandard business. In particular, don't get caught in the trap of using the constant extra death method required under

Guideline IX-A for GAAP purposes. It will almost assuredly affect your GAAP earnings in an adverse manner.

Remember the mortality ratios that Bill and I indicated for rated age versus the IX-A constant extra death method. For my company, actual mortality is above pricing or rated age mortality, but below constant extra death mortality.

If your company is like mine, you set up an initial GAAP reserve equal to the net consideration, perhaps by solving for an interest rate in the first 20 years that makes the initial reserve equal to the net consideration. Or perhaps the "solved for interest rate" gets you to the gross premium and you set up a deferred acquisition cost (DAC) for acquisition expenses. Your GAAP reserve starts at a point where you report no gain or loss at issue, but then you have interest and mortality gains or losses after that point. If the reserve mortality assumption anticipates constant extra death mortality and you don't get it, which is very likely at the early durations, then you may have significant GAAP mortality losses.

What we have done for GAAP purposes to provide for adverse mortality deviation is to use rated age mortality initially, graded into constant extra death mortality at the earlier of 35 years after issue or attained rated age 85. This appears to achieve an acceptable GAAP result while still adding a provision for mortality deviation.

Another GAAP issue related to mortality is how much of a mortality element there must be in a contract in order for the contract to be considered a "limited payment contract," i.e., one containing a "significant insurance risk." One view might be that a contract must have some percentage of the gross premium, say 5%, that is for life contingent benefits. For example, if, on a 20-year certain and life policy, the deferred life contingent portion of the premium is more than 5% of the total, then the contract is a limited payment contract. Otherwise, the policy is an investment contract and is accounted for as such.

But suppose the portion of the gross single premium related to life contingent benefits is only 1% on a 30-year certain and life contract. At the end of 30 years, all of the reserves will be life contingent. In fact, a significant portion of the reserves will be for life contingent benefits after only a few years. It does not seem appropriate to us to change the accounting model in midstream. Our view, therefore, is that if there is any mortality element in the contract at issue, the contract is limited pay. If there is no mortality element at issue, then the contract is an investment contract.

Speaking of accounting for investment contracts, there is one aspect of such accounting with which I strongly disagree with our auditors. The issue is whether or not we can use graded interest rates to calculate GAAP reserves for certain only contracts.

For limited payment contracts, i.e., our regular settlement annuities, in order to place an appropriate adverse deviation provision for interest into our reserves, as I indicated previously, we solve for an interest rate for the first 20 years, with lower interest rates after our initially acquired bonds have assumed to have been called or matured. We also do the same thing for our certain only annuities.

RESERVES FOR STRUCTURED SETTLEMENT AND SIMILAR ANNUITIES

The issue here, if I understand our auditor's point of view, is whether FAS 91, paragraph 18, requires the use of the "interest method." The objective of the interest method is to arrive at periodic interest income (including recognition of fees and costs) at a "constant effective yield." The examples in FAS 91 primarily relate to mortgages and amortization of fees or costs thereon.

The question is, does "a constant effective yield" require the use of a level interest rate for a 40-year certain only annuity? Personally, I would like to think not. The difference between a 40-year certain only contract and a 40-year certain and life thereafter contract is very small. If it makes sense or is required to use graded interest rates for limited payment contracts, it makes just as much sense to use graded interest rates for the 40-year certain contract.

Currently, we are steadfastly refusing to move away from graded interest rates on certain only contracts. Our auditors currently are accepting our practice on the basis that the "error" is not material. The difference will grow over time, however, and conceivably could become material sometime in the future.

When we get to the question and answer period, I would be very interested in your views on this subject. I strongly feel that our auditors are taking a position that is either wrong, or at least does not make good actuarial sense. In fact, while I am thinking about it, let me ask for a show of hands on this question now. How many companies have GAAP reserves for settlement annuities? It looks like an awful lot of companies in the audience don't have GAAP reserves. Of the people who have GAAP reserves, how many of you use graded interest rates for certain only contracts? How many of you use level interest rates for certain only contracts? It appears that about half of those companies represented in the audience use graded reserves on certain only contracts and the other half uses level interest rates. Of those companies using level interest rates for certain only contracts, how many of you also use level interest rates for your limited payment settlement annuities with life contingent benefits? Everybody does.

It therefore appears that essentially everyone is reserving for both life contingent and certain only benefits in the same manner: either graded or level interest rates are used on both types at any particular company.

Another GAAP issue that we have had come up is whether or not a DAC asset is required for acquisition expenses. Up until recently, we had been basing our immediate annuity reserves on the statement on page 81 of *Audits of Stock Life Insurance Companies* by the AICPA Committee on Insurance Accounting and Auditing: "A reserve for future annuity payments and expenses should be provided in an amount approximating the consideration less acquisition expenses." This provision prevented companies from taking a large portion of future profits on single premium policies into earnings at issue of the contract. We used this statement as the basis for not showing a DAC asset at issue. We have an implicit DAC, therefore, which is in effect netted against the reserve. There is no gain or loss at issue.

Our auditors have indicated, for investment contracts, that in the future we must show a DAC asset and amortize it. They feel that the audit guide is superseded by FAS 60, which states that "Acquisition costs shall be capitalized and charged to expense in proportion to premium revenue recognized." In addition, the "Practice Bulletin" of December 5, 1989 indicates that deferred policy acquisition cost (DPAC) related to investment contracts should be reported as an asset, consistent with the reporting of DPAC on insurance products covered by FAS Statement 97."

For limited payment contracts, we are still discussing the issue. It is possible that we will be charging off DPAC in proportion to premium, which would mean at issue for single premium contracts, which in turn would imply that our former practice of setting up an initial reserve equal to the net consideration is correct.

The other side of the coin is that if DPAC should be shown for investment contracts, at one end of the spectrum, and for insurance contracts at the other end of the spectrum, then it seems likely that DPAC should occur for all contracts in between. As I indicated, we are still investigating the matter for limited payment contracts.

PRICING/RETURN ON INVESTMENT

Under the heading of pricing/return on investment, I plan to discuss the effect on profitability of different levels of spread margins; the difference between assuming a spread and running multiple scenarios with real assets; and the effect of NAIC Guidelines IX-A and IX-B.

Table 5 indicates a number of things about how the world may have seemed before Guidelines IX-A and IX-B came along. The results are for a standard age 35 male annuitant receiving a level annuity benefit of $10 per month for 20 years certain and life thereafter. Before Guideline IX-B came along, most companies were probably using level interest rates for statutory reserves.

For many companies, pricing has been done on an "assume a spread" basis. That is, you went to the investment department and asked them, "What can I get on long-term bonds?" If they responded that they could get 10.25% and you needed 25 basis points for investment and general expenses, you might have done your "pricing" by taking the present value of benefits at 9% for 20 years and 6% thereafter, thereby giving you an assumed spread of 100 basis points for the first 20 years after investment and general expenses. You then loaded the resulting present value for commissions, premium taxes and perhaps a little more for profit margins and you had your premium. Profits resulted from obtaining a 100-basis-point-interest-margin, less perhaps something for C-3 risk (the risk of loss due to changes in interest rates), which wasn't really analyzed. You basically just "assumed a spread."

Table 5 shows a number of things. The first is that profitability, whether measured by return on investment (ROI) or as a 10% present value of after-tax profits, is a function of initial surplus strain. The larger the strain percentage, the less profitable the business. The definition of ROI that I am using here is "the interest rate at which the present value of after-tax statutory profits is equal to zero."

TABLE 5

Before IX-B
Age 35, 20 Certain and Life

Pretax Strain Percentage at Issue	30-Year After-Tax Return on Investment			Present Value of After Federal Income Tax Profits at 10%		
	Interest Spread (Basis Points) (After all expenses)					
	50	100	150	50	100	150
5%	24.7%	34.9%	44.4%	5.3%	10.6%	16.3%
10	16.0	22.0	27.5	4.1	9.5	15.4
15	13.0	17.4	21.5	2.9	8.4	14.4

Reserve Basis: Level Interest Rates
Interest Spread: "Assume a Spread"

Second, profitability levels seem quite acceptable, even at an assumed spread of only 50 basis points. My definition of spread, by the way, as indicated in the table, is after investment and general expenses have been covered. If investment and general expenses total 25 basis points, then a net spread of 50 basis points is obtained by earning 75 basis points over your pricing interest assumption.

Now along comes Guideline IX-B. Since level interest rate reserves are not appropriate as a basis for valuing contracts that may last 50 or 60 years, let's say you decide to use "option 2" of the guideline to cover your lump sum benefits, which reduces initial strain as compared with "option 1" (reserving for lumps at a lower interest rate).

My personal belief is that the graded interest rate reserves of option 2 are far more appropriate as a reserve basis than are option 1 reserves, whether there are additional "lump benefits" or not. For example, most companies no longer have assets earning enough to support a 13.25% forever interest rate basis for 1982 issues. Probably half of assets acquired in 1982 have been called or traded away by now.

In any event, Table 6 compares the profitability before and after IX-B. Once again, profitability is on an "assume a spread" basis. Pretax strain at issue is at 10%. That is, the first row of profitability figures, on the level interest line, is the same as the middle (10% strain) row of Table 5. Here we see that profitability is substantially reduced by the graded interest reserves. Profit levels that were acceptable have been reduced considerably. The present value of profits with only 50 basis points of interest margins is slightly negative (-0.3%), which means that ROI is below 10% (9.6%). That is, the present value of profits at 9.6% is equal to zero.

TABLE 6

Effect of IX-B

Reserve Basis	30-Year After-Tax Return on Investment			Present Value of Profits at 10%		
	Interest Spread					
	50	100	150	50	100	150
Level Interest	16.0%	22.0%	27.5%	4.1%	9.5%	15.4%
Guideline IX-B Graded Interest	9.6	16.4	22.2	-0.3	5.2	11.0

Pretax Strain at Issue: 10%
Interest Spread: "Assume a Spread"

Table 7 compares "assuming a spread" with the results of 40 random trials with two different bond investment strategies: par bonds and 8% coupon discount bonds. Two initial spreads, 100 and 150 basis points are compared for par bonds.

TABLE 7

Reality

	Average Ending 30-Year Surplus	Times Negative (Largest)	Present Value of Profits at 10%
Assume a Spread of 100 Basis Points After Expenses	644	NA	5.2%
40 Random Trials			
100 BP 30-Year Par Bonds, 5-Year Call Protection	228	16 (802)	-0.5%
65 BP Discounts	263	15 (576)	0.3%
150 BP 30-Year Par Bonds 5-Year Call Protection	479	14 (768)	1.4%

Reserve Basis: IX-B
Initial Strain: 10% Pretax (6.6% AFIT)

In Table 7, I have not shown return on investment. I was not sure the results are meaningful when there are multiple negatives in the present value calculation, meaning that there may be multiple solutions or no solution, i.e., no interest rate or multiple rates at which the present value of profits is equal to zero. Instead, I have shown the average ending surplus number and the 10% present value of statutory profits. The values for the "assume a 100 basis point spread" correspond to the values in Table 6. In particular, the 5.2% present value of profits is the same. In addition, I have indicated, for the 40 scenario results, the number of times out of 40 trials that ending surplus was negative, as well as the largest ending negative surplus.

The results are not at all encouraging. The "bottom line," if you will, is that actual profitability is far less than what would be imagined by just assuming a spread. Considering first the 100 basis points initial spread using 30-year par bonds, we see that the average ending surplus of 228 is roughly 65% lower than the assume a spread ending surplus of 644; the present value of profits at 10% has disappeared; and lastly, 16 (40%) of the forty trials end up losing money. The largest negative (802) is 55% of the gross premium of just over $1,400. Most of the "problem" is caused by falling interest rates, which results in assets being called and refinanced.

Investing in (8%) discount bonds yielding an initial spread of only 65 basis points, but with more call protection, gives approximately the same unacceptable results. Even investing in par bonds with 150 basis points of initial spread does not increase profitability to acceptable levels.

While it is not shown in the table, I can tell you that the Regulation 126 work that we have just completed for the 1989 year end indicates that long tranche collateralized mortgage obligation (CMO) assets do not seem to do as good a job as regular bonds in cash flow testing. That is, we were able to obtain better cash flow testing results for our settlement annuity block by largely eliminating the long tranche CMOs from the supporting asset portfolio. This to be a surprising result since we had generally assumed that long tranche CMOs were fairly well suited to many aspects of settlement annuities.

It is difficult to make profits on the business at only 100 basis points of spread. Careful management of the call risk is absolutely essential to making any profits at all.

Table 8 looks at the profitability of substandard annuities. All of the profitability numbers in this table, which are for a male age 35 rated to age 65, are on the "assume a spread" basis and therefore significantly overstate profitability relative to reality, as we saw in the previous table. The top row of the table indicates that using rated age mortality and level interest rate reserves generally implies acceptable levels of profitability.

TABLE 8

Substandard Lives
Age 35, Rated to Age 65
10 Years Certain & Life

	30-Year After-Tax Return on Investment	Present Value of Profits at 10%
Level Interest, Rated Age	21.6%	6.5%
IX-A,B	17.0	4.0
Standard IX-B Reserves	8.7	-4.4

Interest Spread: "Assume a Spread"

Both Guidelines IX-A and IX-B require higher reserves at the longer durations after issue. Guideline IX-A, however, generally reduces initial strain, as compared with IX-B.

The net result is that profitability is reduced, but not as much as for standard business, assuming that your mortality assessments are correct, which obviously is critical, and without considering the C-1 and C-3 risks, which probably again makes it difficult, but hopefully not impossible, to achieve acceptable levels of profitability unless initial spreads are increased and significant call protection is obtained.

TAXES

The applicable federal interest rate is 8.37% for 1990 issues and will therefore affect profitability because, for the first time, the AFIR will exceed the valuation interest rate. The reason that this is potentially so important, especially for deferred settlement annuities, is that these annuities have no cash value floor to reduce the impact of the AFIR on the initial tax reserve. Initial tax reserves will be lower than initial statutory reserves, thereby reducing the amount of net cash available to fund the benefits because of income taxes.

In January, I was predicting the immediate annuity valuation interest rate to be 8.0%, which, with an 8.37% AFIR, would have meant that our pricing interest rate would have had to be perhaps five basis points lower in order to cover the additional income taxes that would have been paid at issue. The current difference of 12 basis points between the AFIR and valuation rates will reduce the effect to only two or three basis points. The effect on deferred settlement annuities (without case values) is far more striking. For example, consider a situation where the statutory valuation rate is 6% (over 20 years deferred), but the AFIR is 8.37%.

An additional consideration is how will the AFIR come into play as compared with, say, graded interest reserves? Would the comparison to the AFIR be made on the total reserve for a policy, which I think is correct, or by comparing the AFIR to the graded interest rate on a contract year by contract year basis and using the higher interest rate in each contract year, which I don't think is correct?

Suppose, for example, you have a 20-year certain and life annuity that is reserved on the new IX-B graded interest rate reserve basis. Suppose further that the level interest rate reserve basis would have been at 8.25% forever. When you solve for "X%" for the first 20 years, with a tail interest rate of say 6%, you get say 8.8% for "X%." That is, at issue, the present value of future benefits at 8.25% forever equals the present value at 8.8% for 20 years and 6% thereafter.

Now suppose that three years later the life dies, leaving a 17-year certain only reserve. Should the 17-year present value after death be calculated at 8.8%, which seems to violate the statutory limit of 8.25% as the maximum interest rate? I believe that the correct interpretation is that at the moment of death, the reserve should move from 8.8% and 6% to 8.25% for statutory purposes and probably 8.37% (the assumed AFIR) for tax purposes. If the original certain period was 30 years instead of 20 years, the facts would be different.

PROPOSED ILLINOIS CASH FLOW TESTING REQUIREMENT FOR 1991

With regard to the proposed Illinois cash flow testing law, I believe that something like the following is reasonably accurate.

It is my understanding that Larry Gorski of Illinois strongly supports the valuation actuary concept, and that he intends to move Illinois forward as quickly as possible on some basis with the idea. In January, when it appeared that the NAIC was moving fairly slowly with the valuation actuary concept, Larry formed a working group to create a law or regulation, probably similar to, or at least based on Regulation 126 of New York. The working group had its first meeting in early January 1990.

Larry's target date for taking effect is 1991. My understanding is that if Illinois goes forward with its own type of legislation, that a number of forms of annuities, such as single premium deferred annuities (SDPAs), guaranteed interest contracts (GICs), and immediate and structured settlement annuities, etc., would be covered initially. This would be similar to the way New York Regulation 126 has evolved.

In the last month or two, however, the NAIC has moved forward in a significant way with the valuation actuary concept. It now appears to me that we will see the NAIC adopt changes to the standard valuation law in 1990 which will enable the valuation actuary concept, with NAIC regulations requiring an annual actuarial opinion and memorandum being exposed and adopted in 1991. If this happens, perhaps Illinois will follow the NAIC. If the NAIC does not move quickly, it may well be that Illinois will adopt its own law and/or regulations.

While there are a lot of companies that are not in New York and hence not required to do an actuarial opinion and memorandum, most companies are licensed in Illinois. So it would appear that, one way or another, it is likely that most companies will have to do cash flow testing for year end 1991.

MR. FREDERICK A. RANDALL: Did I hear you say that on Guideline IX-A you were coming up with an initial substandard reserve lower than you did in the rated up in age basis?

MR. SMITH: Generally, that's correct. What you have is a mortality rate that slopes upward with duration and you're solving for the same life expectancy by adding a constant. If you remember Lidstone's theory from the Jordan *Life Contingencies* textbook, a constant increase in the mortality rate leads to a decrease in reserves. Relative to rated age reserves, the IX-A initial reserve is lower for straight life annuities than it is for a contract with a certain period.

MR. RANDALL: And was the crossover after about five years or so?

MR. SMITH: It depends on the nature of the benefits, whether you have level benefits or increasing benefits, and where the lumps are. But, yes, I'd say probably around five years.

MR. RANDALL: How did you develop what your constant extra deaths were for various types?

MR. SMITH: The actual language in Guideline IX-A is that you are supposed to add a constant to the valuation mortality table mortality rate to get you to the average of the life expectancies of the medical directors when they priced it. For example, supposing you have a life that is actual age 35. You ask your medical director what he thinks this guy's physiological age is. He thinks he's like age 65. Well, that implies a life expectancy on the valuation table. You ask him what percent mortality. He thinks it's about 5,238% mortality. That also implies a life expectancy. You may just ask him what he thinks the life expectancy is of that life.

What the Guideline says is that (by trial and error) you add constant extra deaths until you get a life expectancy that is not less than the average of any life expectancies you came up with during the pricing process. In addition, you have to save all the documentation forever for support and you have to do mortality studies to document and substantiate your choice. Further, you can do this only for settlement annuities, worker's compensation annuities, and long-term disability buyouts. Standard reserves at the actual age must be held for other types of substandard annuities.

MR. TRANSON: One of my concerns in the structured settlement business is the great diversity of benefit amounts over a relatively few number of lives. You have some lives that may have a $1,000 a month benefit and others with a $7,600 a month benefit. Do you believe this adds any additional risk to the life as opposed to a situation where all the lives have roughly the same amount of monthly benefit and, if so, are you looking at doing anything extra in your reserves or analysis for it?

MR. SMITH: Well, obviously, you have to think about that any time that you have large policies. For example, I told you about our substandard mortality ratios. We had 150% and 220% but there was one large claim. If that claim hadn't occurred we'd be back just around 100%. So I'm not sure exactly what the answer is. You are going to get fluctuations.

There is something special that we do for large cases. After they are in force, we calculate expected reserves released on an annual basis for every policy, not only for the mortality study, but also to take a look at when it becomes economically feasible to go out and check to see if they are still alive. For example, we've got a couple of very large substandard contracts on our books. One of them has expected reserves released of about $250,000 a year. Every year that guy doesn't die we lose $250,000, because our reserve calculations expected a part of him to die.

I think it pays to be a bit more conservative when you get those policies that have a very material mortality element, just as you would with a life insurance policy. You have different rules for underwriting a five million dollar case than you do for a $50,000 case.