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Moderator: EDWARD P. MOHORIC
Panelists: THOMAS A. CAMPBELL
NEIL J. DAVIDSON
MICHAEL J. O'CONNOR
Recorder: EDWARD P. MOHORIC

Summary: Current topics relating to reserving for deferred annuities, including Guideline 33, equity-indexed annuities (EIAs), variable annuity minimum death benefit guarantees (MDBG), and Guideline MMM, are covered. The progress on the 1994 Group Annuity Mortality (GAM) Table and plans for revision for the Standard Valuation Law (SVL) for annuities are also reviewed.

Mr. Edward P. Mohoric: The stock market is simple—you buy low, and sell high, right? Are not annuities also simple? Don't you just get the money, accumulate it, and pay it out? As you well know, they are complicated, and I think that more attention is paid at these meetings and at each of our respective companies to dealing with the complexities of annuity reserves than is paid to dealing with the life and health reserves, with all their morbidity and mortality issues.

In this session we're going to focus primarily on three issues. Neil Davidson is going to speak on *Guideline 33*. Neil is the vice president of product development at Western National. We are not going to go into excruciating detail on how you do the calculations. We are going to give you some background on it and talk about how it will affect annuity products going forward.

Tom Campbell will be the second speaker. Tom will be talking about *Guideline MMM* for the MDBG for variable products. After what has transpired in the stock

market recently, this may be a little bit more of an issue now than it had been before. Tom is an assistant vice president and corporate actuary with the Hartford Life. He has been there for 15 years and his responsibilities include actuarial review, financial reporting, reserve valuation, and compliance. Tom is co-chairing the Academy's Task Force on MDBG.

Our last speaker will be Mike O'Connor, who is senior vice president and chief actuary with Great American. Mike is going to discuss what's probably the hottest issue right now, which is the group looking at reserving for EIAs. Actually, all three of the panelists are members of the Equity-Indexed Products Task Force.

Mr. Neil J. Davidson: My role on the panel is to update you on *Actuarial Guideline 33*. First, let me ask a question you may have asked yourself: Why should I be interested in *Guideline 33*? Since you are in this session, I assume that your company has a significant block of fixed annuities. If that is the case, two reasons for getting current on this guideline come immediately to mind. First, this guideline is a rather complicated clarification of the Commissioner's Annuity Reserve Valuation Method (CARVM) statutory reserving methodology. You need to begin the process, if you have not already, of understanding its requirements. Second, it is quite possible that this guideline will result in increases to your company's statutory reserves. Implementing *Guideline 33* could have some important business effects you need to consider. Let me note here again that, as Ed said, it's not my intention to conduct a tutoring session on *Guideline 33*. There are several other sources of information you can draw on for detailed technical discussions. *Guideline 33* was the subject of a panel discussion at the 1997 Valuation Actuary Symposium and a teaching session at this SOA meeting (Session 15TS). It has also been the subject of several articles in *The Financial Reporter*. My intent is to derive some highlights of the guidelines and observations on business impact.

These are the topics that I will discuss: the evolution of *Actuarial Guideline 33*; the issue of reserving for multiple benefit streams; the concept of elective and nonelective benefits in the context of this guideline; the progression from separate to integrated approaches for calculating reserves; general effects of *Guideline 33* on statutory reserves; other clarifications in the guideline; and, business impacts of *Guideline 33* and a brief status update.

Evolution of *Actuarial Guideline 33*

This guideline originated as *Actuarial Guideline GGG* several years back. Originally, the guideline was proposed to clarify the CARVM reserving method. The classic simple description of CARVM is that the statutory reserve is the greatest present value of all benefits available in an annuity. When CARVM was originally defined, deferred annuity benefits generally included cash surrender benefits, free

partial withdrawals, waiver of surrender charge at death, and annuitization options. Existing literature and practice handled these benefits reasonably well. Recently, though, companies have added a variety of benefits to deferred annuities: extended care and nursing home surrender charge waivers, accidental death benefits, unemployment benefits, and so on. There was little consistency in applying CARVM principles to this array of benefits. *Actuarial Guideline 33* was put forth to fix that problem.

The guideline was originally adopted effective December 31, 1995. A three-year phase-in period was allowed for setting up any additional reserves that might arise due to implementing the method. That phase-in period ends this year-end.

As I mentioned, *Guideline 33* was intended to clarify CARVM. Contrary to expectations, however, the guideline caused additional confusion. The major difficulty for valuation actuaries was in interpreting the guideline's requirement for valuation of multiple benefit streams. The guideline's requirement to value all benefits in an annuity contract did not clearly lay out the appropriate methods for performing the calculations. Feedback from actuarial meetings, particularly the 1995 Valuation Actuary Symposium, highlighted the need for greater definition of acceptable reserving methods.

In response to this uncertainty, the Life and Health Actuarial Task Force (LHATF) Annuity Working Group requested assistance from the Academy. Thus, the CARVM Multiple Benefits Working Group was formed to identify issues and to suggest solutions to these issues. The results of their efforts have been presented to the NAIC and are in the process of obtaining final approval.

Reserving for Multiple Benefit Streams

As the first step in clarifying CARVM for deferred annuities with multiple benefits, *Actuarial Guideline 33* defines two broad categories of annuity contract benefits: elective benefits and nonelective benefits. Definitions are provided in the guidelines to enable the actuary to identify nonelective benefits. All other benefits are considered elective.

The guideline also defines an integration procedure for computing the present value of benefits under combined benefit streams. Simply put, the process is to value the elective benefits, assuming utilization, with the highest present value and then add the value of nonelective benefits, using appropriate incidence rates.

The definitions of elective and nonelective benefits are quite straightforward. Nonelective benefits are those benefits that are payable only after the occurrence of a contingent or a scheduled event. The payment of nonelective benefits is

independent of the owners' election of a contract option. Examples of nonelective benefits are death benefits, accidental death benefits, disability benefits and nursing home confinement, and surrender charge waivers. Elective benefits are all other benefits provided under the contract. That is, they are options that may be elected by the owner under the terms of the contract, such as cash surrenders, partial withdrawals, and annuitizations.

Integrated Benefit Reserve Calculation

One of the areas where confusion occurred under the original *Guideline 33* was whether the multiple benefits in an annuity contract should be evaluated separately or in some integrated fashion. Under separate benefit methods, the greatest present value of each benefit is computed independently of other benefits. The CARVM reserve is the greatest of these separately computed present values. Typically the cash surrender benefit defines the greatest present value. This method can often result in no specific reserve being held for other benefits.

Actuarial Guideline 33 now defines the integrated benefit reserve calculation that is to be used instead of separate benefit reserve calculations. Under this method, all benefit combinations are to be considered. For each elective benefit, incidence rates must be determined that generate the greatest present value. These are typically at either 100% or 0% utilization. For nonelective benefits, present values are to be calculated using valuation basis incidence rates. All benefit streams should reflect death benefits and survivorship. The guideline also specifies two specific benefit streams that must be considered: cash surrender value benefit streams and annuitization benefit streams. The guideline then requires that all other contractual benefits be considered.

Effects of Actuarial Guideline 33 on Reserves

At best, implementation of *Actuarial Guideline 33* will result in statutory reserves equal to what your company is already holding. However, you are likely to find that some of the companies' annuity products have benefits and features that cause reserve increases. The calculations are potentially complex and the impact of the guideline on any particular contract's reserve will vary according to a number of factors: specific product features such as surrender charge patterns, free partial withdrawal provisions, annuitization guarantees, the array of ancillary benefits, and valuation interest and mortality rates.

Each policy form will require separate analysis. Strictly speaking, there may be an infinite number of benefit streams to evaluate. However, while the guideline requires that all benefit streams be considered, they do not all need to be explicitly tested and computed. Analytical methods can reduce the number of tests to a manageable level.

Other Clarifications in *Actuarial Guideline 33*

The main emphasis in *Guideline 33* is the handling of multiple benefits, but there are a few other issues addressed in the guideline that I will briefly touch on.

One of the items is the election of issue-year basis or change-in-fund basis for valuation of annuity contracts. The guideline dictates that the basis be determined for the contract as a whole and consistently applied to all portions of all integrated benefit streams available under the contract. The basis election is made at issue and must not change during the term of the contract without prior approval of the commissioner.

Guideline 33 clarifies the determination of valuation interest rates to be used in CARVM calculations. Certain parameters for determining valuation interest rates are applied at the contract level. Those parameters are the basis (issue year or change in fund) the availability of settlement options, and interest guarantees on subsequent premiums. Other parameters for determining the valuation interest rate are benefit-level determinations. These parameters are the guaranteed duration and the plan type. The consequence of a benefit-level determination is that different valuation rates may apply for each benefit type comprising a benefit stream.

The final area addressed in *Guideline 33* is reserving for annuitizations in contracts allowing current basis annuitizations, as well as contractual minimums. The issue in this case is how to establish a reserve for a benefit whose cost is unknown. The solution is to allow a company to establish reserves based on the accumulation value, less an expense allowance, not to exceed 7%.

Business Impact of *Actuarial Guideline 33*

The business impact of *Guideline 33* is an area easily overlooked in a pure technical analysis. However, if reserves calculated under *Guideline 33* are greater than the reserves currently held on a block of business, that can have some adverse effect on a company's financial situation. In particular, risk-based capital (RBC) ratios will be reduced due to two factors. First, additional reserves will reduce surplus by an equal amount. Second, higher annuity reserves will actually increase the required capital to support those reserves.

Product design and pricing practices must also be reviewed to take into account the requirements of the guideline. Cooperation between the pricing actuary and the valuation actuary can help you avoid unintended reserve expenses and reduced profitability on new contracts. In my company, we have a spreadsheet to test the reserve impact of potentially costly product features.

Valuation processing will become more complex. Also, considerable resources may be required to research benefit structures on existing products and perform the analysis required to define the multiple benefit streams that must be tested. It is possible that your valuation system will need extensive modifications or that you will need to acquire and install a new valuation system.

Status of Actuarial Guideline 33

The proposal was adopted by LHATF and the NAIC Life Insurance Committee at the June 1997 quarterly NAIC Meeting. Final approval is expected at the December 1997 meeting. The proposed effective date is December 31, 1998. The guideline does provide an optional three-year phase-in for in-force products. The phase-in is subject to approval by the Insurance Commissioner and may require demonstration of adequacy of reserves without the additional reserves from *Guideline 33*.

Summary

The updated version of *Guideline 33* will very likely be approved by the NAIC at the December meeting. If your company writes or has written significant amounts of fixed annuity business, this guideline will complicate the valuation process. You need to devote resources to understanding *Guideline 33* and evaluating your company's products. There is a strong possibility that annuity reserves will have to be increased with adverse effects on surplus and RBC ratios.

Mr. Thomas A. Campbell: I'm with Hartford Life and I'm going to be talking about Actuarial *Guideline MMM*, which covers reserving for minimum guaranteed death benefits that are included with variable annuities. First, it's no longer called Actuarial *Guideline MMM*; it's now Actuarial *Guideline 34* because it was adopted by the NAIC at the fall meeting. As with *Guideline 33*, it has an effective date of December 31, 1998. As a guideline, and this is true for *Guideline 33* as well as *34*, it's an interpretation of an NAIC model law or regulation. In this case, *34* interprets that variable annuity regulation and also the model standard valuation law; which also means that when you apply *Guideline 34*, you also have to apply the principles of Actuarial *Guideline 33*. All actuarial guidelines are not adopted by individual states. It's really just an interpretation of an existing model. States aren't required to enforce it, but they generally do, especially to the extent that they passed the model that's being interpreted.

I'm going to spend a few minutes going through the development of the guideline, and then go through the content of *Guideline 34*, which will include the scope, the general reserve methodology, the assumptions that go into the reserve calculation, and the reinsurance reserve requirements. The development of *34* actually goes back to the end of 1994 when the Separate Account Working Group of the NAIC announced that they wanted to look a little bit more closely at minimum guaranteed

death benefits. The marketplace was generating what was, at that time, record growth for variable annuity sales. More and more annuity writers were offering these benefits and the benefits were getting richer and richer. Companies offered these benefits pretty much to differentiate their products in the marketplace. That translated into a concern on the regulators' part that the additional risks that insurers were putting on their balance sheet weren't properly being reserved for. When you combine that with the lack of uniform reserving practices and the lack of a uniform reserve standard, it really called for the need of regulatory guidance on reserving for these benefits.

You might notice that at the NAIC, things tend to happen in three-month spurts because they have the quarterly meetings. While a lot of activity goes on between meetings, the landmark decisions happen quarterly. So in March 1995, the Separate Account Working Group (SAWG) asked for assistance from the AAA to help them in the development of a reserve standard. The Committee of Life Insurance of the Academy formed the MGDB Reserve Work Group with Steve Preston and me as cochairs. We produced an initial report in September 1995 that outlined the benefit designs and the risks and summarized a Society survey on current practices. After that time, we had many discussions with the NAIC and produced a final report, nine months later (just in time for the June 1996 meeting), that included the final reserve recommendation. We then worked with both the SAWG and LHATF to develop the initial draft of *Guideline MMM* in September 1996.

In March 1997, after working with both of those NAIC Groups in further clarifying and finalizing the guideline, it was adopted by the LHATF and their parent, the Life Insurance A Committee. It then took two more NAIC meetings to go through the Executive Committee and Plenary before it was finally adopted as Actuarial *Guideline 34*. Similar to 33, it affects all contracts issued on or after January 1, 1981 with a December 31, 1998 effective date, and it has the same three-year phase-in as *Guideline 33*.

The scope of the guideline requires that the guideline apply to all MGDBs that are offered with variable annuities, where the death benefit has the potential to exceed the account value, whether or not the death benefit is in the money on the valuation date. In other words, it depends on whether or not the death benefit actually exceeds that account value. It is really just geared toward whether it has the potential to exceed the account value. It applies to most of the designs that are out in the marketplace today, and that would include a roll up where the death benefit increases by a given percentage. It would also include ratchet and reset designs, where the death benefit is geared toward the actual account value, with different given dates. Finally, it applies to a return-of-premium benefit which, when you look

more closely, is actually a 0% roll up. As people are going to be finding out, variable annuities don't guarantee principal death benefits on return of premium. They do have the potential to exceed account values, so they apply to return-of-premium benefit designs. The scope also mentions that *Guideline 34* doesn't apply to group variable annuities contracts that are not subject to CARVM under the definitions in the standard valuation law. Finally, the scope requires the valuation actuary to exercise judgment in determining the applicability of the guideline. This is because even though it was believed that all current MGBD designs are covered by the guideline, it was recognized that benefits could be designed in such a way to produce lower reserves when you apply the reserve methodology in the guideline.

So the NAIC insisted on putting this provision in there. What it does is put more responsibility on the valuation actuary to determine whether this reserve methodology is the proper methodology for the MGDB design.

Now the general reserve methodology in the guideline involves two CARVM reserve calculations: one which ignores the MGDB and one that includes it. The reason for two different reserve calculations came from the desire to hold the MGDB in the general account, since it is considered a guaranteed benefit. The two reserve calculations allow you to isolate the MGDB reserve. While it may increase the amount of calculation, as we'll discuss, if you do the separate account or you do one of the reserves a certain way, you can end up using elements from one reserve basis or the other one. We'll get into that later.

The first of the two reserve calculations is a separate account reserve, which represents the reserve in the absence of the MGDB. As its name implies, the reserve is held in a special account. In drafting the guideline, the NAIC accepted the Work Group recommendations that specific guidance on this reserve be outside the scope of the guideline. The main reason for this was to keep the guideline from having a broader scope that would include variable annuity reserving. It was felt that increasing that scope would not only delay the passage of the guideline, but it would move focus away from the original goal to have an MGDB reserve standard.

Although it's not required in the guideline, many companies calculate the separate account reserve by projecting benefits, assuming that the account value grows at a rate equal to the valuation rate less contractual asset-based charges. If a company does that, they can get into using elements from the second CARVM reserve calculation. That second reserve calculation is the integrated reserve, which reflects all contractual benefits of the variable annuity, including the MGDB, using the principles of revised *Actuarial Guideline 33*. I'll get into the details on the integrated reserve.

Once you calculate both the separate account reserve and the integrated reserve, the excess of the integrated reserve, over the separate account reserve, is held in the general account. More specifically, the guideline defines the integrated reserve as the greatest present value of integrated benefit streams where integrated benefit streams is really a *Guideline 33* term. It also specifies that these integrated benefit streams must be made up of a combination of three separate benefits, which the Guideline calls A, B, and C. A is the stream of projected amounts at risk that are paid out on death, where it defines projected net amount at risk as the excess of the projected MGDB over projected account values. That's where both the MGDB and account values are projected assuming that there's an immediate drop in the asset supporting the variable annuity, followed by what the guideline calls a net assumed return.

The guideline refers to this whole projection of drops in returns as a projected reduced account value, and it gets into some definitional terms that can get confusing. The projected reduced account value is contrasted against what the guideline calls a projected unreduced account value, and I'll get into that in a second. The streams of projected net amounts at risk are discounted using the valuation mortality, which is also covered in the guideline.

Stream B, just like Stream A, is also discounted at valuation mortality. Although Stream A covers the death benefits that are paid in excess of the account value, Stream B really just covers the amounts up to account value that are paid on death. Those are calculated using the projected unreduced account value. That's simply where the account value is projected using a rate equal to the valuation rate less the contractual asset-based charges. So there is a requirement that they be done with that projection. Stream C is called a base benefit stream and that is discounted for survivorship where you calculate the present value using the same valuation mortality rates that you use for Streams A and B. Base benefit streams are streams of what's called other benefits, excluding death benefits. Because death benefits are covered in Stream A and Stream B, you don't need them in C. So those other benefits are going to include things like withdrawals, disability benefits, annuitizations, and anything else that's in the variable annuity contract. The base benefit streams are also calculated using the projected unreduced account values. That's where you're projecting with the valuation rate, less the asset-based charges.

There are a few things to note about the combination of benefit streams. First, *Guideline 34* points out what might not necessarily be the obvious—that you take the greatest present value, determined at the combined benefit stream level, not the individual stream level. So in other words, you don't maximize A, B, and C individually; you just maximize the greatest present value of the combinations. Second, if a company is calculating its separate account reserve by projecting the

account value using a rate equal to the valuation rate, less asset-based charges, then essentially the separate account reserve is really going to be the greatest present value of the combination of Stream B and C. One thing to note is when you take the greatest present value, excluding the death benefits or the net amount at risk, and you do it again, including the net amount at risk, you might not necessarily get the same streams or the same durations. So there might be some issues there when you look at the differences between separate account and the integrated reserves. The third thing to note is that the intent of the guideline is to measure the death benefit through Streams A and B over a policy year, rather than at a single point in time. This is because mortality does occur over a period of time. This is going to require you to use some type of averaging of the beginning-of-the-year and end-of-the-year death benefits. If you begin the year in the money, and if the death benefit is greater than the account value at year-end, when it is out of the money, that's something else to consider.

Let's discuss some of the assumptions that go into the integrated reserve calculation. I'm going to go through the immediate drops in assumed returns and then briefly touch on mortality and valuation interest rates. The immediate drops and assumed returns are used in the calculation of the projected net amounts at risk. To determine the drops in the returns, the guideline requires you to allocate your separate account funds that support the variable annuity on the valuation date to five asset classes. The guideline contains descriptions of the classes and also notes that the ultimate determination of the appropriate fund classifications is the responsibility of the appointed actuary.

Appendix One of the guideline shows the actual drops in returns that are used. It's important to note that the returns are gross of the deduction; it's before deduction of asset-based charges. The company must deduct their own charges to get to the net assumed return, which has been applied to the account value. The reason for that treatment is that we found that in going through the data, there was quite a bit of variation in the charges that different companies charged for the same fund. It also made it a lot easier with the data. If the fixed account is a part of the reserve calculation, it should be projected as a separate asset class, assuming a 0% drop and a return equal to the guaranteed rate that's on the fixed account money. In addition, there's more information in the Academy's September 1996 report on how all the drops and returns were put together. Time doesn't really allow me to get into much detail, but I will say that it was based on 2 sources of historical data, and they were set at a level to produce 83.33% adequacy. That correlation between funds was ignored for conservatism.

As far as valuation mortality goes, the guideline interprets that standard, and, in one of the appendices, it does have a mortality table that the guideline refers to as the

Variable Annuity MGDB Table, which is actually the 1994 GAM Basic Table, where the q 's are increased 10% for margin. The guideline also stipulates that no projected mortality improvements may be used. Because using the 1994 GAM Table was somewhat of a compromise on the part of the NAIC, the SOA agreed to perform a study of preferred annuity mortality to verify the appropriateness of the table that's contained in the guideline. At this point, the Society is in the process of gathering data from variable annuity writers. If you haven't received anything from the Society, and you're interested in participating, you should contact Jack Luff at the Society office.

Regarding interest rates, *Guideline 34* briefly covers valuation rates, knowing that annuity valuation rates should be used in both the separate account and the integrated reserve calculation that are consistent with the requirements in the standard valuation law. That means you have to use the *Actuarial Guideline 33* requirements, and that's one of the things that's in the revised *Guideline 33*. So that should give you some guidance. Those requirements allow you to discount an integrated benefit stream with more than one valuation interest rate. It also requires that rates be based on the withdrawal characteristics of the individual benefits and the policy form. It does provide you guidance on how to select those valuation interest rates.

The last section of *Guideline 34* deals with reinsurance reserves, which was added to address the regulatory concern that the total reserves being held between ceding and assuming companies were being reduced through reinsurance without a similar reduction in the total risk.

The methodology to determine the ceded reserves involves making two adjustments to the integrated benefit streams to produce, in the integrated reserve calculation, what I'll call a net integrated reserve, which is after the adjustments. I'll call it the pregross for purposes of my comments. The two adjustments are: one, treating the future projected reinsurance premium as an additional benefit; and two, reducing the projected MGDB in the benefit streams by the future projected reinsurance recoveries. Of course, you have to add in the future streams of reinsurance premium. Once again, when you do the greatest present value on the net, it's not necessarily going to be the same as the one on the gross. That's something else to note. You then determine reserve credit by taking the difference between the gross and the net integrated reserves. If the net is less than the gross, then take the difference, which is your reserve credit. If, in some situations, the net ends up being greater than the gross, then you take a negative reserve credit. I guess another way to look at that is increasing the direct reserve and taking zero as a reinsurance reserve credit.

On the assumed side, the guideline requires that the reserve for the assuming company be the maximum difference at each duration between the present value of the reinsured death benefits and the present value of the reinsurance gross premiums that the ceding company used to adjust its reserves. Again, the greatest present value for the assuming company isn't going to necessarily be the same as the one that the ceding company uses. Now because of this, the total reserve after reinsurance between the ceding company and the assuming company can actually go up, compared to the total reserve before the reinsurance. So it's something else to consider in pricing the reinsurance and reserving.

There's a lot of material here, and there are a lot of things to think about and absorb. Obviously I can't get into a lot of the detail. There are a couple of places that you can get help; one, you obviously need to review the guideline itself. Now that it's final, I believe the ACLI has copies, and you can contact them to get a copy or you can contact the NAIC. I'm not sure if the Academy has the final version yet. You could also review both September 1995 and the June 1996 Academy Work Group Reports. The June 1996 report does include a pretty simple example that I'm told helps most people. Then finally, there's going to be an article in the upcoming issue of *The Financial Reporter*. It's written by Jim Lamson, who has done a fine job on an article on *Actuarial Guideline 33* that was just recently published. I just recently reviewed his article, and I think it's very good. So I think that's something that's going to help you a lot.

Mr. Michael J. O'Connor: Before I get started, I would actually like to take a little survey to determine how many companies are actively marketing or about to start marketing equity-indexed products, either annuities or life insurance. There are a number of companies here. I'm going to be focusing on just the annuity side, which is where the focus of the Academy work has been up to this time.

I think there are two general areas that companies need to focus on. One is just the pure reserving methods aspect, and we'll go into in some detail about that. What is even more important are the operational impacts. As we'll get into some of the detail, we will quickly discover that on the operational side, the calculated reserves for different products and different reserving methods can be a very significant challenge for companies. I'd also like to include types of source documents that are in existence, that have been around the last few months. There is *Actuarial Guideline ZZZ*. It's a draft, and it is being redrafted probably every other week or so, so it's definitely in a state of flux.

All three of us are on the Academy Task Force on Equity-Indexed Products and that task force has put out three different reports—one in June, one in August and one in September. I believe the August report, or maybe the June report, included an

excellent write-up with some very detailed numerical examples for one of the methods I'll be talking about. It's the CARVM-UMV (updated market value) method. It's probably the most complicated of the methods, but it is a good source document if you want to learn exactly how to calculate reserves under that method. I recommend getting the Academy reports that have that. Also, in the September Academy report, there is a draft of a Life Practice Note. It was also handed out at the Valuation Actuary Symposium in September, but it has been revised a little bit since then. It will be redrafted a couple more times.

I think it helps to go back to the question, how did we get to where we are? At the beginning of the year, when the NAIC formally asked the Academy to form a task force to look at reserving issues for equity-indexed products, I think the major issue was reserve adequacy. Are reserves adequate? The second issue pertains to some concern that some companies may not be up to adequate cash-flow testing. So the regulators were not comfortable in saying, "We'll rely on the valuation actuary to make sure that the reserves were adequate." Over the last several months, there has been more focus on trying to make sure that the formula reserves produce adequate reserves. There were also divergent reserving practices throughout the industry. I think there were some issues or concerns about a company's ability to hedge prudently. There's also some concern about making sure that we clarify the tax method.

We talked about book methods and market methods in many of the reports, but the terminology was a little bit cumbersome. We tried to find a little bit different terminology, but couldn't come up with anything that was concise. So we reverted back to book and market. The driving principle behind some of the methods is that regulators were uncomfortable with the idea that the valuation actuary could be relied upon to determine adequate reserves. At some point down the road perhaps the regulators will be more comfortable in allowing the valuation actuary to determine adequate reserves. This does not exempt the valuation actuary from still performing cash-flow testing, but it really shifted the focus to the formula reserves being adequate. Another principle was, unless the company is "perfectly hedged," regulators really wanted a company to be on a mark to market basis. The concern was that if a company was really doing their reserves and asset accounting on a book basis, but they had some fundamental mismatching going on, it would not surface soon enough and the companies could get into problems and not realize it. The regulators may not see that because of the surplus of the company.

Again, book is not the best term because not all the book methods are book value. For instance, in one of the methods that is a "book method," the initial reserve is actually determined using one of the market value methods. The asset accounting may be a little bit different. The market methods also are not true market value

because it's really just the option piece that's marked to market. In a typical equity-indexed product, you have a fixed income component so as to provide your underlying guarantee at the end of your term, and an option component. So you typically would have fixed-income securities underlying that guaranteed return at the end of the term, and those would still be on a book basis.

Under the market value method and actually in *Guideline ZZZ*, I think they refer to these as type two methods, so you will definitely see that terminology in the draft of the Actuarial Guideline. The CARVM with the updated market values (UMV) was proposed by Larry Gorski. He has an excellent write-up in the August report where he gives some detailed calculations and examples of exactly how to calculate it. If you're contemplating these types of products, you need to understand that method.

The second one is called the market value reserve method (MVRM). The CARVM-UMV and the MRVM are similar. If the company adopts this type of reserving approach, one of the things that the actuary has to do is provide a quarterly certification that the market values on the liability side are calculated using assumptions that are consistent with the market conditions at that time. That's one with a lot of implications in terms of the operational side. How is the actuary going to know that? Do you have to get information in terms of how the options are being priced out in the market? If you're buying over-the-counter options, which a lot of companies are, you have to obtain all volatility information, dividend information, and interest rate information. That's just one example of the operational impact for a valuation actuary.

The Academy Committee recommended two book value or "type one" methods: the option-cost-based method (OCBM) and the enhanced-discounted-intrinsic method (EDIM). You can pretty much scratch the OCBM, because it's not being included in the Actuarial *Guideline ZZZ*. I included it here more for informational purposes. It was part of the Academy recommendation, but it is not part of the actuarial guideline draft. The only method left in this category is the EDIM. If you do choose this as the reserving approach, the company must meet hedged-as-required criteria, and I'll give you that a little bit later on. A couple of other methods were proposed. I believe at one point we probably had about six methods that did not pass the Academy.

The CARVM-UMV method has a *Guideline 33* structure. It focuses primarily on end-of-term benefits. Part of its operational complexity is that at any valuation date, you have to calculate an option value for each policy, or out to the end of the future to the end of the term. So there are a number of option prices that you have to calculate; again, the assumptions behind those calculations have to be consistent with the then-prevailing market conditions. A couple weeks ago, implied volatility

for long-dated options was around 20–21%. After the last few days and the end of last week, they're probably significantly higher. So part of what the actuary and the company has to do is access that information and in effect calibrate their option pricing.

The MVRM method is very similar to the CARVM-UMV. You use this for all benefits—death benefits, annuitization benefits—but the implied growth rate is calculated focusing on the endpoint of the term, the maturity of the term. So that's the nuance between this method and the CARVM-UMV method. It's a little bit simpler method operationally. There are fewer things you have to calculate. Some of the modeling work done by the Academy Task Force pointed out that in a variety of scenarios, and in a variety of product types, by and large this method produces comparable reserve numbers to the CARVM-UMV method. It could produce different reserves, if you have significant interim benefits—say you have some very high vesting, a five-year point-to-point contract, before the end of the term.

This method would be more likely to produce a different result than the CARVM-UMV method. Since this one is not in *Guideline ZZZ*, I think I'll just pass over it. The most interesting thing under differences is the implied growth rate at issue locked in. It makes the reserve calculations very simple, because you calculate that rate and use it for all future valuations. It is like locking in your valuation interest-rate assumption. Unfortunately, there were some downsides. The method is just not robust enough to capture changing market prices.

The EDIM is the only book value method, i.e., type one method. When this was originally proposed the theory behind it was you would calculate just your regular CARVM, ignoring for now the fact that you have this guaranteed index benefit formula. Through cash-flow analysis, you would determine what additional reserve you need over and above that, for the fact that you have guaranteed this index benefit. There is some concern about companies being able to do that, that is, come up with an appropriate margin for that guaranteed benefit. Regarding the fixed component, you set the original reserve to the reserve calculated under the CARVM-UMV method. At the end of the term, the fixed component would just be equal to the cash surrender value, and the intermediate values grow from whatever your initial reserve was to the end-of-the-term fixed component.

On the equity piece, the discounted intrinsic value, you basically look at the intrinsic value of the option and how much the option is in the money. You know what the intrinsic value is today; project that forward to the valuation date, discount back, and you get your equity component that you add to your fixed component. Your asset valuation should be consistent; otherwise, your surplus and your net income going to be fairly volatile. There's a difference of opinion on this, but many

people think that a company would need to get a permitted practice letter from their state to get this particular type of asset accounting. If you buy an option, it's either at market or at amortized cost. So this introduces a different asset accounting for the option to be in sync with what you're doing on the liability side. Economically this accounting makes sense, but you may need to get a permitted practice letter.

Companies are able to switch methods and, at times, may be forced to switch methods, depending on what happens. If you go with one of the book value methods, the type one methods, you have to meet the hedged-as-required criteria and the valuation actuary has to certify that the company is meeting it. If your hedging fails, and you no longer meet those criteria, and you don't go back to meeting those criteria within a quarter, you have to switch to the market value methods. But if you do switch methods, you have to get the approval of your state commissioner. You have to notify all the other states in which you're licensed if you're going to a book-value method. One potential problem here would be on the tax side. If you're switching methods, is that a change in basis or not? The plan types were a hot topic of conversation, especially in terms of whether it is a plan type C, B, or A.

Actuarial Guideline ZZZ says it's plan type C. To have plan type B, you would have to have some very specific wording in your contract. In fact, it makes it sound more like it's a market value-adjusted annuity. So on a practical level I believe companies will be using plan type C.

The hedged-as-required criteria must be met if you're using the EDIM, a book value method. The reason behind these criteria is to make sure that the company is properly hedged if they're going to use an accounting and reserving method that would not be reactive to option prices going up and down. The reserving method is on a book-value basis. I'll get into the criteria. The obvious question is, why would companies want to use this method? For certain types of contracts, let's say you have a five-year point-to-point contract, most companies tend to be going out and buying hedges as they're issuing contracts.

In effect, you have a buy-and-hold strategy on the option side that you're purchasing. This type of methodology might be a real good fit for that type of situation. It's the easiest method to put into operation and to have on an ongoing basis. It does require a quarterly certification that the company still meets the hedged-as-required criteria. The details of the hedged-as-required criteria are in all the Academy reports.

Let me give a concise summary of the five points. Number one is that you have to have an equivalency between the options that you're buying and the products that

you've sold. That equivalency is on items like the index that you're using. If there's an averaging feature on your liability side, you must have the same averaging feature on the asset side. This applies to items like option type, strike price, and the term of the option. This equivalence is an ongoing equivalence, not just at point of issue.

Number two, there has to be a minimum amount of hedges bought. Here the guideline and the criteria recognize that if you have a five-year contract, where most of your benefits are really toward the end of the term, you're going to have some decrements along the way—some mortality, some lapses. So the criteria allows you to assume up to a 3% lapse rate, so that after 5 years, if you feel that, at most, you've had 87% of the initial contracts around, you have to buy 87% options to match that 87% and you can include mortality at the valuation table. It has to be a valuation table.

The first two points talk about the end of term hedging and equivalence. The third point of the criteria gets into how you have to hedge the interim benefits as well, if you have annuitization benefits or interim cash surrender values that are also indexed.

The last two items really get into the operational side. The company actually has to have a monitoring process in place to make sure the hedges are working. The company also has to have a stated tolerance for a mismatch. Actually, the hedges required has already put in a dollar tolerance of 10% of the first \$100 million of the company's capital and surplus.

Two key points in the hedged-to-required criteria is the definition of term, which is still being worked on, and the certification required by the actuary. The certification is quarterly, and, if you're using one of the market value methods, the type two methods, the actuary doesn't get away with not having to certify something. They have to certify that the option prices you're calculating on the liability side are reasonable and consistent with what's happening in the marketplace on the asset side. Again this is an example of items that the valuation actuary has to put in place to monitor those types of things. The valuation actuary must retain that information, and I presume, upon audit he'll or she'll have to justify his or her choice of assumptions.

Term is being worked on. I'm not exactly sure what to say about term, but what we're trying to get at here is, what's the term for the contract? What's the period? If you have a five-year point-to-point contract, the term may not be five years depending on what interim benefits you have. So there's some nuances going on in this definition that are changing.

But again, you have to use reasonable assumptions. You calculate present value of expected, and that could be enhanced benefits. Expected means, what do you really think is going to happen? Are there reasonable interest rates, decrements, and everything? You're not tied to the valuation interest rate or valuation mortality. It's determined at issue. You don't necessarily have to recalculate it. This is an important part of how you fit into or whether you comply with the hedged-to-required criteria.

The hedged-to-required intent's scope includes nonregistered equity-indexed deferred annuities. The scope language in Actuarial *Guideline ZZZ* is changing a little bit. In fact, we had a little discussion on that recently. At least for now, the hedged-as-required criteria is really just focusing on nonregistered equity-indexed deferred annuities. This is not another actuarial opinion, but it is a certification, and obviously it's only required if the company chooses that book-value method or the type one method.

Currently (and this probably won't change soon, if ever), option replication asset strategies do not meet these criteria, and that's made quite clear in the criteria. That could change down the road. There are some companies using an option replication strategy, but at this stage that would not meet the criteria, which means you'd have to use one of the market value methods.

Where are we for 1997? I believe Illinois is going to be disseminating some guidelines for year-end 1997. *Guideline ZZZ* is in draft stage. It's largely consistent with the Academy recommendations, but there are a couple of differences. I believe the actual time frame to get that approved through the NAIC hierarchy is probably next year sometime during the second quarter. In effect, these guidelines are what's probably going to be required for this year-end.

There are a couple of open issues. Option replication is still technically an open issue in terms of whether or not hedged-as-required could be changed or modified to include that type of asset strategy. We will be analyzing some life products. The plan type issue technically might be an open issue, but pragmatically, it probably will not be. There are now some people looking at reinsurance to see what's happening there because of some reinsurance proposals that people have heard about. I think the issue is going to be whether the disintermediation risk is really passed on or not. There's a group looking at RBC impact for these products. I think that for this year, they're recommending no change, so it would flow through your normal C-1, C-2, C-3, and C-4 calculations. One thing I should add to this list, because it's becoming more of an issue, is how the whole definition of *term* is changing. There are some nuances being introduced. So I would actually add that to the list of open issues at this time.

Mr. Mohoric: We covered the spectrum of annuity reserving. We talked about one guideline that has been adopted, and one that will be adopted in December (actually it was adopted two years ago and then rewritten). The equity linked, is of course, still in need of more of a definition.

One last item that was in the program that we do not talk about directly is the whole change in the SVL, which may be the most important change of all. However, there's very little to report on. The Academy task force that's working on SVL revisions issued a report in September. It focuses mainly on defining the task force's objectives, and dealing conceptually with what a valuation law ought to be doing. It does not get specifically into annuities. They are really just starting the process of rethinking the valuation law. Again, this change in the valuation law might actually be the most important topic here, but it's too early to report on anything, and I think it will be at least a couple of years before the practical aspects of those changes come down.

Mr. Eugene R. Strum: I have a question on *Actuarial Guideline 33* and the minimum reserve of 93% for those contracts promising current rate guarantees. Was that in the old *Guideline 33* also?

Mr. Davidson: Yes.

Mr. Mohoric: Mike, one question I have is, on the equity linked, I had been told by somebody that while the reserve issues are somewhat unresolved, some states have stopped approving the contracts and they've established a moratorium on approvals. Is that true or isolated or can you speak to that?

Mr. O'Connor: I believe there are two states, and I think Oklahoma might be one. I think there are at least some types of contracts that they are not approving. It might be changing now. I believe North Dakota was another state that is not approving anything yet. They came out with some guidelines just in the last month or so. So maybe they're starting the process of at least taking filings. Now Florida has introduced an interesting wrinkle. They are, I believe, starting to disapprove contracts under the thought that they are securities and need to be registered. Then, as with annuities in general, there are states where it is more or less difficult to get things approved. But Oklahoma and North Dakota are the two states I can think of off the top of my head.

Mr. John Oliver Norton: How much consideration was given to the interim benefits of a market fall? We always think that these are essentially call option contracts, but in a market fall, it's probably going to be better for the policyholders to actually surrender the contract, and even take the surrender charge hit. If the

options have already been purchased, they might be of very little value. How much consideration have they given to that situation? Then, is there a sense that the cash-flow testing is really still going to be a very powerful tool and probably something that's going to be relied upon? It strikes me that meeting the hedged-as-required criteria would have to be backed up by quite a bit of analysis. Can you please comment on that.

Mr. O'Connor: The valuation actuary would still be required to do cash-flow testing. I believe that one of a couple of wrinkles is that typically small companies have certain exemptions that are subject to some materiality threshold. Small companies that would otherwise be able to do a Section Seven opinion might now be required to do full-blown cash-flow testing if they have equity-indexed products that are above some materiality threshold. I forget what that is. The modeling work that the Academy Group has done for different product types and different reserving methods was a stochastic modeling. One of the things the Academy Group was looking at, as well as the regulators, for different reserving methods, is at what level did they want to set the reserving to get to a certain level of confidence that the reserves would be adequate?

Mr. Davidson: It was thought that the MVRM would keep the company covered because liabilities would go down at the same time the asset values went down. So the methods covered that situation.

Mr. Linn K. Richardson: I've heard some mention of possible requirements in New York and New Jersey relating to required equity scenarios, including specified drops in the recoveries. Can you comment on the existence or applicability of those at all?

Mr. Campbell: I've heard more or less rumors. We don't have a New York company, so I've heard that they might be developing some index scenarios. You'd have a series of index scenarios that you'd have to use to test each of the interest scenarios. Other than that, I don't know if that's real or not.

Mr. O'Connor: A couple of states, and New Jersey was one of them, asked you to demonstrate your product under some specified equity and interest scenarios, but I haven't heard that they plan to do that for valuations in the future.

Mr. Mohoric: Is anybody from a New York Company that's issuing a product? Is New York even approving any?

From the Floor: One company so far.

Mr. Mohoric: New York has approved one company so far.