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Session 15TS
Deferred Annuity Reserving—Guideline 33

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Summary: The speakers discuss the background and history behind NAIC Guideline 33. The speakers present numerical examples that illustrate the fundamentals and calculations underlying this guideline. Late-breaking developments directed by the NAIC's Life and Health Actuarial Task Force regarding clarification of certain issues are included.

Mr. Robert J. LaLonde: This session will talk about Guideline 33. I like to use that new terminology to differentiate it from AG 33. We got a little bit of triple *x* flavor in there and a little bit of triple *I*, as well. I'd like to get a little bit of background on some of your personal experiences. How many in this room are annuity writers and have already set up some reserves under the prior guideline of AG 33? I see a fairly large percentage of members have. Of that group, how many found that they had to increase their reserves? About nine or ten companies. How many found that they could decrease reserves? One company found that they could decrease reserves. How many used estimating routines to perform the calculations and subsequently bought some software and used a more precise routine to calculate reserves? We have one or two who did that. The size of the adjustments, were they very significant or did you use the three-year, spread-out rule as was allowed under the prior regulation? We have nodding of heads saying, yes, we did that. One company that I'm familiar with, with some $10 billion in reserves, found that they had a $30 million reserve adjustment. When you take a look at $30 million in relation to $10 billion, it's a fairly small percentage. It's less than three-tenths of 1% for that matter. But, I suppose as related to surplus, if surplus is some 3–4% of the $10 billion, then that $30 million becomes a 10% adjustment to surplus. It can be somewhat of a large number. Where does the $10 million come from, or where does the difference come from? The result can sometimes come from areas that you

never suspected could possibly lead to additional reserves. There are some sleepers inside Guideline 33 that you have to pay attention to.

Let me give you some highlights from the new guideline. I'm not going to read you chapter and verse what the changes are. We hope to go through some examples to illustrate what the changes are and from that you can learn a little bit about the new regulation. Jim has some extensive examples that he's going to share with you and I have a simple example to help us learn the concepts that are involved. There's some interesting history. I wrote a paper that appeared in *The Financial Reporter* explaining what I thought the original Guideline was saying. Basically, I observed that you could take the benefits that were provided under an annuity and evaluate them separately and then find the largest of the greatest present value of those separate benefits and hold that as your reserve. As other professionals looked at that, specifically those who were close to the regulation that they wrote, they said, "No, that's not what we meant. We meant something slightly different. What we meant is, if you start out with an annuity that has basic cash-value benefits and you add additional benefits such as death benefits or nursing home benefits, somehow the reserve ought to be larger than a policy with just pure cash-value benefits." This evolved and the humorous irony of this is that my paper ended up being a study note for the actuarial exam. Here we have all these actuaries apparently going off on the wrong track.

The new Guideline will clarify many of those issues that I put in my financial paper more precisely, and I think they did a very nice job on that. They clarified exactly how death benefits should be valued; they specifically spoke about annuitization of benefits; how to deal with partial surrenders, which was an unspecified part of the prior guideline; how to go about selecting utilization rates; and how to go about selecting interest rates. There is more precision put forth in the new Guideline in that particular aspect. How many here have read the new proposed Guideline XXXIII? Some have not read it, so we'll try to take you through the important pieces.

The Guideline distinguishes between elective benefits and nonelective benefits. That terminology has been kicking around for some time, so we'll try to explain what is meant by those two types of benefits. It departs from the prior approach of looking at reserve first for cash-value benefits and then looking at a reserve for annuitization benefits and tries to focus instead on something that's called integrated benefit streams, whereupon you look at combinations of elective benefits and nonelective benefits in various proportions. Now it's relatively easy to deduce what percentages or what proportions of these you will want to work with, but in theory one would supposedly look at all the different possibilities. It does retain something, what I call the so-called curtate versus the continuous approach, as to

computing the greatest of present values. There was an issue—should we compute the greatest of present values at any point at any time at any day during a policy or any month during the policy time? That prior wording of the law has been retained. I just want to read that to you because I'm sure you haven't read it in some time. The Standard Valuation Law "requires that, reserves be the greatest of the respective excesses of the present values, at the date of valuation, of the future guaranteed benefits, including guaranteed nonforfeiture benefits, provided for by such contracts at the end of each respective contract year." It's supposed to say that you look at the end of each contract year—not the day after or the day before, but the end of the contract year. That can be open to some interesting evaluation. Maybe another little loophole has been discovered, but I'll get to that during the course of our talk.

The approval process is moving right along. The new Guideline has gone through the actuarial task force and the aid committee; the executive committee, I believe, has already approved it, as best we can tell, so the next thing is a plenary, and that being a rubber stamping of it, so I guess the latest we expect it to be is December. Is that how you understand it?

Mr. James W. Lamson: Correct.

Mr. LaLonde: For the effective dates, basically we get to have a three-year spread. The prior regulation had some obtuse wording about how you could get this three-year spread in. You could spread it in as long as taking the whole thing didn't cause your company to go into bankruptcy, and if it did you were supposed to take it all in right now. I never quite understood that strategy but this one seems to be clearer. Still, everybody raises the issue: if I spread it out what do I do in the first year? Do I have to take anything in the first year? This one clears that up. It says you take at least one-third on this, and you can take more if you want.

There are a couple of terms that we need to take a look at. We need to know what we mean by nonelective benefits and elective benefits. I like to think of them in this format. A nonelective benefit is something that you would be receiving by virtue of attaining a certain specified status, such as dying or entering a nursing home. In other words, the insurance policy, the annuity, says if you attain this status we will give you some additional benefits. Usually there's a waiver of the surrender charge or sometimes there's an accidental death benefit and you get twice as much extra death benefit, although death benefit is a nonelective benefit. Generally, the benefit is more generous than what would otherwise be available. It is also occurrence-related. You can think of probabilities of death or probabilities of going into nursing homes, so there's a natural link there that helps clarify the issue. An elective benefit is a policy provision that allows you to take and receive some money out of the contract. It's not dependent on obtaining a certain specified status

if you can surrender the contract or if you can annuitize it or make partial withdrawals. We should think about these two types of benefits and integrate them because most policies provide them in one way, shape, form, or another.

Let's address a simple deferred annuity. There are many more complex ones out there, but let's think about a situation where we have an annuity with cash surrender options and a surrender charge. All annuities have annuitization options. In other words, you can get the money out at some point in time in the form of an annuity. And, generally, there's a payment upon death—either the return of premiums or the fund value without imposing a surrender charge. I'm not going to address partial withdrawals. I think Jim has some excellent material that he can share with you on that. We'll just take this very simple type of contract and compare it with the kinds of reserving methods that we might have used in the past. And to keep the thought process simple, I'd want to value the policy almost on the day that we issue it or the day after we issue it to keep the complexity down.

We will evaluate two kinds of streams. We're going to look at nonelective benefits and elective benefits again. This is a teaching session, and this is your first quiz. Of those benefits that were discussed, which of those were elective benefits and which were nonelective benefits? This has to be an easy one. I won't embarrass anybody by asking him or her to answer that question, but give yourself a second to think it through. We have surrender benefits, so that's an elective benefit. We have annuitization benefits, so that's an elective benefit. And we have death benefits, and that's a nonelective benefit. So, we have an example here where we have elective benefits combined with nonelective benefits.

Let's think about what the formulas would look like if we did a reserve evaluation for such a contract. The valuation process would be to look at the values at the end of the first contract year and discount those back to the present. Look at the values at the end of the second contract year and discount those back. Look at the values at the end of the third contract year and so on. You keep going until you discount them all back; you then line them all up and say which one of those is the biggest. Suppose we're trying to evaluate what's available at the end of the third policy year. We've already looked at the first and the second, they're independent calculations. Let's look at the third and think about the formula that would support the calculation of present values for my surrender stream. The first thing I should do is look at the death benefit component here, so I have the number of dying times the death benefit available in the first policy year. I'm going to discount that back at an interest rate I for one year. Then I'm going to look at the death benefit payable in the second year and discount that back. Notice I'm using probabilities of survivorship here. I will use the same thing for the death benefit for the third year. Then I have the fund value times the number of survivors at the end of the third year

after the surrender charge, and I discount it back at a different interest rate. I don't use the same interest rate here. I have different interest rate concerns to consider. In the old days if I didn't have this to look at I might not have even considered the death benefits themselves, and if I was discounting back my net surrender value I might have just used this part of the computation and not used the survivorship component. There are some elements of discounting that can be used, and that's why it is possible to get a reserve that's lower than what you might have been booking before. But we do have some different complications.

We also may have, interestingly, a terminology press. We always believe that we will take the death benefit for one year, but it says here to look at the value at the end of the contract year. Almost humorously, in the Valuation Actuary Symposium, somebody blurted out in the workshop, "You know you could just assume the probability of death at the 365th day and put it there." That's a literal interpretation. We automatically include the death benefits for a whole year and put them at the end of the year, but I suppose somebody could take issue with that. I'll let you think about that, Jim.

Mr. Lamson: We already thought about that.

Mr. LaLonde: Good. OK, you can comment on that later. So that's an integrated benefit stream, right? We have death benefits being integrated with surrender benefits, but I don't have anything about annuitization benefits yet, so it looks as if I have to get another benefit stream and look at that one. All right, so I compute another benefit stream and I have the same kind of formula that I'm using to discount death benefits back, but now I need to evaluate this more complex term where I have the fund value available to purchase an annuity, so I'm going to divide it by an annuity due at interest rate *g*, yet another new interest rate, and discount it with an interest rate *k*, and I'm going to bring it back at the same interest rate *k*. I already have four interest rates that I've involved in my calculation, and I'm not even using any utilization factor here. I'm multiplying it by survivorship after the deaths, but I'm not taking into account any percentage of people who could utilize that. That's a big issue for people who have extra reserves on account of their annuitization or annuity benefits because they do studies and they find that the percentage of people who actually take their money and convert it into annuities is virtually zero. Yet, I'm having to reserve for this as if everybody is going to annuitize. It's like reserving for a death/life insurance policy for the full face amount and discounting the face amount, not being able to take into account the fact that you can enter into the calculation percentages of people who would do this. I think that's a flaw in this particular law, but I don't know that there's anything we can do with it at this point in time.

What are we going to use for mortality rates? That was left up in the air from the prior calculations, but now you have more specificity to work with. We're instructed to use the 83 IAM. The annuity due calculation that we were working with, that would be using the purchase rates, or the settlement rates that are inside the contract, if the contract permits you to use current settlement rates, whatever your settlement rates are and the mortality rates inherent in those calculations. The discounting of the annuity has to be based on an interest rate and mortality table, and that's a complex calculation because the termination or the use of duration here has a different kind of context than we're normally used to seeing. The duration here is defined as the point of time from the date of issue to the payment start date; therefore, their table look-up procedures are more complex in order to select that. More often than not we will be able to use a plan type A, except if it's five years or less, then we use a plan type C. But there are some rules for being able to handle that.

There's a specific interest rate for valuing nonelective benefits. We will use a plan type A where the guaranteed duration is based on the date of issue until when payments may first begin. Frequently, payments are eligible to begin immediately after the policy is issued. The valuation of the elective benefits, the cash value and the annuitization benefits, is based on five parameters. I call them my penta-parameters for looking up interest rates. The first three pentaparameters on a contract level, and the last two are at the benefit level. For the first three you ask what valuation basis am I going to use? Am I going to use a year of issue or a change in fund to get that 25% extra discount rate? Looking through that table of interest rates, are there any cash-value settlement options available in the contract? What's the interest rate guarantee on new money that's put into the contract? You flow through that table. We do all those at the contract base. The guarantee duration generally is based on the number of years the interest rate is guaranteed at a rate in excess of the 20-year standard valuation rate for life product, so that's all been carried over. The Guideline has more specific instructions here about how to value the process, which I think really helps. The last pentaparameter has to do with what plan type you have, whether it's a plan type A, a plan type B, or a plan type C.

As I said before, the first three are evaluated at the contract level; the last two are evaluated at the benefit level. That takes you through a quick tour of what Guideline 33 is all about. We used a simple example, but there is much more that can be studied. My observation, as I see it at this point in time, is that we have a benefit that's been granted to us in that we can use survivorship in discounting the cash surrender values. On the other hand, we still won't be able to use annuitization rates or utilization rates for people who annuitize, and I think those companies that write those kinds of contracts still persist. We have not eliminated

the potential for disruptive reserve increases, and this is particularly true for contracts that have a 1-year free-look period or a 180-day free-look period because you have to hold the gross premium until such time as that expires and you get your reserve decrease maybe a year later. We don't have anything that produces a smooth set of reserve increases that you might have for GAAP accounting. Some of the cliff patterns can produce a bizarre reserve increase pattern, so you have to be careful on your contract design and know the effect of reserve increases.

Certainly we have much better directions on the procedures for calculating reserves, although there still are some gray areas. I think as you work with it you get the idea, and, quite frankly, I think that this revised committee did a much better job at putting together the proposed legislation.

Mr. Lamson: I'm with the firm Actuarial Resources Corporation. As Bob said, I am a member of the American Academy of Actuaries (AAA) Commissioner's Annuity Reserve Valuation Method (CARVM) Multiple Benefits Work Group. Our group was tasked with revising the existing AG 33—or actuarial Guideline 33—to replace it's requirements on a more consistent foundation and clarify the original rules to encompass integrated benefit streams. I will go over some examples to illustrate how these new calculations can be performed. In addition, I'll be discussing some results that you might find surprising and that might help you begin to get some insights into the effects of the new AG 33 requirements.

To illustrate how AG 33 reserve calculations are performed, I will start with a relatively simple example, similar to Bob's example. The benefits shown are very typical of the ones provided in deferred annuities sold today. Surrender value is account value less surrender charges. The surrender charges are waived at death and policyholders may take a free partial withdrawal of 10% of the account value each year. As you know by now, CARVM reserve computed under AG 33 must be the greatest of the present values of all possible integrated benefit streams. Therefore, any of the streams that are possible are fair game as examples for us to consider. Two such streams are based on two elective benefits: free partial withdrawals at every opportunity and full surrender. The only nonelective benefit provided by this policy is the death benefit. For simplicity, since things can get complicated quickly under AG 33, no full or partial annuitizations are considered in this beginning example, and reserves are computed on a curtate basis. The valuation date is assumed to coincide with the end of the fourth policy year, thus producing a policy year orientation since the next and succeeding policy anniversaries are whole years following the valuation date. Also, the only two streams we will test are the ones terminating the policy by surrender at either one year hence or two years hence.

Next we need to do a projection of the account value to the ends of the next two policy years assuming that maximum free partial withdrawals are taken each year. The subscripts one and two refer to the periods following the valuation date. Also, the cash value is determined following the free partial withdrawal and is therefore calculated differently from what you might do in the pre-AG 33 days where the free withdrawal is only reflected in the cash value provided upon final surrender. As Bob has already noted, each benefit theoretically has its own valuation interest rate and I have a subscript of *D* to indicate that this one-year discount factor is based on the rate appropriate for the death benefits. For virtually all policies, this rate will be the plan type A guarantee duration five years or less rate, since death benefits may begin to be paid immediately following issue. Correspondingly, there is a different rate for cash surrenders and free partial withdrawals, indicated by the C subscript. For most fixed annuities this will be the same rate we used to apply in the pre-AG 33 days. The plan type C rate and guarantee duration equal to the number of years interest is guaranteed at a rate exceeding the long life rate. Finally, appropriate incidence rates for the nonelective benefits must be incorporated, which, in this case, are mortality rates. Since CARVM reserve calculations require testing several integrated benefit streams I refer to the present value of any one stream as a reserve candidate. The left superscript of two on the *V* term represents the reserve candidate corresponding to the stream that terminates the policy at the second year following the valuation date. Obviously, since there are an infinite number of such candidates that are possible, there really is no good notation for these candidates, so don't attach any importance to my notation. The present value is computed using all components of the stream. In this case the account values are paid to those expected to die, partial withdrawals are paid to those who survive, and the policy termination value is paid to the survivors, all of whom are assumed to surrender. Notice that I have assumed that free partial withdrawals are to be paid to all policyholders who start the year, so the account values and cash values already reflect a reduction for the withdrawal. That is why there is no survivorship reflected in the payment of the free withdrawals in the formula. There is no magic in doing the calculation this way. You can certainly do the calculation using different procedures, such as assuming the deaths occur first with free withdrawals made only on the surviving account values. You just need to make sure that your account value accumulation formulas are consistent with your present value formulas.

Now that we've established the formulas for our calculation, let's work on specific additional information that is needed to do a sample calculation. First, we've assumed the surrender charge schedule is a five-year cliff. The mortality is taken from the appropriate annuity mortality table as specified in the new AG 33; in this case we've used male 1983 Table A mortality. You need to remember that the annuity 2000 tables and the 1994 group annuity reserving tables have been adopted. Incorporate those into your policy form filing procedures and

consideration of reserve planning for future years. The starting account value is $10,000, the guaranteed interest rate is 4%, and the plan is a flex premium plan issued in 1991, valued on it's 1995 anniversary and issued at age 50. This results in actual valuation interest rates of 6.25% for cash surrenders and partial withdrawals, and 8.25% for death benefits. If these valuation rates seem high by today's standards, that's because they are. A little later in my presentation you will see the effect of these high rates relative to today's low rates, or, alternatively, the large effect that today's low rates have on reserves.

As noted earlier, I've made these specific assumptions about the order in which claims are paid. If you want to make a different assumption, you merely need to develop consistent valuation and account value projection formulas. These assumptions do not affect the actual calculated results and the same answers are obtained with alternate formulas. Table 1 shows the familiar valuation interest rate display; this one being for interest year basis valuation for policies issued in 1991. The bold rates are the rates actually used for this flex premium annuity policy. The plan type A rate is used for death benefits, while the plan type C rate is used for surrenders and withdrawals. If we were including annuitizations in our integrated benefit stream, then the other rates in the plan type A column would be used for the assumed annuitizations, selecting the rate for the guaranteed duration band in which the period measured from the issue date to the annuitization date falls. Of course, for term certain payouts of less than five years, the plan type C rate must be used as specified in the Guideline.

TABLE 1
STATUTORY VALUATION INTEREST RATES
(FOR ANNUITIES ISSUED IN 1991)

Cash Settlement	Future Int. Guarantee	Guarantee Duration	Plan Type		
			A	B	C
Yes	Yes	<=5	**8.25%**	7.00%	**6.25%**
		<=10	8.00%	7.00%	6.25%
		<=20	7.00%	6.25%	5.75%
		21+	5.75%	5.25%	5.25%
Yes	No	<=5	8.75%	7.25%	6.75%
		<=10	8.25%	7.25%	6.75%
		<=20	7.50%	6.50%	6.25%
		21+	6.25%	5.50%	5.50%
No	Y or N	<=5	8.25%	N/A	N/A
		<=10	8.00%	N/A	N/A
		<=20	7.25%	N/A	N/A
		21+	6.00%	N/A	N/A

Table 2 shows some of the actual numerical components of our calculations, such as the mortality and survivorship rates, interest discount rates, and the resulting account values, free partial withdrawals, and cash values paid under the two integrated benefit streams tested. Table 3 shows the resulting reserve candidates corresponding to the two streams tested. You can see how each candidate is made up of the sum of three present values, one for each of the assumed benefit payment streams, death benefits, free partial withdrawals, and the final surrender terminating the policy. I have also included a comparison with the cash value on the valuation date, which is really an annual statement requirement and not a requirement of the standard valuation law. If these were the only streams to be tested, the shaded amount of $9,600 would be the greatest present value and, hence, the CARVM reserve.

TABLE 2
CALCULATION VALUES FOR SIMPLIFIED EXAMPLE

	t=1	t=2
q^t	0.005591	.005994
p^t	.994409	.994006
${}_DV^t$	.923788	.853383
${}_CV^t$	.941176	.885813
AV^t	9,360.00	8,760.96
FW^t	1,040.00	973.44
CV^t	8,892.00	8,760.96

TABLE 3
5-YEAR CLIFF SC-'91 ISSUES GREATEST PV AT END OF YEAR 4
DEVELOPMENT OF AG 33 RESERVE*

Projection Year	Death	Free Partial Withdrawals	Surrender	Reserve Candidate
0			9,550.00	9,550.00
1	48.34	978.82	8,322.15	9,349.32
2	92.91	1,836.29	7,670.93	9,600.12

*No ADB or Nursing Home Benefits Included

Now that we've gone through a simple example to understand better the mechanics of the new AG 33 calculations you might ask yourself, what effect will AG 33 have on reserves? To gauge this effect you need to consider a number of factors, such as how relatively high or low the reserves were prior to calculating new AG 33 reserves. Consider the features of the product that will be affected by the AG 33 provisions, such as the surrender charge pattern, the type of free withdrawal benefit, ancillary benefits in the product, and how liberal the annuitization guarantees are.

Of these features, the free withdrawal benefit is very important. I have found that the general level of interest rates has a lot to do with the effect AG 33 has on reserves, as you will see in a few minutes. You will also see the relative impact that guaranteed interest rates have on reserves under AG 33—both guaranteed crediting rates and the interest rate underlying the annuitization guarantees. In general, I have found that AG 33 reserves are not easily analyzed without performing numerical testing. They're not as easy as interest-only CARVM reserves were. To illustrate the effects of AG 33 on reserves, I have done a number of sample reserve calculations based on two sample product designs in the material that follows. Except where noted, I have assumed a 4% guaranteed interest rate and two different surrender charge patterns; one a five-year cliff just like we've been examining, and the other a benign 1% per year grade off a 10% initial surrender charge so the surrender charge goes away in ten years. I have assumed an issue year basis of valuation and compared results to two theoretical policies—one issued in 1991 and the other issued in 1997. You will observe dramatically different results from the resulting valuation rates for these two issue years. Each product has a 10% free partial withdrawal provision and, finally, each product waives the surrender charge on death.

To make these products state-of-the-art and also include some benefits that are addressed by the new AG 33 provisions, I've also included a double indemnity accidental death benefit under which an additional death benefit equal to the account value is paid on accidental death, and a nursing home benefit that allows the qualifying policy holders to make a 50% of account value free partial withdrawal. My guaranteed annuitization purchase rates are based on 4% interest and 1983 Table A mortality. For my sample calculations there is only one life contingent settlement option providing for a ten-year certain and life benefit. I used 83A mortality for valuing both the death benefits and the annuitization benefits as is called for by the revised AG 33. As I'm sure most of you would agree, these product features that I have described aren't bizarre features. These are very common ones that you see out in the annuity marketplace today.

Table 4 is very similar to the other valuation interest rate display in Table 1, except that I've also shaded the rates to be used for the annuitization benefits. Note that the plan type A rate of 8.25% would be used for the regular death benefits and the ADB death benefits. The nursing home benefits would also be valued using this same rate. This is because all those benefits can have payments made immediately following the issue date; hence, the first band of guaranteed duration applies and there is no withdrawal permitted from these three benefits, so the plan type is A. Again, you need to consider that each benefit in an annuity policy can qualify now for it's own, perhaps unique, valuation rate. In practice, there really are not that many rates to deal with. By contrast, Table 5 shows much valuation interest rates

have come down over the last six years. It's dramatic but still tame compared to what we witnessed over the decade of the 1980s.

TABLE 4
STATUTORY VALUATION INTEREST RATES
FOR 1991 ANNUITY ISSUES

Cash SO?	Future Int?	Guaranteed Duration	Plan Type		
			A	B	C
Yes	Yes	<=5	**8.25%**	7.00%	**6.25%**
		<=10	**8.00%**	7.00%	6.25%
		<=20	**7.00%**	6.25%	5.75%
		21+	**5.75%**	5.25%	5.25%
Yes	No	<=5	8.75%	7.25%	6.75%
		<=10	8.25%	7.25%	6.75%
		<=20	7.50%	6.50%	6.25%
		21+	6.25%	5.50%	5.50%
No	Y or N	<=5	8.25%	N/A	N/A
		<=10	8.00%	N/A	N/A
		<=20	7.25%	N/A	N/A
		21+	6.00%	N/A	N/A

The numerical results and charts that I'm going to show you attempt to display the effect that AG 33 has on reserves that you might otherwise have computed as interest-only CARVM reserves. That is the greatest present value of future cash surrender values and reflects the free partial withdrawal benefit only in determining the cash value paid upon full surrender and without using mortality to reflect the death benefit, which is typically larger than the cash value. I will show you some charts that are based on the ratio of the AG 33 reserve to this interest-only CARVM reserve. When viewing these charts, I think you will have a tendency to mentally fall in the trap of considering the ratios to be that of the AG 33 reserve to the account values, which is not correct.

A disclaimer is in order. My calculations do not attempt to evaluate all possible integrated benefit streams. In particular, they ignore streams where no free partial withdrawals are taken and ignore the possibility of nonfree partial withdrawals and partial annuitizations. It is assumed that all policies terminate with either a full surrender or a full annuitization. Obviously, a complete set of calculations also needs to consider many other possible benefit streams. Nonetheless, I believe these calculations form the core of what needs to be tested for these product designs.

TABLE 5
STATUTORY CALENDAR YEAR
VALUATION INTEREST RATES FOR 1997
BUSINESS CONTRACTS VALUED ON ISSUE YEAR BASIS

Cash Settlement	Future Int. Guarantee	Guaranteed Duration	Plan Type		
			A	B	C
Yes	Yes	<=5	8.25%	7.00%	6.25%
		<=10	8.00%	7.00%	6.25%
		<=20	7.00%	6.25%	5.75%
		21+	5.75%	5.25%	5.25%
Yes	No	<=5	8.75%	7.25%	6.75%
		<=10	8.25%	7.25%	6.75%
		<=20	7.50%	6.50%	6.25%
		21+	6.25%	5.50%	5.50%
No	Y or N	<=5	8.25%	N/A	N/A
		<=10	8.00%	N/A	N/A
		<=20	7.25%	N/A	N/A
		21+	6.00%	N/A	N/A

Chart 1 shows this ratio—remember that this is the ratio of the AG 33 reserve to the interest-only CARVM reserve for the two different surrender charge designs described earlier—and results for valuation dates that occur at the middle of policy years as opposed to the ends in the earlier simplified example. Again, just because the chart for the ten-year graded product is above the chart for the cliff surrender charge product, that does not mean the reserves are higher. Rather, it means there is a larger percentage increase in reserves going from interest-only CARVM to AG 33 reserves. This may seem counterintuitive since the cliff surrender charges ordinarily would represent a more likely source of additional reserves; however, under interest-only CARVM the benign grade of the surrender charges means that at large valuation interest rates, at least, the reserve candidate associated with surrender at the next anniversary would be the greatest present value. However, once the stream of free partial withdrawals is introduced by AG 33, the selection of greatest present value changes from near the valuation date to farther from the valuation date, as you will see in upcoming charts. This has a greater effect on the ten-year graded surrender charge product than for the cliff surrender charge product, and the reserve increase is more. As you can see from the chart, the ratio is large, more than a 2% increase in reserves, which is huge for annuities at least at the middle of the first policy year, but declines rapidly thereafter. Chart 1 focuses on 1997 issues because they are affected the most by this phenomenon. Again, that's due to the lower valuation interest rates.

One of the biggest effects of the new AG 33 is due to the acceleration of the benefit payment stream, at least compared to interest-only CARVM. The biggest impact is from free partial withdrawals and to a much more minor degree from ancillary benefits such as nursing home free partial withdrawals. The impact of this acceleration, of course, is to reduce the shrinkage of future values that otherwise occurred under interest-only CARVM when a sizeable differential exists between the guaranteed crediting rate and the valuation rate. Obviously, the magnitude of the impact that the acceleration has on reserves is affected greatly by how large the valuation rate is relative to the credited rate.

CHART 1
RATIO OF AG 33 RESERVE TO INTEREST-ONLY CARVM RESERVE
1997 ISSUES WITH SURRENDER CHARGE PATTERNS INDICATED

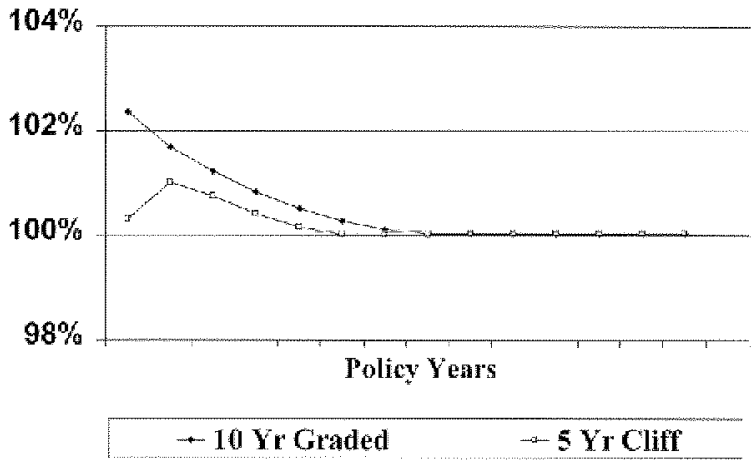


Chart 2 focuses on the ten-year graded product because that was one that was most affected by the acceleration, as shown in Chart 1. The point of this chart is to illustrate how the level of interest rates affects the acceleration phenomenon. As you can see from the chart, there is virtually no impact when rates are relatively high, as they were in 1991, as represented by that 100% horizontal line. However, today's low interest rates magnify the impact of the benefit stream, as you can see by the other line. As noted, free partial withdrawals increase reserves because of the acceleration of the benefit stream. That effect is much larger than for the minor benefits, and the effect varies by the design of the surrender charges and the level of interest rates. To test this, I calculated reserves from a modified product design, that wouldn't sell well in today's product arena; it's just like the graded surrender charge

product but does not have a free partial withdrawal feature. By looking at Chart 2 you can see that the elimination of free partial withdrawals does lessen the impact of AG 33 on reserves, again, relative to interest-only CARVM reserves. However, there are other monsters in AG 33 that push up reserves such as valuing annuitization benefits, so a lesson to be learned is that there might be several such monsters pushing up the size of the reserve candidates, and if you eliminate one of them another might take its place. When looking at this chart, remember that the denominators in these two ratios are not the same. Interest-only CARVM reserves are also less if you eliminate the free partial withdrawals provision, so you need to remind yourself that you're looking at the ratio of AG 33 reserves to interest-only CARVM reserves where the denominators are different from each other.

CHART 2
RATIO—AG 33 TO INTEREST-ONLY CARVM
GRADED 10-YR SCS '91 VERSUS '97 ISSUES

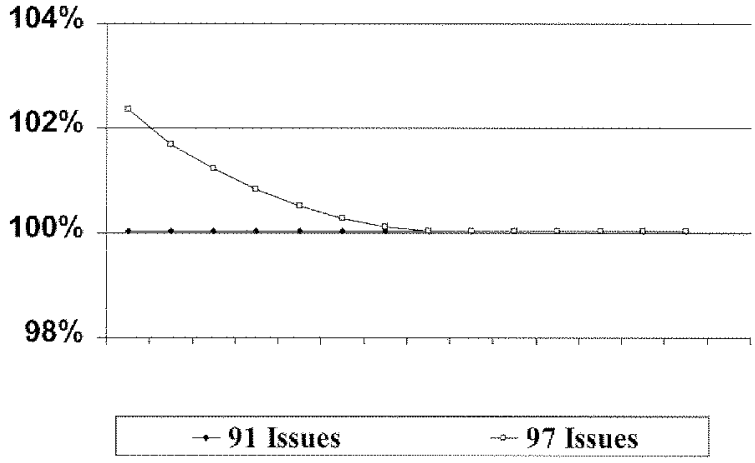


Chart 3 illustrates the number of years of projection past the valuation date needed to find the greatest present value under AG 33 and under interest-only CARVM. The dark line is for AG 33 and the gray line is for interest-only CARVM. These are both for the ten-year graded product. As you can see, the interest-only CARVM reserve is driven by the cash value at the next policy anniversary. The AG 33 reserve is initially driven by an annuitization on the next policy anniversary for the reserve computed during the first few policy years. Then, however, the surrender at the end of the surrender charge period, together with the present value of a stream of free partial withdrawals, takes over as the greatest present value and dominates during the remainder of the surrender charge period. A lesson to learn here is that these AG 33 reserves are very complicated and difficult to analyze without performing numerical testing.

CHART 3
RATIO—AG 33 TO INTEREST-ONLY CARVM
1997 ISSUES WITH TRADED SURRENDER CHARGES
WITH AND WITHOUT 10% FREE PARTIAL WITHDRAWAL

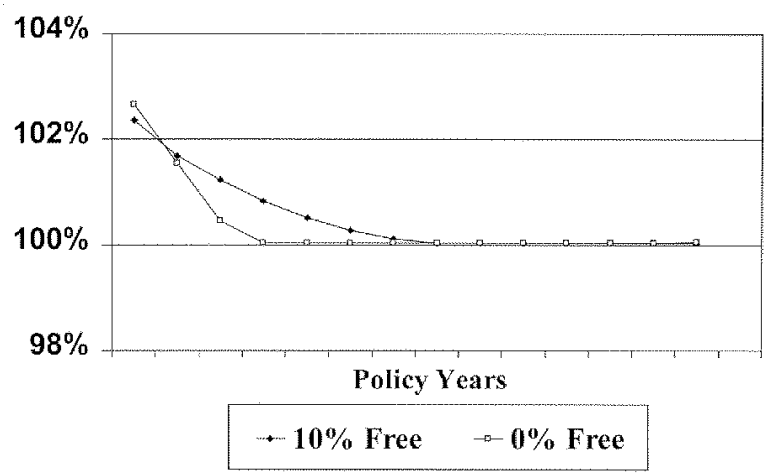


Chart 4 shows that if we could take out the free partial withdrawal provision, as if we could do that from a marketing perspective, the number of projection years goes back to one for both interest-only CARVM and AG 33. However, the annuitization benefit is now driving the AG 33 reserve over the entire surrender charge period. Both lines only go out one year past the valuation date. As noted before, while other benefits such as nursing home and ADB do accelerate the benefit stream somewhat, it is not enough to affect the reserves very much.

CHART 4
YEARS PAST VALUATION DATE TO CARVM
MAXIMUM AG 33 VERSUS INTEREST-ONLY
CARVM 10-YEAR GRADED SC'S AND 10% FREE—'97 ISSUES

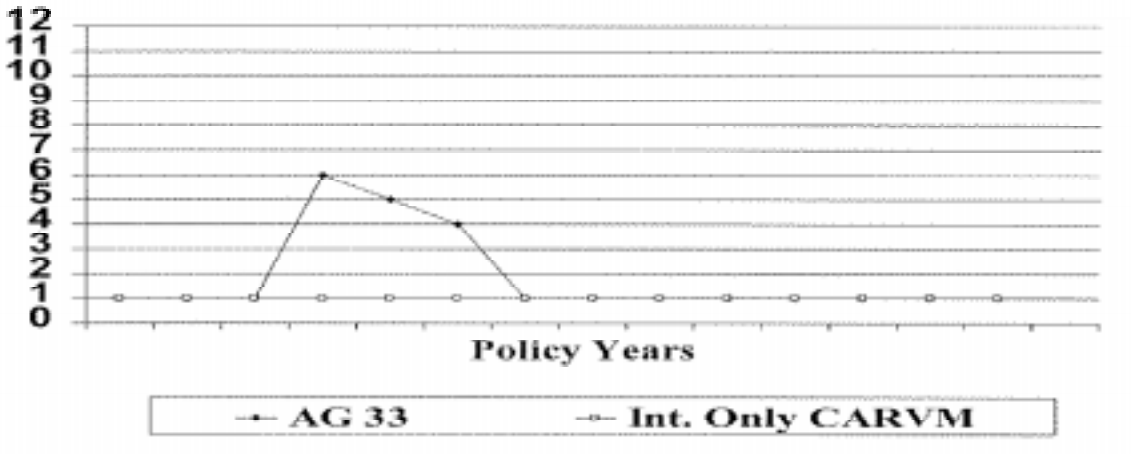
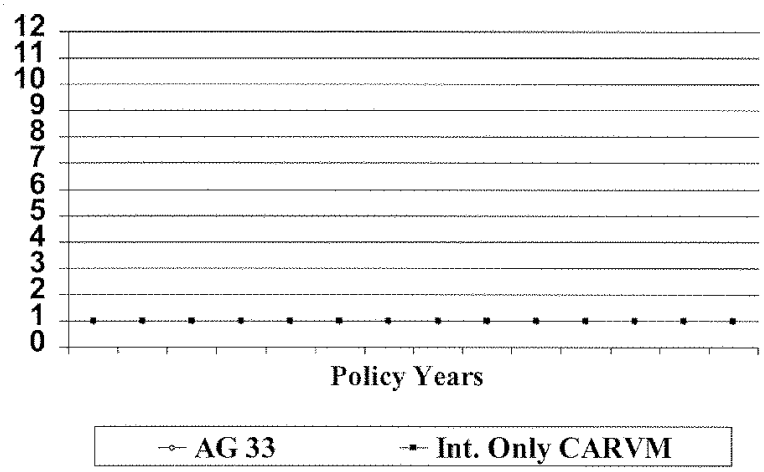


Chart 5 shows that the ratio of AG 33 reserves to interest-only CARVM is nearly identical, whether or not the ADB and nursing home benefits are present in the policy. Note that both these product designs include the free partial withdrawal feature and the denominators of both these ratios are equal, as I did not change the interest only CARVM reserve to reflect the ADB or nursing home benefits.

CHART 5
YEARS PAST VALUATION DATE TO CARVM
MAXIMUM AG 33 VERSUS INTEREST-ONLY CARVM
10-YR GRADED SCS AND 0% FREE—'97 ISSUES



As noted earlier, AG 33 can greatly increase the number of future years needed to be considered in finding the greatest present value. The interest differential between the guaranteed and valuation interest rates can wash out future cash surrender reserve candidates under interest-only CARVMs. Whereas under AG 33 the stream of benefits makes a larger portion of the current account value be paid out sooner, thus reducing the amount of interest discount. Therefore, the greatest present value can occur with longer projection periods. Chart 6 shows the number of years necessary to find the greatest present value for valuations performed at policy years 0.5, 1.5, and so forth. You can see that for this ten-year graded product, reserves computed beginning at midyear two find the greatest present value at the end of the eighth policy year. Interest-only CARVM, on the other hand, finds the greatest present value at the next policy anniversary. Table 6 shows the reserve candidates involved in both the AG 33 and interest-only CARVM reserve calculation for valuation date occurring in the middle of the third policy year. The amounts shown for the account value are the projected values as are used for interest-only CARVM. The other two columns show the present values of the benefit stream. This illustrates the greater length of the projection period, as I have highlighted where the greatest present value occurs under the two different calculations.

CHART 6
RATIO—AG 33 TO INTEREST-ONLY CARVM
WITH AND WITHOUT ADB & NURSING HOME GRADED 10 YEAR SCS—'97 ISSUES

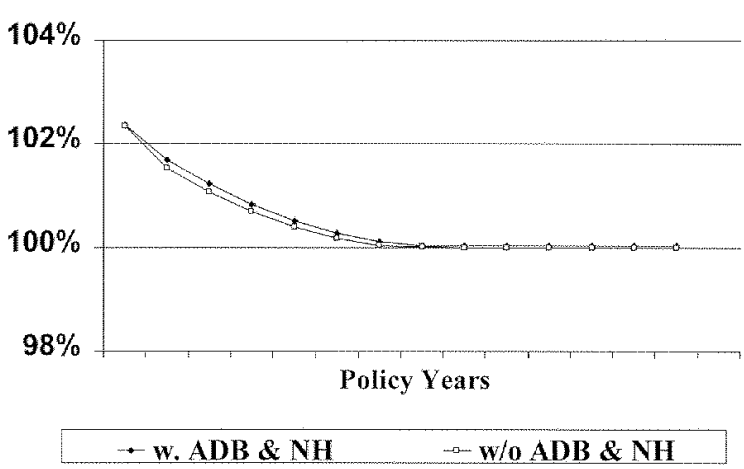


TABLE 6
10-YEAR GRADED SC-'97 ISSUES GREATEST PV AT MID-YEAR 3
AG 33 VERSUS INTEREST-ONLY CARVM

Projection Years	Account Value	AG 33	Interest Only
0.5	10,198.04	9,351.70	9,314.19
1.5	10,605.96	9,363.98	9,291.97
2.5	11,030.20	9,396.18	9,268.97
3.5	11,471.41	9,415.97	9,245.20
4.5	11,930.26	9,426.19	9,220.69
5.5	12,407.47	9,428.46	9,195.46

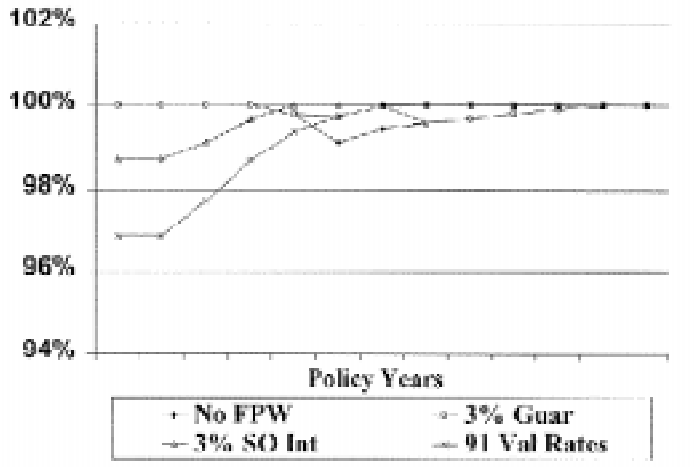
For the same reserve calculations summarized in Table 6, I thought it might be helpful to see the full display of the components making up the AG 33 reserve candidates. As you can see in Table 7, the ancillary benefits hardly contribute anything to the reserve candidates; however you can also see how the contribution to the present value made by the free partial withdrawal builds over time, until in this example, it accounts for almost half of the ultimate reserve to be held. The calculations performed added the present value of the death, ADB, and nursing home benefits together with the present value of the partial withdrawals. The larger of the full surrender, or full annuitization, was then added. You can see how, at some projected policy anniversaries, the annuitization benefit is larger than the cash value. The reverse occurs at other anniversaries.

TABLE 7
10-YEAR GRADED SC-'97 ISSUES GREATEST PV
AT MID-YEAR 3 DEVELOPMENT OF AG 33 RESERVE

Non-Elective Benefits			Elective Benefits			Reserve Cand
Death	ADB	NH	FPW	Surr	Annuit	
21	2	1	994	8,298	8,333	9,352
62	6	4	1,876	7,417	7,265	9,364
100	9	7	2,655	6,625	6,331	9,396
135	12	9	3,344	5,915	5,591	9,416
168	15	12	3,953	5,278	4,880	9,426
198	17	14	4,491	4,707	4,257	9,428

In an attempt to rank the significance of product or valuation changes that might occur on AG 33 reserves, I've prepared Chart 7 showing the impact in descending order of, first, a general rise in the level of valuation interest rates from 1997 levels back to those of 1991; second, changing the settlement option interest rate from 4% to 3% since you could see from the earlier results that annuitizations were having a fairly big effect on reserve levels; and third, eliminating free partial withdrawals. I'm not a proponent of taking these provisions out of our annuity products, as if the market would allow it, but by taking it out we can see what effect it is having on reserves and thereby gain insight into what happens under AG 33. Fourth, change the guaranteed credited rate from 4% to 3%. Note that these four changes are ranked in descending order of significance as far as their effect on AG 33 reserves. The impact is quite different under interest-only CARVM as you will see shortly.

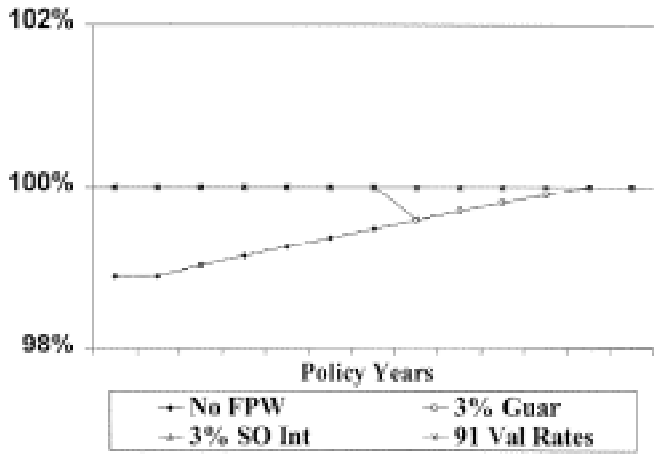
CHART 7
RATIOS TO PREVIOUS AG 33 RESERVES FOR GRADED SC DESIGN
FOR EACH INDICATED PRODUCT/VALUATION CHANGE
BASE AG 33 RES: '97 VAL. RATES, 4 % GUARANTEE AND SO, 10% FREE



In reviewing this chart, which is admittedly a bit hard to follow, you need to focus on the description at the top regarding what ratios are being graphed. In prior charts I have shown graphs of the ratio of AG 33 reserves to interest-only CARVM. In this chart, however, the denominator is the AG 33 reserve prior to the change of the one item listed in the legend at the bottom. You can see that the legend shows changing to no free partial withdrawals, a 3% guaranteed interest rate, and so forth, all one at a time as I've indicated on Chart 7. You can see that the single biggest thing to bringing down reserve levels is the increase in valuation interest rate if today's rates were to go back up to 1991 levels. That produces an almost 3% decline in the reserve in early years. Of course, we can't affect the level of interest rates in any meaningful way. The next biggest impact is obtained by decreasing the interest rate underlying the guaranteed settlement options or in any other way to decrease the amount paid per $1,000 applied. This produced about a 1.5% decrease in the reserves, which is significant for annuity business. This illustrates, in a general sense, how low interest rates are and that our valuation standards are placing a high value on a 4% guarantee reducing or eliminating the free partial withdrawal provision would help reduce reserves, but again, I fear that is something beyond our control. Earlier charts indicated that free partial withdrawals are the culprit that makes AG 33 reserves bigger than interest-only CARVM reserves. However, there are several potential reserve monsters in AG 33 as I noted earlier and even if free partial withdrawals are eliminated, annuitizations can still account for relatively large reserves. Obviously, a combination of changes are necessary to significantly decrease reserves.

You might ask yourself if the four possible product or valuation changes would have basically the same effect on interest-only CARVM reserves. The answer is no, as shown in Chart 8. Eliminating free partial withdrawals has the biggest impact. Changing the guaranteed crediting rate is next, followed by a change in the valuation interest rate. Changing the settlement option interest rate is last because interest-only CARVM does not involve annuitization benefits. Therefore, you can see that we need to view AG 33 reserves differently than we have considered CARVM reserves in the past. No free partial withdrawals bring down the reserve significantly. With AG 33 reserves there are so many other valuation and product features that have an effect on reserves that it takes multiple changes to have a meaningful effect on reserves. The point here is that you need to change the way you think about CARVM under AG 33. If you get involved in product development or can communicate some of these things to the product actuaries at your company, you might be able to take some actions to somewhat ameliorate the effects of AG 33.

CHART 8
RATIOS TO PREVIOUS INT-ONLY CARVM RESERVES FOR GRADED SC
FOR EACH INDICATED PRODUCT/VALUATION CHANGE
BASE CARVM RES: '97 VALUATION RATES,
4% GUARANTEE AND SO, 10% FREE



From the Floor: With termination of employment, would related benefits be elective or nonelective?

Mr. LaLonde: Termination of employment benefits, now how is that going to work?

From the Floor: Cash surrender available only at the termination of employment on a group contract?

Mr. LaLonde: So if you terminate employment you get the full value?

From the Floor: Well, let's say there is a surrender charge.

Mr. LaLonde: There is a surrender charge, so they would assess a surrender charge?

From the Floor: Yes, but again the benefits would be only available after termination of employment.

Mr. LaLonde: We considered that on the work group. In any one of these situations, as valuation actuary, you have to do the soul searching to try to decide whether that's a type of benefit that the policyholders might actually take the action in order to receive the benefit. Personally, if I was valuing an unemployment rider like that I think I would consider that a nonelective benefit. Most people aren't going to take some action to quit their job in order to receive the surrender charge waiver.

From the Floor: I don't mind that answer, but as a follow-up question, is there a decrement table that's recognized?

Mr. LaLonde: No, there isn't, but, the Guideline does provide some guidance in descending order. You need to look to valuation laws, obviously, and work down to industry experience and company experience for setting assumptions like that. Obviously, population statistics would be something that I tend to look toward for that kind of a rider myself.

Mr. Lamson: I would look at that question as an opportunity for deciding what level of reserve you might want to hold because the answer can possibly go either nonelective or elective. If it's a nonelective benefit then I can use probabilities and thereby give it a smaller value. If it's an elective benefit then I have to reserve it as though it's just a regular available type of benefit. You may have some tax strategies that you want to explore in discussing it. There are obviously some opportunities for you to make some choices on how you might want to categorize that, in my opinion.

Mr. Larry J. Bruning: You might talk about the grade-in period for those of us who have put up additional reserves already for the old version of Guideline 33. If this new version takes reserves up even a little bit more, who knows which direction, I assume we only have to put up the difference from where we're currently holding them. On the previous Guideline 33 we had to get, I believe, permission from the Insurance Commissioner for the grade-in. Is that going to be the same case under the new revised Guideline 33? Maybe we should've called it 33.5 or something.

Mr. LaLonde: That's why I call it XXXIII.

Mr. Lamson: I happen to have AG 33 here so I'll look at this in a second in case I'm wrong. But, I think what it is, Larry, is that if you take the reserves that you would have to hold at the end of 1998 under the previous version of AG 33, which I think was the end of the grade-in period, that would take you to 100% of old AG 33 reserves. Take the difference between that and the new reserves that you would have to hold under the new AG 33 and that's the difference that you can spread over three years. I don't think that you need to apply to the Commissioner for the spreading. Bobby, you have the answer?

Mr. LaLonde: "The company may request a grade in period for contracts issued prior to December 31, 1998 from the domiciliary commission upon satisfactory demonstrations for method of level current reserves held for such contracts are adequate in the aggregate." There's some slippery stuff in there too, apparently.

Mr. Randolph N. Vance: There was some question about the tax reserves under the prior AG 33. Has that been changed in any way with the wording of the revised Guideline?

Mr. Lamson: No.

Mr. LaLonde: Ed Robbins is going to have a session, 97PD, U.S. Life Company Taxation, talking about the tax ramifications of this. I'm sure he'll give you some alternatives to look at.

From the Floor: I'm just curious if the committee has any examples or considered examples of situations where partial surrender is above the free partial withdrawal amount, actually the increased reserves. I'd also appreciate any commentary that you might have on utilization rates. I stayed away from those two areas in the presentation, which I find probably the most troubling in the material. If you could comment on that and any examples where you feel that those items, although they increase the complexity, do not appear to be increasing reserves. I'd appreciate that feedback.

Mr. Lamson: It's difficult, frankly, to construct examples whether a policyholder taking a nonfree withdrawal will result in a larger reserve. Errol Cramer, at Allstate, another member of the work group, always liked to bring up an actual product feature that I think they have where there are some guarantees of current, higher interest rates. It's hard to talk about any of today's interest rates as high, but we can go back a few years when they had an 8% or 9% interest guarantee that extended for two or three years. If you have a policyholder take a nonfree partial withdrawal, then that's going to potentially produce smaller reserves because then the money is not there to earn the higher rate of interest. There's a lot of concern I think for most people when they read AG 33 and consider the infinite number of potential integrated benefit streams. The reason I say infinite is because virtually all policies provide for nonfree partial withdrawals, so theoretically you could test 11%, 11.1%, and 11.2% and our mathematics tells us there's an infinite number of those that we could then test. But really when you get down to it and you begin to examine the features that you do need to test I think it's a relatively small subset. I'm fairly comfortable with the calculations I have up here and while they are somewhat complicated, I'm ignoring things like nonfree partial withdrawals. It really goes back to the old CARVM days from the perspective of understanding how the valuation calculations work and doing analysis to decide what you really need to check into. That's one of the things that we strove to put into the new AG 33—some support for us valuation actuaries to prevent someone from saying to us, you haven't checked this scenario and that scenario.

On those incidence rates for the elective benefits, again, we like to think that if you have free partial withdrawals you will be OK testing 0% free partial withdrawals and 100% free partial withdrawals, and you don't have to test every possibility in between. We tried to put some support for that approach into AG 33 and in the language regarding practicality because in the real world we have to get reserves out on time and can't test millions of scenarios.

The question, I think, was utilization rates. One of the terms that we used in AG 33 was to talk about incidence rates and to stay away from the word utilization. The reason for that is that when AG 33 was first being proposed back around 1992 or 1993, there were a large number of companies that wrote to the regulators asking, "Why do I have to set up reserves based on 100% of my policyholders annuitizing?" Bob had talked about this earlier. The regulators just rejected that one time after the next, despite the fact the company showed actual studies where 0.5% or 1.5% of their policyholders ultimately annuitized. We're forced to test worst case, but many of us like to think that we're headed in the right direction for a new valuation standard where we can use things like utilization rates and company experience.

From the Floor: Do you think that the actuary could hide behind that particular provision for somebody to determine that the reserves were higher under a certain benefits stream, and say, for practical considerations I didn't consider that test; so therefore, I'm within the law because under my interpretation of practical consideration that's OK?

Mr. LaLonde: I think that comes down to a judgment call, again, as to how obvious the place where you get caught is compared to what you actually tested. It's not a shield to hide under and ignore a bunch of these calculations.

From the Floor: As you commented, it's very hard to generalize from just thinking about the law and the relationship to interest rates, which we're all inclined to do, no matter what the results are likely to be. You have to put the pencil to the paper and run through the calculations to prove it absolutely.

From the Floor: I have a question relating to curtate versus continuous. Was the language related to that changed?

Mr. Lamson: Absolutely not.

From the Floor: Our state interprets it as continuous which does have some tax reserve implications in that our understanding is you don't change your method when you go from statutory reserving to tax reserving; you just change the

assumption, so if our method in our state calls for continuous, that's what we're using on the tax return. Are states consistent on that, or is that open to each state examiner?

Mr. Lamson: The curtate versus continuous issue is really one that goes back to the standard valuation law itself, and many people think that it's fairly clear, as I think Bob pointed out in the beginning of the session, that the valuation law seems to anticipate curtate. Nonetheless, there are a couple of states, Illinois and New York, that require a continuous reserve type calculation. I think for tax reserves you have to look to the definition employed by the majority of the states. Isn't that right?

Mr. LaLonde: No, it's whatever is prescribed by the NAIC. I think you would have to hold tax contain reserves, although I'm sure Ed Robbins can give you another.

From the Floor: I don't have the Guideline in front of me, but I'd like some clarification on the issue of utilization or incidence with regard to elective benefits. The way the Guideline stands is 100% utilization is to be assumed, or is that the actuary's judgment in finding what he or she is comfortable with?

Mr. Lamson: You have to be responsible for considering, not testing, all the possibilities, meaning 87.625%, for example. We tried to put in language that gave support for testing 0% and 100%.

Mr. LaLonde: I think, as I read it, deaths are going to enter into your calculations. Just to use an extreme example: 25% of the people are supposed to die in this particular year, that means only 75% can possibly get the full surrender value, so you get the discount, the full surrender value, by the 25% deaths so you don't have to double count them, so to speak. That is permitted, so you can't use mortality rates based on your experience; you have to use a valuation type mortality rate. Or if you have survivors, or nursing home benefit utilization rates, you would bring those into the calculations too.

From the Floor: I was wondering if you've come across any key issues or considerations in regard to applying AG 33 to equity-indexed annuities in any fashion? Any discussions that you may have come across?

Mr. LaLonde: Well, that particular topic is evolving on its own course. AG 33 is sort of general, so I would imagine there is some general application to equity-indexed annuities, but the way the equity index contracts are worded requires significantly more direction particularly as it applies to partial withdrawals. I think the day is still quite young as to how equity-indexed contracts will be actually reserved. Those are my thoughts.

Mr. Lamson: As AG 33 got closer to adoption and there were minor wording changes made here and there, one of the wording changes was made just for that very purpose that you brought up. Larry Gorski was concerned that the new equity-indexed annuity valuation methodologies should certainly apply to equity-indexed annuities, so there were some small wording changes made to AG 33 to ensure that other Guidelines that apply to more specific types of annuity products, like equity-indexed annuities, would apply to those products, so you couldn't just ignore them and fall back on AG 33.