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Recorder: R. THOMAS HERGET

Summary: In this session, the panel addresses important aspects of today's term insurance environment and how they impact the establishment of reserves. The panel consists of two actuaries and a marketing executive. The marketing executive discusses the current competitive arena in which term insurance is sold. The actuaries address concerns and issues in the establishment of statutory, tax and generally accepted accounting principles (GAAP) reserves, including reinsurance and provisions for adverse deviation. The panel provides an update on the status of Guideline XXX.

Mr. R. Thomas Herget: We don't have any sorcerers on the panel, but I think with XXX, you will see that we can make reserves appear.

I work at PolySystems where I am executive vice president in our installation area. I'm also on the Academy's State Variations Task Force, and I'll be the chair of the Financial Reporting Section. I'll introduce Marina Adelsky and Kathy Hansberger when they speak.

To start things off, I thought it would be a good idea to get a good overview of the term insurance marketplace. Kathleen Hansberger is a vice president with Financial

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†Ms. Hansberger, not a member of the sponsoring organizations, is Vice President of Financial Distributors, Inc. in Columbus, OH.

Note: Charts 1–25, along with Table 2, are not available online. Please contact Linda Blatchford at lblatchford@soa.org or call 847/706-3564 for a set.

Distributors in Columbus. Kathy has had a lot of experience in the insurance business. She is actually in marketing, but we've asked her to give only one formula and only a couple of numbers. Kathy's insurance career started at the Midland in Columbus, and she has also been with Community National. She does a lot of work in annuities, particularly equity-indexed annuities as well as term insurance. Her firm works with many industry leaders including CNA, the Midland, Lincoln Benefit, and Kemper.

Ms. Kathleen Hansberger: I'd like to give a snapshot of the marketplace as those of us who actively market and sell term insurance today see it. You can also call this "everything you always wanted to know about term insurance, but your marketing vice president is afraid to tell you." As Tom gave me this assignment and I started looking at what would be of interest, and what's really happening in the global term arena, I found that today's competitive environment and the emerging marketing strategies could impact the business in an extraordinary and perhaps unprecedented way. Many of us tend to think of selling term insurance as a very simple prospect. It is indeed price-driven today, but because of what I see in the marketing strategies and the approaches that are being taken, I've been amazed at the impact that's going to have on some of the assumptions you make as you price and certainly as you reserve for term insurance.

A few minutes on the rise of term. Obviously, term insurance has become a bigger and bigger part of the consumer market. The interest rate environment of the 1980s led many of us to question the value of cash value life insurance as a viable savings vehicle, and then consumers began to get concerned about real value. You saw the rise of buy-term and invested in different programs. Consumers started to read *Money* magazine and Jane Bryant Quinn's column. They started to get educated and they started to shop based on price, and they started to focus on cost. You have increased consumer demand which has led to increased supply and increased competition, and that has driven prices lower and lower. Today the average price for term insurance is \$2.60 per thousand. Some of you might have been in the market a long time to remember when it was double and triple that. And we're seeing the commoditization of the term market—the term products are all starting to look very similar and the prices are simply going down.

The marketing strategies that we're seeing are really being geared to the changes in the consumer market. You have informed consumers. As I said, these people are price shopping, and we're finding particular target markets in this baby boomer generation who obviously are very interested in buying term insurance. We, as a generation, are very age averse. We're worried about our health, we're exercising, we're watching our cholesterol, and we're worrying about staying young forever. We're finding that some companies are actually targeting with their slicing and

dicing of underwriting classes this age averse baby boomer. How preferred are you?

We're seeing aggressive advertising of low-cost rates to consumers and producers. If you've looked through *National Underwriter* or *Life Insurance Selling* or *Broker World* lately, you've probably seen nothing but hot rates and low cost. You've probably heard rates quoted on the radio too, and that brings us to the rise of the direct marketers. Many of you are familiar with advertising on radio, television, and the Internet. This is the direct marketing of term insurance. These are the select quotes of the world—the telequote or the quick quote. There is an increase in spreadsheeting term insurance. Direct mail sifts out leads that are interested in buying what is today becoming a commodity. Again as a result, you have this fine slicing and dicing of underwriting classes. You have your preferred and then super preferred, and super duper preferred. I was talking to someone who wasn't aware that there are also preferred smoker classes. The preferred smoker classed seems to be kind of an oxymoron.

So there's a finer slicing and dicing of underwriting classes because many of us are trying to convince ourselves that we're healthier than average. We have a better heart history than average, and of course, the carriers are responding to this. You as actuaries, obviously are responding in trying to apply a finer and finer selection to your rate classes.

One man's trash is another man's treasure. What is also known is one man's preferred is another man's standard. When you're comparing term rates, you have to understand what you're comparing. Companies that only have one or two rate classes in the term arena have a standard rate and that rate may be very different from a company that has eight to ten rate classes. So it's really critical that you understand what your standard really is.

Why do we do this? Why have we moved towards this very fine refinement of rate classes? First, we do it to advertise the lowest rates. When you have the lowest rate for an age 95, preferred male, nonsmoker, what happens? You pop to the top of the spreadsheet. If you're selling term insurance in the brokerage arena, or if you're selling term insurance through the direct quote, or telequote, or select quote systems, you want to pop to the top of the rate sheet whenever possible. Again, there's also this appeal to the super health conscious baby boomers who want to feel that they're not average or standard. They believe that they are preferred in some way. If they're not smoking, they automatically assume that they're healthier than the general population.

We also do it because we can. The rise of blood profiles in reaction to the acquired immune deficiency syndrome (AIDS) epidemic, and the need to screen out human immunodeficiency virus (HIV) positive applicants has given us a wealth of other information. Obviously, we know more about the big five: cancer, diabetes, heart disease, kidney disease and lung disease. Those who are used to short-form applications are used to seeing those major screening questions on them.

So we know more about those conditions when they do occur because we have a wealth of information from blood profiles. We also know a lot more about alcohol abuse and blood profiles also screen for undiagnosed diabetes. Those of you who know anything about diabetes know that the largest part of a diabetic community doesn't know that they have diabetes. They're undiagnosed. Blood profiles can give us a much better handle on the real cardiac risk of an individual.

I won't spend time on genetic testing. That's another panel discussion but I will say that blood profiles certainly do give us the basis for some genetic testing should we choose to adopt that. We're getting more information on family history which is combined with the wealth of information that a blood profile gives you. An underwriter can make a much better assignment of rate class. Regarding smoking status, obviously we can tell whether someone is using tobacco or smoking cigarettes on a regular basis. We're also finding out more about lifestyle.

Again, these health conscious baby boomers are much more comfortable telling you that they work out three times a week, that their mom and dad lived to be 90, and that they have no history of heart disease. We're able to assign these finer rate classes because we can get this kind of information.

The bottom line to you is that selection is actually occurring at the distributor level and to a very large degree, it's based on price. Companies that don't offer super preferred rates will likely not see the super healthy segment of the population. I think that's going to lead to some unintended consequences. First of all, we talked about the price of term going down so you would assume that the commissions on term insurance would also concurrently go down. We find that's a little counterintuitive. In fact, the real compensation to the producer is probably increasing today, and that's due to the efforts to attract and retain producers who are selling a commodity on price. You're seeing companies offering bonuses on term production, just like they do on cash value and annuity production. You're seeing a big increase in trips and toys based on production.

Many of you probably are involved in companies that offer service challenges, which can rack up some significant dollars. An agent can make \$250 a case if a company fails to meet its service challenge.

Finally, conversion programs are becoming very popular. Producers view that as an opportunity to recommission. Conversion is a nice way, from the carrier standpoint, to attract consumers who have been through the underwriting process lately. It will hopefully keep your underwriting cost down and increase your block of consumers. Understand that the agent sees this as an opportunity to earn a new commission.

My firm does a lot of term sales, and I will tell you that we calculated the compensation on a particular term case a couple of weeks ago just to see what this all added up to in terms of a percentage of the first-year premium. It ended up being about 165% of the first-year premium. Most of you are probably not pricing 165% in your term for compensation.

Other unintended consequences, if you're not going the conversion route or if you're not trying to change programs is your clients are probably trying to again assign final rate classes. In order to do that, you have to have more medical information. More medical information and more tests cost money, and I think you're seeing a definite increase in underwriting costs. You're also seeing an increase in term being used for jumbo cases. Again, that will also increase the medical underwriting costs for a given case. Lapse rates show who stays and who goes. I'm not sure that we really know the impact yet of these 5-, 10-, and 15-year guaranteed term rates, and who's going to be shopping for the next hottest straight at the end of their guarantee period and who's going to be staying with you because they're medically unable to move elsewhere.

External exchange programs are conversion programs, and you need to ask yourself when does the effective underwriting really wear off. We have seen a number of carriers vying for consumers through exchange programs. It might have been five years since an individual has been underwritten. Are you comfortable that the impact of underwriting is going to be seen five years or seven years out. There are internal exchange programs. Those of you who have various term lines have to face the profit differentials that occur in product lines. Remember that your agent is always going to be looking for an opportunity to recommission. You have to be careful that your agents aren't moving business from more profitable lines to less profitable lines. If they do, you have to be able to adjust for that eventuality.

We're seeing an increase in not taken rates, which I'm not sure people have really thought about. This is coming from the effect of shopping. It used to be that an agent would get a quote for term insurance from his home company because a client asked for it. He wasn't going to make a lot of money on term. One term policy is much like the other. The fine assignment of rate classes and price is so important, and there's much more shopping going on. An agent may indeed quote

two, three, or four companies for a given consumer. Of course, that means three companies are going to have a "not-taken" on their books. We're also finding an increase of "not-takens" from misquotes. An agent will go out and be confident that a consumer is super preferred, and of course the case comes back as a standard or even a preferred. These health conscious baby boomers are somewhat offended to find out that they're not super preferred are, in fact, just standard or, even worse, substandard.

So these misquotes are causing an increase in not-taken rates also. You actuaries know a lot more about antiselection or mortality than I do. You need to ask yourself, whether your standard population really standard? Again if the super healthy end of the population is gravitating towards those carriers who are offering exceptional, reduced rates for this super healthy population, what does that do to the balance of the population? So you really need to take a look at who is in your standard block.

We have experts on XXX on the panel. I will just mention that, from the marketer's standpoint, it's making a lot of people who sell a lot of term insurance very nervous. One of the reasons is we're seeing such different reactions from the carriers; there's not a cohesive industry response to it. We're seeing guarantees with pre-XXX pricing; we're seeing a no-cost rider extension using pre-XXX pricing. We're also seeing this attempt at projected but not guaranteed premiums. That makes marketers very nervous. Of course, you have marketers who have found themselves in market conduct complaints. We're just coming off the vanishing premium problems. This whole concept of premiums projected but not guaranteed makes us very uncomfortable. Let's just say XXX, from a marketer's standpoint, is something that's kind of hanging over our heads, and we're very concerned about what the industry's going to do.

Mr. Herget: That brings to mind the actuary driving two actuaries. One is looking out the front and the other is looking out the side, and the other looking out the back. You need to look in all directions to know which way you're going. Kathy did give us a lot of things to think about. If we really are spending 165% of premium, it will be kind of interesting to see what happens to our net-to-gross ratios and profitability. The only good news is there might be some more expenses we can capitalize.

We're going to talk about setting up GAAP reserves on a term insurance product. To illustrate this, I've selected a ten-year term product. Let me tell you about the assumptions that underlie this ten-year product, and then we'll walk through the process of how you would set up GAAP reserves.

Where does mortality come from? It more often than not comes on a diskette that's sent over to you from pricing. It says, these are the rates we used. You may not have anything better to use so you'll start off using those. They're not sure exactly where they do come from, and they may be a best estimate. The valuation actuary will start out just using these rates. Lapse rates, I'm assuming lapse rates will be 8% in the first year, 7% in year 2, 6% in year 3, and 5% for years 4 through 9. I'm going to assume 100% lapse at year ten. We'll talk about that a little bit later because most of these products will have provisions to carry over into something new, but for this, I found that using a 100% lapse rate, assuming everybody's off, is probably the easier way to get going. For interest rates, we'll use a level 7%. We need issue cost.

Table 1 shows our per policy issue costs. I'll divide them by first-year premium to see if I get close to 165%. Notice that between age 40 and 45, there is a jump in cost, and that's where we start to do more underwriting. These costs should be reflected throughout and not assume an average cost for all issue ages. For commissions, I've assumed 115%. This does not include a bonus in year 2–10 of 3% and a premium tax of 2.5%.

TABLE 1
PER POLICY ISSUE COSTS

Age	Issue Cost
25	\$210
30	\$225
35	\$240
40	\$260
45	\$320
50	\$350
55	\$390
60	\$440

We've assumed just four rate classes. I started working on this presentation this summer, and I probably should have assumed 16, 32, or 64. I have one for sex, one for tobacco, and four size bands (50, 100, 250, 1,000). So the pricing actuary has come over and said, "We have this new product and here are the rates: two times two is four and four times four equals 16 sets of rates for which you need to set up GAAP reserves." We will take one of these particular 16 cells, no doubt male nonsmoker, and walk through what the actuary needs to do to set up the reserves.

What we've done in Chart 1 is set up a cell for each issue age. We created a \$100,000 policy for each possible issue age, and we put in all the assumptions that we want to use. What I've done is put in pricing assumptions, because you'd like to get a feel for what the company will be selling. What will the product look like that you're going to have to be reserving for, reporting on, and explaining how it behaves. So the first thing that I like to do is put in the pricing rates. The ratios in total come close to 100%, and at some key ages, you'll see they tent up over 100%. Ages 35 and 45 are very competitive ages that need to appear very lucrative. You'll notice that my average net-to-gross ratio across the top is 96%. This is just for one cell. Each issue age has its own cell and they're all weighted equally. You should get comfortable with this. If you're not comfortable with what you see, you should talk to your pricing actuary and find out what's not there.

I also like to take a look at what this means in dollars (Chart 2). What does this mean dollar-wise because, in the prior graph, everybody was weighted equally. People at the higher ages were paying heftier premiums so let's translate that margin into dollars. You can look at this and start to have a feel for where I might be vulnerable, where it's lucrative and where I'm wasting my time. Then you can take that type of analysis one step further, and multiple it by the annuity factor that underlies your assumptions. Chart 3 didn't change too much because my assumptions really didn't change from age 20 all the way up to 60, but this graph is merely the one before it times an annuity factor. You would get some variation if you had variations in the length of the term for each issue age. So now we just finished our analysis of what things look like if we issued one policy at each issue age. Now let's look at our actual distribution. The next charts replace each one with a snapshot of what we've actually sold weighted by actual accounts, distributions, etc. You should be looking at this for each of your 16 rate classes. We're just looking at one of them right here. In Charts 4, 5, and 6, you can see that the ages 35 and 45 are still over 100%, and the total weighted average profitability is 98%. You might be thinking, why am I bothering to go through this, and why all the effort to pull in 2% of profit. It doesn't seem to be worth much. We'll address that in a few moments.

Let's take this a few more steps and look at this in terms of dollars (Table 2*). At these issue ages, this is where the dollars come in and we pay shareholder dividends with salaries, bonus plans, etc.

How are we going to reflect this inner actual valuation. Table 2 shows what things might look like if you grouped items into every tenth issue age. I've picked ages 25

*Table 2 is not available online. Please contact Linda Blatchford at lblatchford@soa.org or call 847 706-3564 to obtain it.

through 65 in steps of ten. When you apply the actual distributions to those ages, these are the resulting profit margins that your GAAP reserves would be tending to reflect. When we go to five-year groupings, you'll notice that it seems to be a little more profitable. The total net-to-gross ratio has dropped from 100.9 to 99.3. In Table 2, you can see what things would look like if you had a GAAP reserve for each and every issue age like you do for statutory and tax (Table 2, as well as all of the charts, must be obtained from the SOA office). Right off the bat, you'll see that the total net-to-gross ratio of this block is 98%, which does tie back to chart 4. If you had tried to make a model, you would be spending an extra day a quarter trying to figure out why I'm even off and you'd be explaining modeling differences. So we found that it's a little bit easier to just set up GAAP reserves for each and every issue age, and it's actually less work because you don't even have to create a model. This will give you a better running start in explaining your quarterly results.

Let's look at one of the big players now in establishing reserves. One of the big reasons that term insurance can be more profitable is because of the introduction of reinsurance. This example is going to assume a co-insured policy. We're not going to reinsure the policy fee, and the expense allowances are 100% in year one and 25% thereafter. I've gone through the same type of analysis that I did for the direct piece. We have a different arrangement with the reinsured, but I want to know what that piece of the business is going to be looking like. For every dollar I had coming in, I'm going to have 75 cents going out. So just knowing what your direct business looked like and getting a feel for it is barely half of the assignment. I go through the same type of analysis, and we take a look at the profitability. We see that our net-to-gross ratio exceeds 100%.

Chart 7 shows that this may not be all that bad because the chart is going the other way. This says, for every dollar you send out, you're going to bring in more than a dollar. That would be good. I would be very comfortable if I were reinsuring part of my toaster, but this is a life-long partner for my insurance company, and I would really like to be sure that these are sound rates and the reinsurer will be here for quite a while. Your reinsurance, when using the direct company's assumptions, does appear to be unprofitable. So we go through the same exercise again. You see the profits weighted by unit. Again, I have a one-cell population (Charts 8 and 9).

We see the profile of the ceded business where I've actually applied it to the actual distribution, and the weighted net-to-gross ratio is almost 105% for the entire block (Chart 10). So that says for every \$100 we bring in, we'll get back \$105.

Chart 11 shows the ceded dollar profit per unit, as we saw before, and Chart 12 shows the present value dollar per unit, and again, it's about the same profile.

What I've just showed you isn't all that uncommon. It was not an exceptional case so we stepped back and decided, what kind of crystal ball our reinsurer has. What type of assumptions might one need to use to have this make sense from the reinsurer's perspective?

Table 3 shows some sample calculations. If you went in and changed your assumptions, this is what the profile would look like. If you used the same assumptions as the direct, you get 104.8%. If you make lapses 20% worse in all years, it comes down slightly. I think the key might be in mortality improvement. You'll see that if you assume some incremental mortality improvement of 1.5% or 2.5%, this will bring it back down under 100% and throw in a little bit more of a worse lapse rate. You can get to 96%. So I would conclude and presume that this would be how the reinsurers are looking at the term world. So how much to retain is going to be a little easier question. I remember 15 years ago, you never reinsured anything, and today the table has totally turned. You really want to reinsure almost everything that moves.

TABLE 3
REINSURER'S PERSPECTIVE BASED ON ACTUAL DISTRIBUTION

Assumption	Net-to-Gross Ratio
Same as Direct	104.8%
20% Worse Lapses	104.1
1.5/Year Mortality Improvement	99.7
2.5/Year Mortality Improvement	96.4
2.5/Year Mortality and 20% Worse Lapse	96.0

So let's take one more look at our actual distribution in Chart 13. We've done a valuation of all the direct business. We've spun off all the reinsured business and have done a valuation. Now we want to see what is left over. Our net-to-gross ratio is 81.2%. This is on a one each basis; this is not an actual distribution. This doesn't look too bad; it's actually starting to look pretty good.

Let's look at our dollar profit for each unit sold (Chart 14). The high ages are definitely where we'd like to be. When multiplied by an annuity factor, it doesn't change (Chart 15).

Now we'd like to take a look at what our net-to-gross premium ratios look like on the actual block (Chart 16). We apply our valuation to our entire block; it's still healthy, and it stays healthy. We have some small problem at the low issue ages

but, overall, it's pretty healthy. Charts 17 and 18 show our profile for the dollar profit per unit, and the present value per unit.

Table 4 shows, in the far left-hand column, what your profile would look like if you didn't have any reinsurance. Your net-to-gross ratio is 98%, and the total present value of profit is \$5.589 million. On the far right-hand column, you retain nothing. If I retain nothing, why do I have any gross premium? It's just the policy fee coming through. If you reinsure everything, the number in the lower right-hand corner, \$17 million, looks pretty attractive.

TABLE 4
HOW MUCH TO RETAIN

	100% Retain	75% Retain	50% Retain	25% Retain	0% Retain
Policies	62,841	62,841	62,841	62,841	62,841
Units	21,477,850	16,108,387	10,738,925	5,369,462	0
Gross Premiums	\$37,385,903	\$29,217,686	\$21,049,469	\$12,881,252	\$4,713,075
Net Premiums	\$36,638,296	\$28,080,186	\$19,522,076	\$10,963,966	\$2,405,856
Net-to-Gross	98.0%	96.1%	92.7%	85.1%	51.0%
One-Year Profit	\$747,607	\$1,137,500	\$1,527,393	\$1,917,286	\$2,307,219
Profit/Unit	0.03	0.07	0.14	0.36	N/A
Annuity Factor	7.5	7.5	7.5	7.5	7.5
PV Profit/Unit	0.26	0.53	1.06	2.67	N/A
Total PV Profit	\$5,589,919	\$8,512,189	\$11,429,853	\$14,347,518	\$17,265,481

Table 5 is a hypothetical case. If your reinsured net-to-gross ratio was not over 100%, then this might be a slightly more meaningful exercise in determining how much you want to keep and how much you want to reinsure. What does it do to your top line and what it does to do to your bottom line?

We've done an exercise with pricing assumptions. This is the type of thing you want to do with your pricing assumptions to get a feel for what kind of product you have because this is probably how it will behave. Now we have to set up GAAP reserves, and we need to reconsider each of these assumptions.

For issue cost, we want to reflect the actual issue cost at an issue-age basis; lower-sized bands could theoretically cost less to underwrite and cut off ages for more underwriting. You also want to chew up your expenses at each reporting period. Some people wait a full year before they start to true up. I think it's a good idea to true up, quarterly and maybe even monthly if it's a hot line of business.

Maintenance expenses are usually \$25 a policy per year. That seems to be the universal number. It's usually a fairly modest number like \$25. For commissions, you generally use the rates that are published with the agents. You would, of course, true that up every quarter, and you do want to be able to capitalize your bonus amounts. In many situations, a bonus amount is a function of a calendar year's performance. When somebody sells products in the first part of the year, there generally is an accrual made in accounting for what bonuses might be. You need to make sure that when you true up, you captured the accrual of the bonus. That often will be accrued each month throughout the year, fine tuned in January or February, and paid in March. So you need to make sure your reserve factors and assumptions tie in with that accrual process because it doesn't get converted to cash until two months after the end of the fiscal year.

TABLE 5
HOW MUCH TO RETAIN/ HYPOTHETICAL CASE

Ceded Net-to-Gross Ratio: 104.8%					
	100% Retain	75% Retain	50% Retain	25% Retain	0% Retain
Total PV Prof	\$5,589,919	\$8,512,189	\$11,429,853	\$14,347,518	\$17,265,480
Ceded Net-to-Gross Ratio: 99.0%					
Policies	62,841	62,841	62,841	62,841	62,841
Units	21,477,850	16,108,387	10,738,925	5,369,462	0
Gross Premiums	\$37,385,903	\$29,217,686	\$21,049,469	\$12,881,252	\$4,713,075
Net Premiums	\$36,638,296	\$28,551,761	\$20,465,226	\$12,378,692	\$4,292,157
Net-to-Gross	98.0%	97.7%	97.2%	96.1%	91.1%
One year profit	\$747,607	\$665,925	\$584,243	\$502,560	\$420,918
Profit/unit	0.03	0.04	0.05	0.09	N/A
Annuity Factor	7.5	7.5	7.5	7.5	7.5
PV Profit/Unit	0.26	0.31	0.41	0.70	N/A
Total PV Profit	\$5,589,919	\$4,983,278	\$4,372,030	\$3,760,782	\$3,149,834

I usually see people using pricing lapse rates, and you do have to consider the shock lapse at the end of the period. Let's say, in this example, I have a ten-year term product. It did convert to either another ten-year period or annual renewable term (ART) to age 107. You need to look at a couple of things. First, what will your administrative system do with this plan if it does convert? In many cases, a new plan will be assigned. So if you develop factors for durations 11, 12, 13, and 14, there could never be any plan code or any in-force business to which those could

be applied. So that is one of the first things you need to check. What will your administrative system do? The second thing you need to check is if you do keep the same plan code, you have to find out what happens to the issue age and issue date for this second renewal period. Some systems will automatically update things by ten years. Others keep the original. So if you're developing factors to apply to this, you need to be aware the base upon which they'd be determined.

Mortality rates are usually based on the pricing rates often because you might have 16 or 32 rate classes. Where else would you get any kind of mortality assumption? If you went to Society of Actuaries tables, you might start out with something but by the time you blew it up and tried to make it fit with all these rate classes, you would probably be spending a couple of weeks before you concluded that it was impossible to do. Then you drop back to your pricing rate. So I would just skip that whole two week part and go right to the pricing rates and see where it takes you. You generally do not have improvements in the direct company's pricing.

One of the reasons is because the illustration actuary act is here now, and that doesn't really permit the inclusion of projected trends or improvements to reflect relatively recent experience. So you generally won't find your own direct assumptions included in the way of significant mortality improvements like I illustrated earlier. Of course, we must have a provision for adverse deviation, and I think this is pretty challenging. That number generally is always very close to 100%. How much worse can you make it? Lapses are usually left alone, interest rates are often level. A higher rate may actually make it less profitable because you have a big investment up front. You could add a percentage increase for mortality. It's difficult to establish a provision for adverse deviation (PAD) in the context of direct only. You must have your reinsurance there in front of you as well, and a modest increase in mortality does have a large impact on your GAAP margin.

I will recap what I recommend for setting up GAAP reserves. First, put in your pricing assumptions for all the cells and all the reinsurance. You have to get comfortable that this is where your pricing people and your marketing people want you to be and if there's something that doesn't make sense, you have to work it out. You have to go back and do some more research. By being able to match pricing assumptions, you really get a lot of confidence that you've captured all the nuances of the product. The second round would be to then convert this pricing to GAAP by adding a provision for adverse deviation. Frankly, at this point, it will be your story; they're your numbers and you frankly don't have to go to pricing. It will be your best expectation and your best beliefs and you'll be explaining it. What you should do is automatically establish a third round.

You've done all this work at the beginning, such as checking and reflecting on pricing assumptions. I would not like to see that go down the tubes and be forgotten. That can become the basis for your gross premium valuation. A year later or two years later when you need to look at recoverability loss recognition, you can change these assumptions and make them your gross premium. Then you can demonstrate where you stand on the block. So I like to look at a three-step process. First, I match the pricing; second, I do GAAP; third, I establish a gross premium valuation for use in following periods.

A special consideration is the shock lapse rate. Like I discussed earlier, you need to find out what your administrative system is going to do with somebody who reenters in a later period. If you use say 80% for that final lapse rate or the year ten lapse rate, you need to make sure that 80% is applied at the first opportunity the person has to pay the higher premium. Remember the premium's going to quadruple or quintuple, and if you assumed a monthly mode and you put an 80% lapse rate in there for your ten, that's actually going to kick in eleven premium payments before you want because the person would still be paying those year ten premiums on a monthly basis. If you just put it in as your ten, it gets applied too early, but it works fine for annual.

So you really need to have two input streams based on mode to capture and handle this lapse rate correctly. And one way of doing this is through a Fackler formula. I understand the term Fackler is no longer on the syllabus. A Fackler formula for doing a terminal reserve is shown below:

FORMULA A
FACKLER FORMULA—TERMINAL RESERVE

$$\begin{aligned} & ({}_{t-1}V + P)(1+i) - DB * q_x(1+i/2) - CV * q_w / (1 - q_d) * (1 - q_w) \\ = & (3.00 + 1.50)(1.06) - 1000 * .00132 * (1.03) - 0 * .80 / (1 - .00132) * (1 - .80) \\ & = 4.77 - 1.36 - 0 / .99868 * .2 = 3.41 / .19974 = 17.07 \end{aligned}$$

The prior reserve plus premium times interest, minus the death benefit, minus the cash value, is all divided by decrements. Take a look at the middle term. You'll see one minus 0.8 in the denominator at the end, and that is our 80% lapse rate. So to go trauma prior terminal which was \$3 to the next terminal by dividing by 0.2, you end up with a phenomenally big number, \$17.07. Algebraically, that's right. Notice that, at the bottom, the last lower right, you have 3.401 divided by almost 0.2 and that skyrockets that reserve number. Now if you're doing some type of average mean reserve, \$3 at the beginning plus premium and a \$17 at the end, you're going to have a huge benefit reserve, a huge deferred acquisition cost, etc., and you'll be spending that entire year explaining what's going on with your reserves.

So is there a better way? Perhaps. I'm calling this a final reserve as opposed to a terminal reserve. There's a difference in the formula below:

FORMULA B
FACKLER FORMULA—FINAL RESERVE

$$\begin{aligned} & ({}_{t-1}V + P)(1+i) - DB * q_x (1+i/2) / (1 - q_d) \\ & = (3.00 + 1.50)(1.06) - 1000 * .00132 * (1.03) / (1 - .00132) \\ & = 4.77 - 1.36 / .99868 = 3.41 / .99868 = 3.42 \end{aligned}$$

Look at the denominator. You'll see the one minus Q has dropped out. This is the formula that would be used to apply the throughput the year before these big lapse rates are expected. In this case, your ending terminal reserve is 3.42. You really do want to apply this type of number to everybody in the tenth year because they're still all there, and they haven't left yet. So by modifying your denominator, you can have something that can get you on the 7:00 train and get home at night.

There are some special considerations. You may a deal with the policyholder, and he or she pays monthly; the contract with the reinsurer is annual. You might have an apparent anomaly in your reserves. You set up a small monthly reserve on top, but then you deduct a huge annual reserve which is correct. It looks strange, but it's really the prepayment of a full-year of premium (which you didn't collect yet), or the prepayment of the mortality charge. Another interesting thing is if your policyholder is paying you monthly, you would set up assumptions accordingly, and your reinsured is on an annual basis. Even though the reinsurer is on an annual basis, you will have monthly lapse rates on that product. So you need to bring down and transfer your lapse assumptions to make it uniform throughout the year to match a policy mode that frankly isn't being paid with reinsurance but that's what the direct policyholder will be paying.

For the most part, I've talked about co-insurance. There are some extra considerations if it's yearly renewable term (YRT). The first big question is what is the premium? *Financial Accounting Standard (FAS) 60*, the old audit guide, says profit should be a level set of premiums. You have to ask yourself what your premium is. We've seen this being handled in different ways. One method is to set up the direct reserve as a percentage of the direct premium, paying a level payment. There is a separate set of calculations where all the reinsurance reserves are done as a function of an increasing cost-of-insurance (COI) cost. So, both by themselves, produce profits that are a level percentage of that particular piece's income stream, but when you add the two together, you do not get the level percentage of premium that results from the netting of the two premiums (direct minus the YRT premium).

So I think this is pretty much undefined territory. I haven't seen too much uniformity or really too many opinions expressed as to how it should be. A third way of looking at that would be to transfer your reinsurance stream of premiums to even take it out altogether from your revenue stream—your premium stream—and just use it as a net offset in your death claims. There are three ways to go for YRT.

Term insurance can be sold in a universal life policy. I'd like to illustrate how that might turn out if you don't take your time and set things up correctly. They have a no-lapse guarantee, a low level of premiums, and often a level COI. The question is, what if we had originally set up this term plan as part of regular universal life insurance? You might have a time to get it set up because you sold only a few policies. We put it in our regular universal life (UL) model, but maybe we let it sit there too long. What I've done is construct a small model office.

By count, it's 50% UL, 50% term, but by fund, it is virtually all UL. By premium, it is mostly UL, and again the term product, is a ten-year product. Table 6 shows how earnings would result. In the first example, it frankly was a careless application and we didn't take the time to segregate the two. You can see the earnings stream as if everything was done under UL assumptions. But if you had taken the time to segregate the two out and prepare FAS 97 cells for each one, each one would have different assumptions. The earnings definitely do emerge. So you really need to be splitting these two types of products from each other.

TABLE 6
TERM INSURANCE ELSEWHERE—INCOME STATEMENT

Year	1	2	3	4	5	6	7	8	9	10
Commingled (All UL Assumptions)										
	\$2,437	\$2,325	\$2,012	\$1,702	\$1,411	\$1,157	\$968	\$810	\$669	\$598
Separated										
UL	\$1,509	\$1,700	\$1,620	\$1,488	\$1,342	\$1,211	\$1,145	\$1,105	\$1,083	\$1,073
Term	595	545	495	451	411	373	345	317	183	13
Total	\$2,104	\$2,245	\$2,115	\$1,939	\$1,753	\$1,584	\$1,490	\$1,422	\$1,266	\$1,086

That brings me to the end of my remarks. Now I'd like to introduce our third speaker who will talk about statutory and tax aspects of term insurance reserving. Our next and final speaker is Marina Adelsky. I met Marina about two years ago. Marina was born in the Soviet Union which, of course, is Russia today. The Soviet Union no longer exists. She went to the University of Leningrad, and of course we all know Leningrad has changed its name. Marina has been with Prudential, but she just recently joined Price Waterhouse.

Ms. Marina Adelsky: I will be talking about statutory and tax reserves. There are less selections and options than what we have in GAAP, but there are still some. In this session, I'm planning to outline what options are available in determining statutory and tax reserves. I want to demonstrate the resolutions of selection options on two different models. One is a policy for one age, and the other will be a typical portfolio of term policies. I will very briefly address some of the insurance issues, and finally, I will provide a XXX regulatory update. I will also give a little refresher on XXX.

Let's discuss the plan that I will be using to demonstrate results of the impact of choosing different options in statutory and tax reserves. This is a regular 20-year term plan with level death benefits. Premiums are level for ten years and increase thereafter. The policy is issued to a 35-year-old-male. I will only be talking about standard insurance. The issue date is 1997 so the tax interest rate is 6.33%. I will assume annual premiums, and I will specify in these demonstrations what statutory and tax relationships I selected.

The term portfolio has a combination of different, but fairly typical products. It has risk specifications, smokers, nonsmokers, and select for all ages. It has 4,200 policies altogether, and I assume that all of them were issued in 1996. I projected results for five years, but I didn't do any work on lapses or anything like that. This is a stationary population reserve projected for five years just to demonstrate how reserve changes over the course of years for the whole portfolio.

When I was preparing for this presentation, I was planning to concentrate on different choices. I want us to be aware that we are making this choice. So some people probably think about what kind of options are available when you do statutory and tax regulation. Everything is regulated. You just have to follow regulations. There is no room for creativity. So there are some options, but they are not options that are available to a regulation actuary who is doing statutory and tax regulation. You can choose different reserve methods or different mortality assumptions for basic reserves. You can use different mortality assumptions for minimum reserves, and you can choose different interest rates. You also have options with regard to gross premiums in deficiency reserves. This is also kind of what you choose to compare with your net premiums.

As promised, this is a quick XXX refresher. XXX became Model Regulation 830 in March 1995, and I only will outline the items in the regulations that impact term insurance; I will not concentrate on anything else. First, it introduced new 15-year select factors, smoker, and nonsmoker distinct. Before XXX, we only had ten-year select factors. It introduced a new reserve method for contracts with changing premiums and benefits. This reserve method asked us to calculate reserves as a

maximum of the unitary and segmented method. Unitary is what we got used to; it's our regular Commissioners Reserve Valuation Method (CRVM). Segments are determined as CRVM for the first segment, and net level premiums thereafter. The segments are determined by comparing mortality ratio with gross premium ratio in two different years. The last point is pretty important, though it really doesn't produce very different results; we still have to remember that Regulation 830 and its New York counterpart ask us to calculate segments differently. One asked us to use minimum mortality to calculate our segments; the other asked us to use basic reserve mortality. So if they are different and you are following regulations in New York, you have to remember this.

I will demonstrate a basic unitary and segmented reserve for a 35-year-old, nonsmoking male (Chart 19). The first segmented reserves are ten years, and this is level segment. Then they are segmented and unitary and are exactly the same, but in the first ten years, of course, your segmented reserves are much higher than your unitary reserves.

So now I think we can start discussing our different options, and we will first look at reserve methods. I want to discuss a tax reserve method called the NAIC method, which is in effect on the date of the issuance of the contract. This is a huge change. We're changing the premium and we are changing the benefit contracts because now we are required to calculate these reserves using a maximum of unitary and segmented. I attended a workshop at the 1997 Valuation Actuary Symposium, and the moderator asked if anybody in the group calculated tax reserves using XXX for products that were issued after March 1995. I was the only one who raised my hand, and I think he was surprised that there was only one hand also. You can always say that our tax reserve should be less or equal to statutory reserves. We can say that if we calculate our statutory reserves using our regular CRVM. Then our tax reserves are in compliance.

There are some other considerations for reserve methods. People who are doing valuation in New York inquired about why one should use XXX in New York. They did not raise their hands to inquire about calculating tax reserves using XXX. So there are a couple of options that I wanted to demonstrate. One is when our statutory method is identical to the tax method, and the other is when the tax method, is CRVM-830 or XXX and statutory is CRVM as specified in the law, (in the standard valuation law). I just wanted to point out they both have kind of the same advantage. Number two, statutory reserves may have lower deficiencies, when I use 830 current select factors rather than ten-year 80 CSO select factors, I used new select factors, like the 15-year select factors.

In Chart 20, the top line is statutory reserves calculated using XXX; the middle line is tax calculated using XXX (as we're required to do), and the bottom line is our regular CRVM. These are the reserves for five years for the term portfolio. I wanted to point out that 1996 is the year when all these policies were issued, and when all these reserves are equal. It kind of surprised me a little bit, but then if you use fully continuous functions, and if $C \bar{D}$ doesn't really depend on the interest rate that you are using, then this is legitimate.

Now the next option that we have is to select mortality for basic reserves, and there are some considerations. We must make assumptions as to payment of premiums and death benefits. Tom asked me to give you a curtate, fully continuous, and discounted continuous year. Curtate is when you pay premiums with your own payment of premiums at the beginning of policy year and death benefits at the end. It is fully continuous if we assume continuous premiums, and benefits are payable at the moment of death. Discounted continuous is almost the same as fully continuous, but we return an earned portion in the year of death.

For tax reserves, we use the prevailing standard table without select factors. I think that this is good. We are allowed to use either ten-year select factors in calculating basic reserves or 15-year select factors, 150% of the new select factors, but if the statement adopts Regulation 830, then we cannot use 15-year select factors.

I want to mention an obvious point, which is how pricing actuaries and valuation actuaries should work very closely together. When pricing actuaries test term plans for a nonforfeiture benefit, they should use the same mortality as the valuation actuary does in doing the valuation. This should be coordinated.

Chart 21 is a great graph of XXX reserves for smoker, nonsmoker, and composite mortality. This is for XXX, but the relationship is practically the same for CRVM. When I use it for a portfolio of policies and I tried it for a couple of different portfolios, composite mortality assumption produces approximately 10–15% higher reserves than smoker/nonsmoker distinct. Of course, it does depend on your population and your in-force business. So here are a couple of options for mortality assumptions for basic reserves. Tax and basic statutory reserves use the same mortality, and basic reserves use select mortality. There are some advantages and disadvantages for both of them.

Let's discuss a basic reserve using 15-year select factors and a basic reserve without use of select factors. I demonstrated it using the XXX method (Chart 22). Though mortality factors extend for 15 years, our first segment is ten years and this is what the regulation requires us. It only allows us to use the new select factors in the first segment which is ten years in this case. If our first segment would be eight years,

then for the remaining two years we could use ten-year select factors, and then we go to ultimate mortality. In our case, the first segment is ten years and then we use ultimate mortality.

Saying that mortality assumptions for minimum reserves are not needed for tax reserves is not quite accurate because if we follow the regulation exactly, the regulation requires us to use minimum mortality to calculate the segments. I mentioned before that it doesn't really produce that much of a difference, even if your mortality is a little bit different. You have to assume something, otherwise you don't know how to calculate your segments. There are some other considerations:

MORTALITY ASSUMPTIONS FOR MINIMUM RESERVES—CONSIDERATIONS

- Not needed for Tax reserves; however, the minimum reserves may impact the statutory cap
- Usually, the lowest allowable mortality produces the lowers Net Annual Premiums and the lowest Minimum Reserves
- 120% of 15-year S/NS distinct select factors may be used for new business even in the states that did not adopt Reg. 830, but it must be demonstrated that the reserves **in aggregate** are at least as high as required in the state.

In option A, we use smoker/nonsmoker distinct mortality with ten-year select factors. In Option B we use 120% of 15 years, smoker/nonsmoker distinct select factors, and these create horrible deficiencies if you use ten-year select factors. The deficiencies are huge (see Chart 23). Then we calculate the reserves using XXX, but using what is allowed—15-year select factors. Deficiency is now manageable and it's pretty much the same as what happens if we use CRVM and ten-year select factors (Chart 24 and 25). So these are the things to consider when you set up your mortality for your minimum reserves: What kind of factors are you allowed to use? What kind of things do you have to consider if you use the factors that you are not allowed to use like the aggregate sufficiency test?

The next point is interest rates. When you do mortality assumptions, there is a lot less slicing and dicing that Kathy outlined in her presentation, but there is some. Interest rate considerations are pretty much straightforward. If you have the tools and time, you can do refined assumptions. If you don't have time, you can assume a long-term rate. For some plans, you have to use long-term rates but for some ages, you can use short-term rates. If it's a term-to-65, you have to use long-term rates, but if the age is 55, then you can use short-term rates, and the only difference is I think a lot of work.

Now gross premiums used in calculating basic and deficiency reserves are the premiums that you use to compare with your net premiums when you want to see how deficient your business is. The law is not very clear in defining what premiums

you should use. There is some evidence that gross amortized premiums may be used. When you calculate your XXX segments. You shouldn't use your policy fee but when you calculate your deficiency reserves, you may use your gross premiums with the policy fee. This is allowed and it seems to be allowed. That improves your deficiency reserves, but it makes you consider two sets of loss premiums—one with fees for deficiencies and one without a policy fee for segment determination. So there are options and some deficiency reserves depending on this option. There are some considerations, advantages, and disadvantages.

Allow me to make a very brief mention of the reinsurance issues. We shouldn't forget that reserves are for substandard and conversions when we do the insurance reserves. I think that minimum reserves are set up by the company that's writing business, depending on how they do minimum reserve calculations. The ceding company is not allowed to take credit for any excess over what the reinsurer is holding.

Mr. Frank A. Hacker: Tom, I just want to know if you have any guess as to when there will be enough states to meet the 51% test.

Mr. Herget: I would say another year. Marina, do you know how long it will be?

Ms. Adelsky: I think the ACLI is considering pushing states to adopt it by the year 2000, even if this ratio is lower. That's what they told me.

From the Floor: This was an excellent session by the way. I have a question on recoverability. Do you measure net reinsurance or just gross? How do you handle it?

Mr. Herget: If you didn't do it net, you couldn't get off the ground so it kind of answers itself.

From the Floor: It doesn't say that the accountants will go along with that.

Mr. Herget: I think we just have to be a bit of a salesperson. You really couldn't sell the product without it. It also reinforces the relationship that you need to have with your reinsurer.

From the Floor: And when you're doing your GAAP reserves separately for direct and reinsurance, it is because of the different assumptions that they're using, right?

Mr. Herget: No. I think you need to use the same assumptions. The direct writer has to have the same assumptions for direct and ceded, but you obviously get a

little curious as to what they know that you don't know. That's why I showed what I did.

From the Floor: How about Regulation 149 which is a little thing in New York where we have to test the cash values to see where they come at? It's like the analog of 147. Is anybody doing that in the audience? I've just worked on it for a company and you get some interesting results.

Mr. Herget: Why don't you share some of those results?

From the Floor: You can't really issue stuff after 50 on a 20-year term plan because you get some problems that you really can't solve. The reason you can do it up to there is they allow you to go to age 70 on a level premium situation. Regulation 149 kicks in when you have an increase in premium at any particular point in time. There's a lot of testing that has to be done. I've talked to the New York department, Bill Carmello, and they don't really want all the paper up there, but you really have to do it and see what the results are.

From the Floor: I have one other question. With all of these bands and preferred and super preferred, is it really important to have them? I mean to keep track of all of them is very difficult. When you have to do things like Regulation 149 and even a 147 test, it just doesn't seem to make any sense except that you want to get your name up there. Does everybody come up at the end? I mean are there really any smokers?

Ms. Hansberger: That's a good question. Nobody smokes anymore until they have to take a urine test. But is it important? I think time will tell. Even though I'm in marketing, I would say it's become a little ridiculous. You have to wonder just how super preferred a person can be. I think you'll eventually see the pendulum swing back because people like you are going to go crazy trying to keep track of 64 rate classes. I think time will also tell that in fact we're not able to slice and dice as finely as we think we are, or at least as much as we say we are. There won't be the mortality improvements that we expect in some of these finer rate classes, and it will be just as convenient to lump them together. Your marketing people will tell you that today it's necessary. Competition is, to a degree, dictating it, and the spreadsheeting that's going on in the brokerage arena is, to a large degree, driving that. If you want to compete, your name must pop up to the top of that spreadsheet.

From the Floor: Have you ever looked at the actual sales for the various things? Is it at the top or the bottom, or is it an even distribution? In other words, I'm getting at the question, do you really need them all? I guess sales wise you do.

Ms. Hansberger: Well, there are some companies that will tell you they're thinking about going back to less classes, and some companies are telling you they're going to go to more classes because of competition. Some companies are notorious for quoting wonderful, super preferred rates, but only 3% of the population who apply for them get them. That pretty quickly turns the field off and that pretty quickly becomes a moot point. Again though, companies that have been resistant to a finer slicing and dicing are losing business to companies who are able to quote a super preferred rate versus just a preferred rate. So you have a lot of confusion in the marketplace right now, but I do think that the pendulum will swing back to a more manageable level, and that the actual experience is going to dictate that.

Mr. Paul N. Smalley: My question was for Kathleen. If I caught your answer just a second ago, the lowest rate still wins, at least where your interest lies.

Ms. Hansberger: Lowest rate does still win. Much of that is because companies have made great technological advances in being able to underwrite quickly. Instead of waiting for reams of paper to come from Home Office Reference Laboratory, they now get an electronic transmission. Much of the underwriting screening process now goes in the computer and doesn't require a person to look at it. So turn around time, regardless of how many rate classes you have, is becoming better across all term carriers. I will say that placement rates vary greatly by the carrier, and you'll have carriers out there that will quote an extremely low rate on a super preferred basis and over about six months, the field starts to realize that the placement of that rate is darn near impossible. You'll see a shying away from that carrier and a move towards carriers that are able to actually provide the rate that they quote. The reason is that there are so many carriers out there providing those kind of rates. I think as companies contract their rate classes, then I start to look at other things like service or bonus programs that take all my business into consideration. Right now, because there are so many carriers competing on rate, that's the winner.

From the Floor: What's your comfort level regarding you and your producers administering saliva tests in an effort to quicken the placement?

Ms. Hansberger: We love it if the carrier's comfortable with it because of the speed. We are concerned about the carrier's comfort level with it. It's new, it's different, and there is an element of liability that we're not used to taking on. We do like the speed of it but I think that, in the long run, with rate classes, saliva testing, field issue, and with all of these technological advances, the bottom line is the agent is concerned that the carrier's going to introduce a service that they'll have to take away tomorrow. We'd much rather not have some of these things than to put them in the field and then have to pull them back out. It's much more

difficult for us to take that kind of thing out of the brokerage community once we introduce it, than it is to wait until everyone is a little comfortable with it and then introduce it.

Mr. Gregory D. Adams: I have a comment and a question. One reason for subdividing the classes is because, by doing so, it is going to put large amounts in that one preferred class that you have. I think you may very well wind up having mortality that you don't think that you will have due to antiselection. We have a great amount going into our preferred class. We only have one at this time. I mean it's too new to know, but I'm concerned.

My question is on the reserving side with California. California says XXX is acceptable. The other option for 1997 and later issues is to do a gross premium valuation analysis. Are most companies doing that? What's your feeling, Tom?

Mr. Herget: I really haven't heard of too many companies actually doing that, but California is still about 2,000 miles away from me.

I want to make two other comments. I talked to somebody before the meeting and they asked if a gross premium valuation might be a good way to do a statutory reserve given how XXX is very complex. This ties in with the National Alliance of Life Companies having a meeting in a couple weeks to develop a counter proposal for XXX to present to the Life and Health Actuarial Task Force. I don't think it would be necessarily that good. It has a tendency to front-end profits. I do want to alert you to this possible meeting coming up, and maybe another round of examining on how to reserve XXX.

We've seen how the margins are fairly small on this term business. You can get some boost into your GAAP profitability if you actually take the time to set up a GAAP reserve basis on your supplemental benefit premiums. You can find a table for your accidental death and dismemberment rates. Being life and annuity actuaries, it's a little tougher to find one for a waiver premium that you're familiar with. You can get some significant profitability out of those. They're only riders, but a large percentage of a small rider was certainly a very impressive number compared to 0.5%, which is a bigger number.