

**1995 VALUATION ACTUARY
SYMPOSIUM PROCEEDINGS**

SESSION 8

Small Company Issues

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SMALL COMPANY ISSUES

MR. A. GRANT HEMPHILL: I'm vice president and actuary at IL Term Insurance Company, which is a subsidiary of Indianapolis Life. I'm also vice chairperson of the Smaller Insurance Company Section Council. I'll be your moderator, but I'm also going to talk about the role of actuaries in strategic alliances. John Dawson will speak second. He's vice president and actuary with Willis Carroon Corp., where he has a wide variety of consulting assignments. He will discuss the cost of regulatory compliance. Then Jim Thompson, who is a consulting actuary with Central Actuarial Associates, will speak about cash-flow-testing software. I should point out that Jim is the editor of *small talk*, the newsletter of our section. I think it's a very successful newsletter, and he deserves a lot of the credit for that. John O'Sullivan is vice president and actuary of Protective Life. He will be discussing setting and validating assumptions. He is also our leader, as the chairperson of the Smaller Insurance Company Section Council.

Just for a few moments I'll speak about strategic alliances, also known as joint ventures. These are just deals where insurance companies cooperate. They work together to accomplish something.

The Life Insurance Marketing and Research Association (LIMRA) recently did a study of what it called manufacturer distributor relationships. In a survey of over 100 companies, LIMRA found 53% of them had entered into some sort of manufacturer/distributor relationship.

Four examples of strategic alliances between companies would be product development, third party administration, brokerage, and private label.

By product development I simply mean one company does the product development for another. The most likely companies to be doing this are reinsurance companies. They'll provide product development in exchange for reinsurance.

1995 VALUATION ACTUARY SYMPOSIUM

Some companies will administer blocks of business on a third party basis. Likely candidates for that are health insurance and purchased blocks of business.

Brokerage is the most common and the simplest example. One company licenses its agents with another company to distribute the latter's products. Common examples here are disability income, term insurance, and survivor products.

I would like to discuss private labels in more detail. A company provides a product for another to distribute on that second company's paper. The distributing company uses its own paper. The actuarial implications of doing that for the distributing company include all of the problems for the above relationships; so I can cover most issues with this one example. These are just examples. There are all sorts of strategic alliances that are going on.

Let's consider a scenario. You are the actuary at a small life insurance company. The marketing people come to you and say that they have found a way to sell the product that they've always needed; the one that you didn't have the time, the resources, the knowledge, or the administrative capability to provide. A manufacturer of that product will provide it. The manufacturer will file it on your paper. The manufacturer will issue and administer it in your name, provide the reserves, and 100% reinsure the risk. There is nothing for you to do. Well what do you do? I have some suggestions.

Today due diligence obviously comes to mind. The marketing department has probably already chosen a reputable and strong carrier, but you should participate in or lead the due diligence effort. Marketing has probably chosen a competitive product. I think it's up to you to review the product -- if you can review its pricing -- and make sure it has long-term staying power. Will the projected values actually be met? It's likely, after all, that you will be the illustration actuary for that product.

Secondary effects must be considered. Cost ramifications are an example. If a new product replaces sales of your existing products, then your issue units will decline. Your units in force and your unit

costs may be disturbed. As another example, if this new product has very strict underwriting standards, it may get some of the better risk that you would have issued. Your mortality might erode.

The last thing I want to discuss here is shared pricing assumptions. This would apply if you were keeping some of the risk. Then you'll probably want to do something like traditional profit studies. In that case you need to develop the pricing assumptions mutually with the manufacturer of the product. The manufacturer understands the product better, but you know your field force and your marketplace better. So some collaboration is required.

Let's return to that scenario. In the extreme example again, the manufacturer of the product is saying, here's your reserve run, all you have to do is book it in Exhibit Eight. So the question is, what do you do? The real issue is reliance. Can you rely on what you've been provided by that other company? The American Academy of Actuaries through its Actuarial Standards Board has given us actuarial standards of practice. Number 4 concerns opinions, not including asset adequacy analysis. Number 22 covers opinions based on asset adequacy analysis. In both cases, it says, by default, you may rely on the data that you were provided. You have to disclose the fact that you are relying on that data. It also says that you need to review the data for reasonableness and consistency. But nonetheless, you can rely on the data being provided by another and disclose that reliance.

Can you rely on the actuaries who did the reserve work? Those same standards of practice, in each case, say that you can get opinions from other actuaries about certain blocks of business. You can file those opinions. You can mention them in your actuarial memorandum. But you need to review them, and comprehend them, and you need to form your own overall opinion about reserve adequacy, without relying on another actuary. So the answer is you can rely on data supplied by others, with qualification. You cannot rely on actuarial work done by another. Now if you read the standard of practice on cash-flow testing, you get a slightly different answer, but I think cash-flow testing is a broader subject than reserve opinions. You need to do cash-flow testing on some reserve opinions but you might be doing cash-flow testing for a lot of other reasons. Maybe for those other reasons you can rely on other actuaries. This reliance issue will be discussed in other sessions, and you may learn a lot more about it then.

1995 VALUATION ACTUARY SYMPOSIUM

I want to discuss a few more details on the reserves. Reserve setting -- statutory minimum standards -- would seem to be simple and not a problem. Perhaps your company holds continuous reserves. Now you're being provided curtate reserves, and various adjustments to those reserves. Perhaps you have always issued age-nearest-birthday business, and now you're getting an age-last-birthday product. There are a lot of little things like that that need to be thought through.

There could also be substantial differences if the manufacturer of the product is domiciled in or operating in certain states and you are domiciled in or operating in others. You might really come up with a different valuation standard.

Concerning reserve audits, you just need to have the right to audit the provider of the product and verify the provider's work. You need to also provide that your auditors can audit the work that's done off site.

Cash-flow testing is probably the most complicated issue. There is one case where I think it could be simple. Cash-flow testing applies to the net reserve. So if you 100% coinsure the risk and if you do due diligence on the product provider, then I think your work is finished. But if you are keeping some of the risk, then now you're responsible for cash-flow testing. Can you depend on that other company for the cash-flow testing that it did? I really don't think so, because even if your liability is a parallel to that company's, your assets aren't.

To summarize, strategic alliances are fairly new. I think this has for the most part evolved in the last ten years. The concept's probably a lot older, but it hadn't started happening. It's growing rapidly now. It's evolving. Actuarial implications will be interesting. Occasionally they'll be unique. Actuaries need to be at least as creative as the people who are structuring the deals. In fact, I think it would help if actuaries are the people who are structuring the deals.

MR. JOHN D. DAWSON: I'm going to talk about managing the cost of compliance. I'm going to start with a compliance example from a different industry. Let's pretend that we're all going to get on an airplane and we're going to fly from Chicago to Los Angeles. You are the navigator, and it's

your job to satisfy various objectives. We want to get there as quickly as possible and we want to use as little fuel as possible, that's an expense issue. There's this great big thunderstorm sitting over Utah, and you need to take that into account. You have all the tools that you need. You punch everything into your computer, and you come up with your flight plan. Unfortunately, you're not going to be able to use that flight plan because we have regulators we need to deal with. In the airline industry they're called flight controllers. Flight controllers have a very important job. It's their job to make sure that airplanes don't crash into each other when they're flying up in the sky, and flight controllers take this job very seriously. They see the sky as a series of grid lines, and when you're flying through their air space, you have to get on one of those grid lines, and they're going to make sure that you follow all the other airplanes that are flying through that airspace. This big storm in Utah is going to be a big problem, because we're probably going to get stuck in between two small, slow moving aircraft. That's going to make us go slow and affect our fuel economy. That's regulation. That's compliance. We have regulations like that in our industry that hamper our ability to really do things efficiently and effectively because the regulators need to have assurances that we're not going to hurt ourselves.

Table 1 is fairly complicated, and the number down in the lower right-hand corner is not what is important. What's important here is the mechanics. This is the tool that I want you to have. This is the tool that you can use to figure out how much it costs for you to comply. It's a tool that we use in the consulting industry to figure out how much to charge you when you hire us to do something. I've listed some tasks that you have to do this year down on the one side. These aren't intended to represent all the tasks that you have to do, but they are supposed to be all the tasks for this fictitious company. I've listed the people across the top. I've allocated out all the different tasks to the different people so we know how we're going to get the work done, and where people are going to spend their time. We apply their cost per hour, and we figure out how much everything costs. It's a fairly simple thing, but if you haven't done this and you are managing your actuarial area, I suggest that you give it some thought.

TABLE 1
Valuation and Financial Reporting Activities

Tasks and Functions	Manager	Associate	Clerk	Admin. Assistant	Total Hours	Expected Cost
1. Maintaining Reserve System	\$ 40	\$ 600	\$ 360		1,000	\$34,535
2. Calculating/Validating Reserves	60	200	420		680	21,135
3. Certifying Reserves						
Cash-Flow Testing, etc.	20	50	15		85	3,561
Memorandum/Opinion	30	10	5	\$ 10	55	2,539
4. Experience Analysis	200	100	700	100	1,100	33,915
5. Financial Reporting/Accounting	120	240	280	600	1,240	34,562
6. Emerging Regulation	300	24	48	60	432	21,551
7. Developing Business Plans	1,000	600	200	60	1,860	90,873
8. Managing Department	600			1,100	1,700	57,494
9. Continuing Education/Exams	60	200			260	11,665
10. Professional Engagement	100	10	10	70	190	8,071
TOTAL EXPECTED HOURS	\$2,530	\$2,034	\$2,038	\$2,000	8,602	
COST PER HOUR	61.26	39.95	22.55	18.85	37.19	
TOTAL ANNUAL COST	\$155,000	\$81,250	\$45,950	\$37,700		\$319,900

It's important to figure out how much your employees cost per hour. This is the second piece of the tool (Table 2). There are a lot of ways to do this, but the most straightforward is to start with base salary. You have to add something for benefits and taxes. Across the country, about 40% of the base salary is a pretty good estimate of what benefits and taxes will cost, but if you have a better estimate for your company, by all means use it. Include things like bonuses, exam incentives, and I like to throw in departmental overhead, because I want cost to run my operation is allocated somehow to the things that we're doing.

TABLE 2
Determining Your Hourly Cost

Component of Cost	Manager	Associate	Clerk	Admin. Assistant	Total Cost
Base Average Salary	\$100,000	\$50,000	\$30,000	\$25,000	\$205,000
Benefits & Taxes (40% of Base)	40,000	20,000	12,000	10,000	82,000
Productivity Bonus	5,000	1,250	750	---	7,000
Exam Incentive Bonus	---	5,000	200	200	5,400
Departmental Overhead	10,000	5,000	3,000	2,500	20,500
TOTAL COST	\$155,000	\$81,250	\$45,950	\$37,700	\$319,900
HOURS WORKED	2,530	2,034	2,038	2,000	8,602
COST PER HOUR	\$61.26	\$39.95	\$22.55	\$18.85	\$37.19

This is an important step, because first, before you can manage the cost of compliance, you need to know what drives cost. You need to know where you're spending all of your time and where you're spending all of your dollars. In this example, we're spending hardly any time on cash-flow testing, but we're spending an awful lot of time on financial projections. If your goal is to reduce costs, this is going to be a good place to start. But the important step is taking action. Once we know what drives cost, then we can take action. Validate the budget against expectations. Did you know you were spending that much on financial projections? Did you know you were spending that much on continuing education? Review the relative tasks and make sure that they are in line with the value that those tasks are really providing to you. You can do this whether you're dealing with compliance issues or something else. But it's important to review them and make sure that you're applying your resources in the right places. Then identify additional resources you might need. If you do use something else, include in your budget the cost of borrowing employees; don't be afraid to hire temporary employees, and if you need to use consultants, this framework will give you the rationale to make sure that you're making a wise decision and that you're going to be spending the right amount of money.

1995 VALUATION ACTUARY SYMPOSIUM

One message that I want you to take with you is that I believe and I hope you believe that you need to be engaged in the actuarial profession and in the insurance industry and the regulatory process. You need to do that, but if you're not doing that, you're probably sitting there saying, gee John, I have all these other things to do. I have things that I'm not doing because I just don't have the time and resources. How can I possibly find time to sit on actuarial task forces and write papers and all that sort of thing? Well, as you say that, I firmly believe it's because you have so much to do that you have to be engaged. You can't afford to be blindsided by emerging regulations. That's a message that I hope that you take with you.

Now I'm going to tell a little story. When my twins were three, we took them to a restaurant for their birthday, and for dessert they had ice cream. The server brought out these huge bowls of ice cream for these little kids. It was warm in the restaurant and before they were done eating their ice cream, it had all melted, and they had these great big pools of melted ice cream on the bottom of their bowls. My wife and I were bracing for the worst because our kids tend to be kind of vocal when they're upset about something. But Jesse looked at Joshua and Joshua looked at Jesse. Then Joshua yelled, "Ice cream juice!" They picked up their bowls and they drank the ice cream juice. Your job is to make compliance be ice cream juice. Somehow you need to find some value in the compliance issues that we're faced with. And to give you an example, let's talk about Regulation XXX.

How many of you have been following Regulation XXX and know what it is? Most everybody. But for those of you who don't, I'll give you a thumbnail sketch. Its purpose, as it has been explained to me, is to ensure that the minimum reserve requirements for life insurance products are appropriate. It will require some products to have larger reserves, and many people believe that because of that, it's going to eliminate many product offerings. Those people will go on to tell you that because we're going to lose some products out there, we have a need to do product development.

There are still more people who say that Regulation XXX is characterized by complicated reserve formulas that are going to lead to the need to update your systems and maybe trash your valuation system altogether and get something new and different. Is Regulation XXX melted ice cream or is it ice cream juice?

When I talk to people about XXX, there are four different positions that people tend to have. The first position is the one that I hear most often. They'll say, John, we're ignoring XXX because it's not a problem for us. We don't sell those kinds of products. We don't have aggressively priced term. We don't have long-term guarantees in our UL policies. If you have that position because you've done the math, that's great. But if you have that position because you don't think it's a problem, I suggest that you take some time and look. Several of the regulators are pursuing acquisition of software that will enable them to make sure you're doing your job, and that your reserves are calculated correctly. If I were in your place, I would want to make sure that I'm doing my job before someone comes in for the state examination and find out that I have an XXX problem after all. Of course XXX is just a model law, so you do have some time.

The second position is kind of interesting. About a year-and-a-half ago, a few big-term writing companies said, gee, XXX is going to make our cheap term go away. If we sell a lot of it, people won't be able to replace their products with something else, so we'll have really good persistency. We can afford to decrease premiums and increase commissions. They started having fire sales and they've been doing that for a year-and-a-half. New York has adopted its version of XXX. The states that are looking at XXX now are looking at maybe the middle of next year, maybe the end of next year, before they will adopt XXX. That means those fire sales are going to go on for another year to year-and-a-half. Some people have characterized them as going-out-of-business sales. Regulation XXX, is it melted ice cream or ice cream juice?

The third position is, well, if it's going to make my reserves go up, then I have to increase my premiums, and if my premiums go up, people won't buy my policies, so I'll just pull them from the marketplace. If you take that position, you're ignoring the fact that some of those product features that are going to cause your reserves to go up are important product features for the marketplace. People like the guaranteed renewability and convertability of term policies. If you take that away from them, you're leaving a need in the marketplace unfulfilled. I think there's melted ice cream in there.

And the last one is, wherever there's something new, there will always be somebody who says, I have answers. I'll sell you something. There are consultants out there who will help you develop products that are going to meet the XXX challenge. There are software companies that either have or are working on solutions. Some of them will even give you their software to try it out, a great way to learn about XXX. And there are companies like Grant's, that'll develop products and then they'll do a joint venture with you so that you can have a product and they can share in the rest. Is it melted ice cream? I think that's ice cream juice.

So, in summary, managing the cost of compliance requires, in my opinion, four things. (1) You need to understand what drives cost, and I hope the tools that I gave you at the beginning of my presentation are helpful to you in doing that. Figure out where your staff is spending its time; figure out how much each thing costs; and then you can begin to manage things. (2) Streamline your processes and use technology efficiently. If you have members of your staff who are still doing things with a 286 machine, I suggest that you start looking at something that's a little bit faster and more powerful. Technology is going to enhance productivity, and it will make you operate faster. Technology will pay for itself. (3) You have to manage your internal and external resources effectively. If you do hire temporaries or if you do hire consultants, make sure you know what you're going to get and make sure that you purchase those services wisely. For your internal people, make sure that you're providing rewarding experiences and you're putting the right people in the right positions. (4) Finally, remain engaged in the profession and in the regulatory process. That's the only way that you're not going to get blindsided by emerging regulation and screw up everything else that you're trying to accomplish when you're managing compliance and the cost of compliance.

MR. JAMES R. THOMPSON: I'm going to be discussing cash-flow-testing software. There has been a proliferation of personal computer (PC)-based systems. We will not recommend any software or even mention any particular names or for that matter. I won't even answer any questions that purport to do so, or even do so in private conversation at this meeting. But what I want to do is show you some points to consider when making a choice.

First of all, when you get into the cash-flow testing, you have to remember to scope the problem. This is extremely important. Many companies are different and you have to do this yourself. There's no sort of standard list. You have to, first of all, understand what features you want in a model. There are a lot of models out there, and before letting people dazzle you with all kinds of features, think of what features you need. Some systems are very complex and they're very comprehensive. As you might expect, they often cost more. If you know what features you want, then you can find something that is cheaper and can still do the job. Some small companies are comparatively simple in operation, so you may only need to get a system that covers those features describing those particular assets and asset investment and reinvestment strategies that you need. Some companies are small or have niche markets and may only have one or two main selling products. Some of these products however, may be highly unusual and your company then may have certain peculiar modeling problems. You have to understand what these particular features are. There are other companies, on the other hand, that have a whole potpourri of inherited products from a dozen prior product development efforts, and you may have a very complex modeling problem for a very small company. You have to understand the scope of this.

Another point is, you must understand management's view of testing. Your management, in a small company, may be your company president. That may be it. Or you may be in a company where you may have the investment manager and a couple of other key people. Their view of cash-flow testing is very important. Is it a necessary evil or useful tool? If management views it as a necessary evil, then getting by with the cheapest possible software is a very high priority. Now there are other possible uses for cash-flow testing software. This goes back to the ice cream juice situation. Cash-flow testing is regulatory compliance. On the other hand, you have cash-flow-testing software. You can do projections. I know many companies that do a business plan. They have the top managers run away to some kind of retreat and come back with a plan. Everything has a certain constant return on equity (ROE) and sales go up and all kinds of other magical things happen. They design a five-year plan. Meanwhile in another department of the company is an actuary and he has a model that he's validated and tested and it's news to him that there's a company plan. Companies have a powerful tool here for doing some projections and they should use it. Now, of course, one problem is, if a company develops a business plan, it has new business. The cash-flow testing regulatory

1995 VALUATION ACTUARY SYMPOSIUM

model is in force. But it is relatively easy once you get an in-force model to design a simple new business model as an add-on, with simple types of products.

Here is another function: what about the value of a particular line of business, like in-force-to-date business or projected new business? What if you want to sell a particular block or trade a block? You can develop the value of the whole company. This might prove very useful if the company's up for sale. There are other features that you can use for software; one is dynamic solvency testing. This is currently required in Canada. There are some companies, in particular fraternal, that are both U.S. and Canadian. Then, of course, you have Canadian policy premium method (PPM) reserves. Another point deals with GAAP reserves. Many small companies are not on GAAP, but some are, and you can be on GAAP for any number of reasons. But the small fraternal and mutuals should bear in mind the current attitudes of regulators and rating agencies regarding GAAP. One reason why small companies resist this is because it looks like onerous compliance. What if someone comes up with some software innovations that help them comply? These are issues that you should be aware of.

Finally, I want to summarize this on the ice cream juice note. This is an interactive decision. It's not your decision alone. The more you interact with management, the more you may find that management has other problems (like the business plan I mentioned) that it may want to solve. If management sees some value in the system, it may take a different view of the decision. So if you involve management upfront and show the importance of the decision and show how the testing can help management solve some problems, you may change the basic attitude towards the software decision. The more you can change the basic attitude in an interactive manner, the better the chance you have of getting a system that may have more usable features and more complex features.

Now we're going to get into some of the features that you have to look into. Let's start out with the liabilities. What method is appropriate for handling each line of business? For example, if you list your liabilities, you line them up. You have to use cash-flow testing for a particular line. Can you get by with gross premium valuation? Can you mark a block as simply not tested or use some other method of analyzing the problem, like loss ratios for health insurance or whatever? Is the line interest

sensitive or is there some type of asset feature that's important for the product like immediate annuities? You have to look at the materiality of the lines. You may find that you have a lot of diverse lines, but a lot of them are immaterial. Cash-flow testing is most frequently used for, obviously, deferred annuities, which to some extent brought this on; especially the single premium deferred annuities. Cash-flow testing also does include the immediate annuities that are heavily priced with assets in mind. When I say immediate annuities, I include structured settlements, immediate annuities, and supplementary contracts. They're all somewhat related. Of importance is the call feature. Because many people buy assets and don't look at the call feature, you can have some real problems in down scenarios with this line that may create problems for the company as a whole. You may have a lot of supplementary contracts in force, so you have to take this into account. Obviously, there is UL insurance and that includes fixed premium and flexipremium. A line that has come out as a surprise in the cash-flow-testing area is participating insurance. Many of the smaller companies, including the fraternal, sell this product heavily. It's an old traditional product; but people don't think of it as interest sensitive. However, if you look at your contribution dividend formula, there's an interest function in there, and as many of us have learned in the last three years, if the interest environment does go down, there is an interest sensitivity in this product. People decrease the dividend scale, and that creates all kinds of problems. Now it's not the same. You have to make an artificial adjustment. Say I'm going to reduce my dividend scale X%. I don't know of any software that will handle it in an interest-sensitive manner, but you should consider this a product that has reaction to interest.

Now what you have to do with these products is summarize all the features of your contracts. Some of your contracts will be very generic, but sometimes you'll have unique features. Does the particular software system you're evaluating handle these particular features? Some software is generic, but what if you have certain odd bailouts, annuity bonuses, or return of cost-of-insurance charges? You have to find out whether that particular software handles it. Some people have generic software, and they've modified something for a particular client, but not for other clients. They may just happen to have your feature or they may not.

1995 VALUATION ACTUARY SYMPOSIUM

In any case, then, consider the commissioner's annuity reserve valuation method (CARVM) for annuities and the UL model regulation. Does the software handle these by exact seriatum computation, or does it have another approach? What sort of approach do you handle for your products? If your products are fairly simple, can you use cash surrender value as an approximation? You have to consider this.

There are certain lines that are not often cash-flow tested. These include credit life and health, regular health insurance, disability income, individual term life, and nonparticipating life. There are a lot of small companies that may be a potpourri of term insurance, single premium deferred annuities, and credit life, as the company goes through various evolutionary cycles and makes opportunistic relations with agents and producers. Now you may simply want to model these off the system, which is a good way to start. However you may want to eventually put everything on one system. Now why might you want to do this? One reason is it's more convenient. This is especially true if you're trying to use your model for some other purpose, like projecting the whole company. Most people start by just using the cash-flow system for interest-sensitive lines, but do the others off the system. However, the valuation actuary has to eventually address these. He may also find that, if he wants to address valuation actuary issues, he may look at all these off the system, he may find debits in certain lines and positive cash flows in another. He may want to see what happens to the total company. What if your total company is in negative cash flow? Is this going to affect your decision on what to do? So you might want to consider this, but usually this is a light priority.

Now we're going into the asset types. There are many assets, and you have to look at how the software handles the particular features. Now there are a lot of complexities of different assets. Typical companies have bonds. They have call features and default features. They also have zero coupon bonds as opposed to regular bonds. Then you have mortgages. Then you have agencies or mortgage-backed securities, Government National Mortgage Association (GNMA) bonds, and other agency types of things. There you have the risk of prepayment due to a variety of causes. There are also stocks, which you can usually put in surplus. Then there are collateralized mortgage obligations (CMOs). Which types do you have? Some CMOs are very simple to model, however one feature that a lot of PC systems have is some liaison with various reverse engineering organizations as they're

called. And what happens is, sometimes the small company actuary doesn't have a clue as to how to model these things. There are organizations that essentially take the CMO features, and if you give them these seven scenarios, they'll give you the cash flows for them. You should be aware of the materiality of CMOs in your portfolio and whether this is very important. And obviously the more material this is, the more you should ask the software vendor about what particular relationships he has for handling this.

Another problem is negative cash flow. What if your company hits a negative cash-flow scenario, where cash is going out the door? How are you going to handle this? One point is you have to find out what your company would do if confronted with this situation. It's good to have a management view because a lot of people don't think this problem through. If it happens to them by line or by total company, what are they likely to do? Then you go and figure out what system will handle that particular option. Different software systems have different levels of sophistication, and this is sort of an evolving feature. One simple approach is pro-rata sale of assets. You hit negative cash-flow that may amount to 5% of your assets, so you just sell 5% of each asset. That's a very simple thing to program into a computer, and therefore it's something that a lot of PC systems have. However, is that what you would do? What about borrowing money? You can take a system that says, if you have negative cash flow, borrow some money. Let's say borrow at the one-year Treasury rate or whatever. That's very nice, but what if after five years of doing this in some particular adverse scenario, you end up borrowing a value equal to the full liabilities of the company. Is that realistic? It will come out of your model if that's what you put in. If you put your borrowing switch on, that's what happens. But is that modeling what your company would in fact do?

There are now available increasingly sophisticated options for this. One is to categorize your assets by various classes and then dispose of them by prioritizing those classes. There are a number of ways of doing this. One is you might say, look at the *FAS 115* class. Some of them are marked not for sale; some are marked for sale. That's one way. The other is by the year of purchase or the year of maturity or by some type of quality. Segmenting these by lines of business was suggested in one of the earlier sessions. This makes a good deal more sense, because it's probably what your investment department does. It's here that you can go ask them and involve them in the situation and try to get

them to say, what are the choices that you might conceivably make. Then you know what choices you have to look for in a software system.

We're going into some other asset features. One is the C-1 risk default. There are several ways of modeling this; one is what I call the shave. You just debit it so many points, and the lower the quality of the bond, the higher the number of points you debit it. On the other hand, there's another intricate way of saying probability times the amount of your hit, in correlating this with interest scenarios. You can have some very complex features available on models. Do you, yourself, have the ability to make up some sophisticated approach that you think is credible? Do you want to really pay for that feature, because obviously the systems that have the more sophisticated features cost more. There's the reinvestment assumption, you should make sure, again, that the assets you're putting in your reinvestment assumption can be modeled. Now usually your reinvestment assumption is much simpler than your in-force assets. So if you have the features for your in-force assets, you probably can handle this.

Then there are the scenarios. For cash-flow testing, basically you need fixed scenarios; you do not need stochastically generated scenarios. Much of the software can be very sophisticated on the stochastic generation of scenarios. Can these scenarios go off the deep end? Are there mean reversions or some practical limitations in the software? You have to consider this. Now you'll be paying more for this. Since mandated cash-flow testing involves fixed scenarios, and my observation is that management understands fixed scenarios, I think that, when you buy software, you don't necessarily have to get something that's very sophisticated on the stochastic scene.

Then there are parameters. Consider spreads. Say this type of bond has a certain yield in the future on the reinvestments, and that's usually given by a spread relative to Treasuries. The lower the quality of the bond, the higher the spread relative to an underlying Treasury curve. Software systems will give you parameters for these, which purport to describe the actual variations for the asset types over recent historical time. Now this is a very useful beginning. However, as a valuation actuary, you have to understand that you're accepting blindly, to some extent, someone else's recommendations.

You don't want to do that. You want to understand the rationale for this. Do you need this? Do you have your own opinions on these, and would you rather develop these assumptions on your own?

There are miscellaneous features for dealing with the software. One is installation. You need a lot of help installing these things. Murphy's laws do hold. If something can go wrong or confuse you, it will. You need a lot of help. Most of these people will give you a couple days of learning in class. Do they give you phone call limits, subsequently. Are there a lot of limits on this, subsequent to the calls? It's very important to have a lot of hand holding when you first start up a system.

What sort of documentation do you get? Is it clear? Is it easy to understand? Is it well organized? Is there a comprehensive table of contents? Can you actually follow the relation of one column of output to the next? Try checking it out some time; don't just read the documentation to see if it looks clear. Take the output, check it column by column, make sure you can do it. Do you have to call the main office a lot to cover unexplained items? Does your system allow you to modify it? There's usually some language that you're doing this in. Do you know that particular language? Or is there a users' group that prioritizes items? Will your priorities be met? How quick is the run time? That is very important. Sometimes, when you get a demonstration, vendors demonstrate it in three or four cells. Take a model that you're actually going to run, just make up a big one and see what the run time is. Take as long as you are allowed for demonstration. Plan to have other departments or areas in the company involved in the demonstration, particularly your investment department or your planning people. Try to get them to give you some feedback. In the demonstration, see whether your unusual product features are handled. By the way, one company, which is an enterprising one, has put demonstration software on Actuaries Online. It does give you a chance to carry out unlimited demonstration.

Look at the input. Is it easy? Are there utilities or features that help you handle repetitive files? Can you reference various tables easily without having to input endless columns? Sometimes you have complex features and sometimes the way to handle it is to do some Lotus spreadsheet and then read it into the software. Is there a capability? Consider output. Is there a convenient summary? Can you do in force by product cell, by line of business, by company? Regarding flexibility, can you look

1995 VALUATION ACTUARY SYMPOSIUM

at certain pages or columns without dumping the whole thing? As mentioned in the documentation, can you trace the relation of one column to another? Does the model have any feature for validating your initial in force. This can help a lot of time.

Price is the big issue. There is a trade-off between price and features. By and large, the more features you have, the higher the price. But there are different price structures. Typically there's an initial price, plus an annual maintenance. What is maintenance? Does it include upgrade? It should include service. How much service? Are there limits to it? Are there different modules? As I mentioned before, there are different lines of business. Can you buy the various liabilities -- UL, annuities, health insurance, miscellaneous lines -- by modules? Do you get any kind of discount for buying the whole system? How many computers or sites are covered by the price? That's very important. If you talk to someone and ask for his or her price, he or she may give you the full shot price, which may be higher than what you would get if you accept one PC at one site.

In summary, scope out your problem. Scope it out in a lot of detail as it applies to your company. Interact with your management. This is the ice cream juice feature; see if you can get management interested in capacities beyond cash flow. List the necessary modeling features to handle what you want, and this includes peculiar product and asset features. List the same for any possible extensions from cash-flow projections into other uses. List which software firms have the necessary features, then you compare prices, then you throw in the judgment item. You have to consider service and the learning curve. Then you make your choice.

MR. JOHN M. O'SULLIVAN: I decided to be a little bit different and take a step back to look at the whole valuation process and sort out what we're trying to do. I don't have any specific formulas or any advice or anything like that on purchasing software, but I do have two goals. One of the goals is I wanted to get a perspective on this valuation process that we put ourselves through each year. The second goal is to establish the principle that it's important to make as much use as we possibly can out of the work that we do at year-end.

As we as insurers are competing more and more with noninsurers, there's the tendency to start picking up the other guy's yardstick. I don't know whether or not it's HMOs that you're competing with. Most of my background is with annuities, so therefore I tend to think of banks and mutual funds as my competitors. You start seeing things that are more common in other industries being applied to our industries. This is very healthy. But you also have to be very skeptical about it. I recently received a textbook written by somebody out of the banking industry. My boss gave it to me and said there were some unique perspectives in it that I can apply to our business. It was very interesting book (I read about maybe 25% of it on a plane trip here to Chicago before I fell asleep), but it illustrates this opportunity for cross-pollination, provided that we don't just buy the other person's story, hook, line and sinker. There are some very good things that we can pick up from other industries, but we also need to be careful.

Think about, for example, how our products, even the close products, really do differ with some of the products that you find from our competitors. If you compare a mutual fund with a variable annuity, a variable annuity is being looked upon as a tax deferred mutual fund. Can we manage this thing like we would a mutual fund? That's not really the case. There are enough features there that are significant enough to make it a terribly big difference. One of them is this guaranteed minimum death benefit. Here the insurance company is guaranteeing that upon the death of the annuitant, the company will put a floor under the redemption value. That's something that you would rarely see any mutual fund being willing to do. We guarantee our expenses; mutual funds don't guarantee their expenses. If they have high expenses or they want to find a reason to increase their cash-flow because the assets on the management have decreased, they're pretty much free to, with minimal regulatory scrutiny, raise their cost. So the point I'm trying to get at is just that, even though there are near substitute products that we compete against, and even though we want to learn from other industries, especially if we perceive them as being more successful, I think we need to do it carefully and thoughtfully.

If you're in the mutual fund business, your feedback mechanism is cash. You can always look at cash, and see how you're doing. In our business, our feedback mechanism isn't cash. Our feedback mechanism is the valuation process. Valuation here, is much broader than just statutory reporting

1995 VALUATION ACTUARY SYMPOSIUM

and meeting regulatory requirements. GAAP is very commonplace, mutuals going onto GAAP. Certain companies are starting to try value-added type of accounting. That's certainly a form of valuation also. It behooves us to think about valuation as more than just statutory reporting.

Each of us that acted in this valuation actuary job has operated at probably four different levels at one point or another. Quite often I think simultaneously. The first level is the help or exposure level. You get the valuation actuary job the first year and realize you have to put your name on something: What am I going to do now? Then you move beyond that to the busy level. In the busy level, you're trying to get a lot of work done in a really small compressed amount of time. From the busy level, you move on to what I would call the surprise level. In the surprise level, you get all the numbers, and then you start looking at the thing. You've been so busy just checking arithmetic and checking it for reasonableness that, for the first time, you're really sort of looking at the numbers. You ask, what are they trying to tell me? You hope there are no surprises because your boss will be very disappointed on January 25.

Then there's the highest level, which I think is where we want to spend as much of the time as we can. That's really where you're at a proactive level, where you're actually looking at the fiasco that you put yourself through at year-end and saying, "Is there any knowledge here that I can apply to my business to make it more profitable or do a better job for my customers?" That's where we probably want to spend as much of our time as we can, but the reality is we're going to operate in all four levels.

On this first level (where you worry about how exposed you are to the things that you're signing), there are really a few things that you need to be focused on. One of them is to know about the professional guidance that's out there and there's a lot of it. Just look at the amount of paper that's floating around in this meeting, and you're getting an equal amount of paper probably from your outside auditors, certainly the NAIC. If you do business in New York, you're also going to get even more paper. There's a world of people who are willing to give you some advice and some guidance. In summary, you really have to intelligently absorb this information and then act intelligently also. Then you get beyond that.

The next two levels are related to each other. The monsters of business and surprise! There, I think, the goal of a valuation actuary should be to make sure that you're not so busy with the details that you're missing the message. One of the protocols that we had developed when we were starting a valuation function in a relatively new company, was to start by identifying the key elements for the business, the things that could really bite us. Then we would do monthly and quarterly reports to really see what the trend was. That prevents you from having any kind of surprises. We would, toward the end of the year, put together an agonizingly detailed list of everything that we had to do. We did this before the holidays, so that we could get cheered up by Christmas and New Year's. In any case, we had this detailed list, and once New Year's was over, we really started working a list. We would meet about every other day and make sure that we were hitting what we said we needed to hit and put the focus on keeping to the schedule.

The other thing we learned from difficult experience was that, when the systems area gave us all the data we needed, we must make sure that we had reconciled the real basic stuff, like policy count, cash values and things like that, before processing the numbers. We would attempt to be as careful as we could to organize things and get them out of the way. When we finished doing one particular run on a product, we would have somebody (hopefully who didn't produce the numbers), do an independent quick check on a thing through a sample calculation. Once that was done, we put it away in the file and put together something that we call our valuation binders. Basically we would pull selected pages off of these large runs and that, along with the sample calculation and a product description, were things that we put into a binder. That way we had a starting point for next year. If regulators came up with a question, we were able to answer it. We'd give a copy to the regulators, a copy to our outside auditors, put a copy away somewhere in an archive, and then we had a working copy.

The way we settled on this thing was that we would get our valuation questions in the middle of the summer from our state of domicile. We had forgotten almost entirely the details, and we would go back into this filing cabinet that had every piece of paper from year-end, but we were buried with data. By organizing things, we set ourselves up for the next stage, which was freeing up some time for the financial analysis, which I think really is the sequel to the financial reporting. There's an awful

1995 VALUATION ACTUARY SYMPOSIUM

lot of information that gets put together at any year-end time. I think one of the tricks is to make the most use of that information. Jim alluded to this with cash-flow testing.

Valuation work, like cash-flow testing, has an awful lot of other uses inside of the company. I started by talking about some other industries that we compete against to say cash was their feedback mechanism. Our feedback mechanism isn't as quick, and it lies in the financial analysis. It's the way that we correct the mistakes that are happening in product development. It's the way that we try to see ways to run the business more effectively; our current environment is a lot riskier than what we had been operating in five or ten years ago. We're operating with less margins, and moreover, because we're expanding either the types of products we're offering or the distribution channels that we're using, we usually don't have credible information. Even if you had a track record on a product line that had been running for a long period of time, you may be seeing changes in your experience because of the people who sell your product or because product features may be used differently.

My background is in mostly annuity products, and I will give you a couple of examples from the annuity world. The market value adjusted annuity product has been out there for about five years or so. Under this kind of product, the customer chooses a guarantee period ranging from five to ten years. At the end of the guarantee period, then customers can either leave or stay around and renew for another guarantee period. How many renew gets to be a critical item on the amortization of a deferred acquisition cost on GAAP. We start to see experience that emerges on the renewal persistency that is similar to market value adjusted annuities. There is starting to emerge some significant difference between companies' experience. Another thing that has been coming up for a long time is, what's the mortality level on annuity business? You have it in two ends. You have it on the deferred end, and you also have it on the payout end. To the best of my knowledge, there really isn't much good data on that

My last example has to do with variable annuities. Most of the variable annuities that are in force have been written during good economic times. So we don't have any experience yet as far as what the lapse rate will be, when in fact there is pretty bad investment performance. Guess what? That makes a real material impact on the cost of this guaranteed minimum death benefit, which is truly

something that deserves the spotlight that it's getting today. So we could have emerging experience that may not be terribly appropriate for us or it's appropriate for us, but it's not indicative of the future because either we've changed something in the product or we changed our distribution method.

Then we bring other fallacies into it. Whenever we look at things, we look at it from the perspective that we bring to it. One of my favorite quotes is, "Well, that's the way that the numbers are," (even if the numbers don't make sense). I'm sure everybody has just come across that at least once. Numbers can be calculated correctly; they can even be published in pretty reputable sources and still not make an awful lot of sense. An example is the published experience in the industry on the mortality between refund income annuities and nonrefund income annuities, you'll see a relationship that's very counterintuitive. Most of us have been trained to expect to have much better mortality experience on nonrefund stuff since people do know their own health. If in fact they have doubts about their health, they're going to buy the refund options. But actually a lot of the published data has the relationship flipped. We have a relationship that probably held for a whole bunch of individual companies. But when you mix all their experience together, guess what? It doesn't turn out that way because the data aren't homogeneous. So I think you have to view your numbers with a critical eye and probe at them for a while.

The other fallacy that we bring to financial analysis is that this is the way we've always done it or this is the way it has always been in the past. A couple of examples illustrate this point. One of them is that historically real estate has been a fantastic investment for life insurance companies. But if you look over the last ten-year period, there was a period of time when it wasn't a terribly great thing to be in. Another example is people tend to buy common stocks or buy mutual funds when the market is high. Who wants to buy into an asset class that has had terrible experience? This is our old way of thinking of things, you just trend the past and assume that the past continues.

From all these ideas, I conclude that, in our world we have an awful lot less certainty, so we better have a lot of flexibility. I think the more that we can operate at the level, where we're being proactive and we're doing the financial analysis, the better off all of us will be. You look at some of the stories that you see in papers, and you can see the same kinds of things that would bury life insurance

companies are burying certain other companies. I think of Executive Life as sort of having fallen into the trap of thinking that it built a better mousetrap and would get as much volume in there as possible, only to find out that, after all of the volume was there, there was a flaw in the product. If you think about what happened with silicone implants, it's pretty much the same thing. It's an idea. The idea took off. A lot of companies sold products, but in fact the financial implications were not favorable. It was because the emerging experience emerged much slower than the sales. It took a long time to show up.

Another example on this whole category is a mutual fund outfit that's in the upper Midwest that had fantastic performance in a bond fund using CMOs. Unfortunately, two critical assumptions did not always hold true. One of them was that CMOs would always have good liquidity, so it could run a mutual fund based on CMOs. The second thing was that the company had some very good software to be able to model CMOs. The company got into some of the very risky residual classes, which was where the best yield was. Well most of the time things were fantastic, but what had happened was, the model broke down in a certain interest scenario, which unfortunately happened, coupled with the fact that the liquidity wasn't there at a reasonable price. So the mutual fund suffered quite a bit of damage, and that's pretty close to home in my book as far as what we do with cash-flow testing.

I'd just leave you with one last thought: smaller insurance companies now get challenged on many fronts. We have less credible data. We probably have less resources than a lot of the big guys, and we tend to have less diversification in products and in distribution. On the other hand, we still have some pretty good advantages. I think one of them is that we're closer to the action. The fact that you can see what's happening in an organization matters an awful lot. Second, I think the PCs are a blessing, especially the actuarial bulletin board, because they really do give you an awful lot of power. Finally, I think our business tends to be more manageable. In addition, we have the Smaller Insurance Company Section of the Society of Actuaries, and I would urge you to take an interest in it, find out about it, and support it. I think we're unique in a sense that we're not product oriented. We're not into necessarily life or annuity. We're not functionally oriented in the sense of product development or financial reporting. They may be able to provide a benefit for you.

MR. ROBERT H. DREYER: Grant, in talking about cash-flow testing for joint ventures, you acknowledged the probable need for doing your own asset flows and kind of played light on the liability side. It seemed to me that your chances of being able to avoid the liability cash-flow test, really is the exception and not the rule. I would suggest first of all that your expenses are going to be quite different in most cases from that of the vendor and, if your agreement with the vendor happens to be of an excess type, rather than strictly proportional, you could even wind up with different mortality and lapse results.

MR. HEMPHILL: I agree with you completely. I didn't mean that you could somehow combine the cash-flow testing of the reinsurer, use the liability part of it, and finish it with your own assets. I was just pointing out that, because you didn't have the same assets, that's one reason why you could not depend on the cash-flow testing that the product provider was doing. You'll have to do your own.

MR. ALLEN D. BOOTH: I have two very general questions for Mr. Thompson, first and for anybody else who wishes to chime in. Please give me a rough definition of how you define pass/fail on a cash-flow test, and then give me a quick rundown on what you read is the definition of materiality.

MR. THOMPSON: For materiality, in the state of Illinois, I think you have to model 5%. When it comes to pass/fail on the cash-flow testing -- remember this goes beyond my subject, which was simply the cash-flow testing software -- usually if you do eight scenarios, I have seen cases where people can fail on the final surplus on one and people can still sign an opinion, but this is ultimately a very judgmental question. I think it goes to the heart of the issue, and I think that we should have an open discussion on this. I would say failing on one, but you could still possibly pass on the opinion. Does anyone have any comments?

MR. HEMPHILL: I would just add that you can consider the likelihood of each scenario. Failing one scenario that seems reasonably likely could be very important. Failing a scenario that for whatever reason you don't think is likely may not be that important.

1995 VALUATION ACTUARY SYMPOSIUM

MR. ROBERT E. KELL: This is for Grant again. Concerning reinsurance whether it's yearly renewable term (YRT) or coinsurance, the assuming company usually calculates some kind of reserve and makes that information known to the ceding company. Again as far as the actuarial opinion, what do you think are the practical applications of this? Do you accept that number if it's very immaterial? Do you ignore it if it's a very small number? Do you get some demonstration that it's calculated correctly? Do you calculate it yourself on either an exact or an approximate method? How is that best handled do you think?

MR. HEMPHILL: I'd welcome other comments. Several things come to mind. One is you're lucky if you get that number from your reinsurer in time to use it in the annual statement. That's often my experience. You may have to estimate it. Two, I think you do cash-flow testing on the net reserve. So I think you take credit for what the reinsurers are holding.

MR. KELL: Do you want to see a demonstration that the reinsurer's calculation is an accurate calculation?

MR. HEMPHILL: Are you talking about in a joint venture relationship or just normal reinsurance?

MR. KELL: I'm talking of, in some cases, a joint venture where there's a lot of reinsurance credit; in some cases it's maybe just YRT where it's a very small reinsurance credit. I guess I mean anything in between.

MR. HEMPHILL: What I was getting at earlier is, if the joint venture partner is providing you the reserve that you should hold, you cannot rely on the partner. You have to do whatever testing you think is appropriate to satisfy yourself. For standard reinsurance, I'm used to those amounts being small and most people trusting them.

MR. JOHN D. DAWSON: If your reinsurer fails, it's your liability. So it depends on how much risk you're really taking and how comfortable you are that you're working with a solvent, credible reinsurer.

MR. DREYER: Talking about normal reinsurance, in our situation, I ignore it on the grounds of immateriality, and I do any cash-flow testing on a gross basis, figuring I'm ultimately liable for those reserves.

MR. HEMPHILL: There were a number of questions that were submitted in advance of this session. I'll bring up a few of them. One is, can cash-flow testing be done without computer modeling?

MR. THOMPSON: I'd never attempt it. You have to use a computer model. There are some people I have heard who do their own Lotus spreadsheet models and put in various Lotus features, but it gets very complex, so I say the answer is no.

MR. HEMPHILL: What is the best way to properly do asset/liability testing and keep the cost affordable? I think that's the sum total of our presentation here, but maybe someone would like to specifically comment.

MR. DAWSON: The best way depends, of course, on what your objectives are. So the very first step as Jim said, is to figure out what it is that you want to accomplish. Figure out what management is going to buy into. If it's clearly just a compliance issue, you do it as cheaply as you can to provide you with the adequate comfort that your reserves really are adequate. If you need to spend a lot of money to provide that comfort, you should spend the money to provide that comfort. You want to manage cost, but more important it's your reputation, and your professional ability to sign statements of actuarial opinion that are on the line when you sign that statement. So I would caution you against trying to do it as cheaply as you possibly can.

MR. THOMPSON: I'd like to add that I've done cash-flow testing for various companies and I've discovered that a typical small company actuary has a big learning curve if he's going to have to learn to model CMOs, learn the asset parameters, learn any type of system, and then evaluate which system to buy into. As a consultant, I sometimes work with a company where I do the actuarial opinion and memorandum first, with the actuary referencing it and doing the statutory reserves, and then I provide

him with a tremendous amount of documentation done on a computer system that he and I have agreed on. Then, when I lease the computer system, I figure in the cost the first year. Then the second year he buys the system or leases it and sort of copies my opinion, does peer review with me and then goes on. This saves someone who's somewhat unfamiliar with it a lot of learning time. But ultimately, there's a lot of subtlety to this, and it depends on staff size and your current level of sophistication.

MR. HEMPHILL: Another submitted question is for Section Eight actuarial opinions, what are companies doing other than full blown cash-flow testing?

MR. THOMPSON: Is there someone out there who is doing a Section Eight opinion and is not doing cash-flow testing, and can you provide some rationale why?

MR. GLENN A. TOBLEMAN: It depends on the line of business. I guess when people say cash-flow testing, I think in terms of annuities and life insurance. Like Jim had mentioned, if you're doing health insurance, I don't think cash-flow testing necessarily implies that you have to run a big model and do a lot of asset sensitivity issues. You can do something akin to a gross premium valuation to determine whether or not that particular block of accident health insurance business is going to produce statutory profits.

MR. DAWSON: The analysis that you do in order to give yourself the comfort that these reserves are adequate needs to depend on what the risks are and what the products are. It would not make sense to do a very extensive cash-flow testing exercise on a very short-term product that is supported by cash. Likewise it wouldn't make sense to do just a gross premium valuation on a block of deferred annuities. You have to do what makes sense.

MR. HEMPHILL: There are several other questions that were submitted along the very same lines. What proportion of total liabilities are cash-flow tested by small companies? Do our consultants have any sense of that answer?

MR. THOMPSON: That varies all over the lot. I've seen different types of small companies and some are into things like credit insurance or some are into accident and health policies, then, they suddenly sell a lot of single premium deferred annuities, and they violate the annuity ratio -- the reserve ratio law. They just exceed it, so they have to do annual testing, and they have a heavy percentage of their assets. Then there are others that don't ever have to do it. There are so many different small companies with different product strategies that it varies from a little to a lot.

MR. HEMPHILL: Concerning the illustration actuary, how many companies will have to add to staff? Does it seem that small companies are being told to not only make bricks, but also gather straw as well? John, that's obviously a compliance issue question for you.

MR. DAWSON: I guess when I think about this illustration regulation, (I'm actually not sure what to call it), where the policy values are going to depend on the product design and your company's ability to achieve certain levels of efficiency, it concerns me a little bit that the smaller companies may not have the economies of scale to compete at all with the bigger companies. I wonder if this is really good for the industry, if it puts a lot of smaller companies at a very competitive disadvantage because they can't provide the same level of values that the bigger companies can.

MR. HEMPHILL: Must required continuing education be valuation specific for the products written by the company, or is 12 hours about any generally related insurance sufficient?

MR. JOHN M. O'SULLIVAN: My comment is just that I don't think 12 hours is very much time at all. I think you can go ahead and browse through that pretty quick, so I would think, if you're only spending 12 hours between reading things and attending seminars, you probably need to bone up on it, given what's happening.

