

**1989 VALUATION ACTUARY
SYMPOSIUM PROCEEDINGS**

ASSET STRATEGIES/INVESTMENT DEPARTMENT RELATIONSHIPS

MR. GREGORY D. JACOBS: I am going to compare and contrast the roles, perspectives, and operations of the valuation actuary and the chief investment officer (CIO), and get into a discussion of the investment management process in an attempt to add a view from the perspective of the CIO. Then I will go through a case study to get some observations about how that relationship should exist.

The role of the valuation actuary, quite obviously, is to quantify the level of the risks that the company is undertaking, together with establishing appropriate reserve levels. The key item there, I believe, is the word *risks*. I believe the key role of a CIO, if you ask him his purpose of being, is to enhance the value of the company through enhanced returns. The key word there, I believe, is *return*. As we go through this presentation, what I think you will see is that I am building a conflict. We have risks versus return -- conflict number 1 -- in the role of our functions.

The second issue I want to talk about is the perspective. I believe that all valuation actuaries have generally a longer-term view of things. Our projections are 15-, 20-, 30-, 40-year type projections. Investment officers don't generally think in those terms. When

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we put together interest rate assumptions, we're looking at annual changes in interest rates, possibly quarterly changes in interest rates. Whereas, a CIO has a shorter-term perspective. He is wondering what the market did yesterday. He has a video monitor on his desk that tells him what the Dow is doing, or where the bond indexes are, or what the Treasuries are doing. He is looking at the world almost instantaneously. There is a big difference!

I believe that we, as valuation actuaries, have a "macro" view of the environment. Again, we deal with models. We are not dealing with specific assets, we are not dealing with specific liabilities, but we are dealing with a modeling sort of effect; whereas, again, I believe that most CIOs look at the world through more specific eyes. They look at specific assets, specific interest rates, and specific points in time -- a much smaller sort of environment. I believe we, as valuation actuaries, view the world through a strategic planning sort of perspective in that we're not looking necessarily at tactical implementation of the plan, but more at the plan in total, because of our longer-term view. We're not real concerned with what happens tomorrow or the next day. Whereas, CIO oftentimes are most concerned with a discussion of tactical implementation of the strategic plan. Again, there is a perspective difference between the two.

As for operations, we look at assets in macro or in aggregate model terms. We take a product manager viewpoint, or a product manager operation -- single premium deferred

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annuity (SPDA), universal life, structured settlement -- which is product driven. CIO, I believe, view the world as portfolio managers. They look at their junk bond portfolio, their callable bond portfolio, and their equities real estate, etc. It's a vertical versus a horizontal view of the organization. And finally, and this is to me the big crux of the difference between the two, I believe, that liabilities drive assets. That to me is a simple phrase, but I think it has important ramifications -- that the liability cash flows are the instruments or the things inside of an insurance company that define what assets we ought to be investing in, how we ought to invest, how we ought to reinvest, and how we ought to manage our portfolios. Some of my friends on the investment side of things, have a view that assets drive liabilities; that they can, through their skills and their investment management potential, create situations that might be able to drive liabilities -- drive product mix, drive product design, drive crediting strategies, etc.

What I have been trying to lead up to is that there are many conflicts that exist. There is a difference in role, there is a difference in perspective, and there is certainly a difference in operation. To me there is an extreme need to find a common ground between the two areas in the company. How? By understanding each other's perspectives and how they operate. It's a two way street. We need to share with them what we're doing and why we're doing what we are doing; and if they can open up and do the same thing for us, that's learning.

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What I am going to do next is to try to explain the investment management process a little bit, again, through the eyes of a CIO.

Chart 1 is, I believe, textbook style of the investment management process. Specification and quantification of investors' objectives, constraints, and preferences leads to portfolio policies and strategies, setting the policy investment strategies of an organization. That's, I believe, where this whole thing starts. Relevant economic, social, political sector, and security considerations all lead into capital market expectations. These are the factors that are pretty much out of our control. Those two elements feed into the portfolio construction and revision; asset allocation, portfolio optimization, security selection, implementation and execution. Coming out of those are monitoring the investor related assumption and monitoring the capital market expectations. All of that ends up with attainment of the objective and performance measurement. You will notice that it kind of has a start, but when we get to the end, it comes back to the start. It's a continuous dynamic process. I believe that's how all investment officers view their world.

What I am going to do now is break this into the four critical elements and discuss, again, from a CIO's perspective, some of the important issues. (See Chart 2). Let's concentrate on the portfolio strategies part first. Within the determination of portfolio policies, I believe these are the critical areas. Investment officers are concerned with the return

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requirements and spread management. They need to understand the guarantees, the pricing spreads, and the profit margins associated with the products, and they need to understand the competition. As far as the risk tolerance, there are obviously three issues. Quality is our famous C-1, interest rate is our famous C-3, and event risk is -- I guess it's always been around but it's never been quantified before.

The issue here is that the insurance business has grown through time to have a quasi-trust, heavy fiduciary responsibility. It has not been viewed as good for insurance companies to fail, but insurance companies have failed. Competition is severe now. Maybe society has changed, and maybe it's okay for insurance companies to take risks and to fail.

There are liquidity requirements that are obviously important for the investment officer to consider. This was very well-known and publicized in 1981 when there were big runs on the banks, disintermediation, policy loans, bailouts, and on and on. That's an important consideration.

With respect to time horizon, traditionally life insurance has been a long-term horizon product, but because of disintermediation and our change in product mix, the time horizons are shortening. This is requiring a different view of the world for the CIO.

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Certainly tax considerations are important. However, now that the capital gains rate is the same as the regular gains rate, it doesn't have as great an impact.

Certainly, in the insurance business there is a regulatory consideration. They are regulated by such things as the Mandatory Securities Valuation Reserve (MSVR), the definition of an asset, the market basket (or the distribution of assets within a company), self-imposed diversification (essentially, imposed upon companies through the regulatory environment), and the statutory NAIC accounting principles.

All of that gets wrapped up into portfolio strategy. I see investment officers basically in three broad categories. There are the active/passive type people. (The actives are the ones who turn over the portfolios all the time; the passives are the buy-and-hold guys.) There are the matching people who duration-match or cash-match, or try to cash-match. And then there are those who look at their asset portfolios as a pension fund or an endowment fund and just go for total return.

In this whole role, I believe, the valuation actuary must be involved in the process. It is not "should" but "must." We need to relate with the investment people. We need to understand "where they're coming from."

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Next is the capital market expectations side of the process which I will break into macro and micro issues. The macro issues are economy, politics, tax reform and monetary policy. All of these things drive, on a daily basis, what the investment officer does -- what's going on in the international front. All those are important in his decision-making process including what is going on in stock market/bond market/futures market, interest rates, and inflation -- ultimately getting to sets of scenarios.

We have dealt with the issue of sets of scenarios for quite a number of years. I believe our friends in the investment side have done the same thing. But now it can finally come together. I think it is extremely important that the actuaries and investment officers spend some time together on the sets of scenarios.

In a micro environment, yield spreads, calls, prepayment, default, risks, and sector analysis (different sectors in the industry and investment potential), come into play. What are the yield spreads over Treasury? What are the default parameters associated with a Government National Mortgage Association (GNMA) or commercial mortgages? They need to be involved in these questions.

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I feel that we should rely on the CIO for this information. We should not be responsible for or think we're responsible for preparing this but this ought to come directly from the CIO. But we ought to be intelligent enough to understand what the CIO is talking about.

Asset allocation (choosing optimal mix, security selection, execution) is the actual investment process. In my view, we shouldn't have anything to do with this process. That's the investment officer's job. He doesn't come into our area and bother us when we're trying to price a universal life product, so we shouldn't bother him when he's trying to select securities.

And finally, we come to the monitoring and the performance evaluation process. Within the monitoring, there is the portfolio rebalancing -- looking at cash-matching, looking at duration, looking at what's going on in changes in the marketplace. There should be a continual rebalancing.

Within that rebalancing certainly is the monitoring of the capital expectations together with the investor-related objectives and constraints. The performance evaluation generally is looked at in one of two ways. There is the benchmark way of looking at it, and that's comparing your investment manager's return to some outside index -- Shearson, Solomon Brothers, Merrill-Lynch, bond indexes of various growth funds, or whatever. Some

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companies set a "utopia" portfolio within their company to keep track of what that investment would have been, and compare the company's actual investment performance to that utopian sort of portfolio. And then, in the performance evaluation, again, there is the total return versus the reduced risk. It is important, obviously, to look at the magnitude of the return while at the same time trying to eliminate as much risk in the portfolio as possible through cash-matching and duration-matching. I believe that the valuation actuary should be involved in this process -- should as opposed to must.

Charts 3 and 4 show a recent example of something we went through with the CIO of a company in a little bit of an iterative process. The numbers themselves aren't important, so suffice it to say, we used assumptions, models, and products. That's not what's important. What's important is the process. We had an SPDA block of business, \$200 million in reserves. (We reserved it by the Commissioners Annuity Reserve Valuation Method.) The company credited a market rate. That is constant throughout this process - - the liability side of things did not change. Initially the company had a total return investment strategy -- an active trading/churning/find the highest yielding asset/try to get the biggest return we can get for our bucks. I, as valuation actuary, was concerned about the reserve adequacy. At our initial meeting I taught the CIO the asset/liability projection concept -- discussed why we're doing what we're doing, talked about New York Reg. 126, talked about scenarios, talked about the cash-flow assumptions that one needs to develop.

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We discussed the interest rate scenario significantly. I made the CIO responsible for that. I think it is important that he has a significant, if not exclusive, role in setting the interest scenario. Make him part of the process. He is not going to believe the results unless he has a hand in them.

Projecting the liability cash flows was my job, and that was relatively easy because they were relatively determinant. Because it's a market-credited strategy, there was not a lot of volatility in lapse rates that we assume (because you're always in the market); therefore, the liability projections were fairly straightforward and simple. It didn't change much in my scenario.

As for projecting the asset cash flows, that was the problem for our friend, the CIO. He was totally responsible for projecting those asset cash flows.

Chart 5 shows the results. Again, we used 25 scenarios -- some good, some bad. As before, the numbers don't mean anything in themselves. The important thing is to compare them to results that follow in charts 8 and 10. Chart 6 shows some summary statistics. The mean was a loss of \$5 million; standard deviation was \$23 million; the low result was a potential loss of \$49 million. Again, this is on \$200 million of reserves. The number of negative trials was 12. I, as a valuation actuary, felt that I needed to add \$29 million to the reserves.

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This number was based on the premise that I wanted a 95 percent probability that I don't lose any money. I just move down the scale to figure out what the threshold is so that only 5 percent of the time it is going to be negative.

That, obviously, was not acceptable. So we had a second meeting (summarized in chart 7). We discussed the results -- what they mean, why they came out to be what they did. We reviewed the liability cash flows, and described the assumptions that went into them, why we chose those assumptions, and what the ramifications of those cash flows were. We tried to define a new investment strategy that tried to get a cash-flow match. We determined that the reason why it was such a loser and so volatile the first time around was because the investment strategy was not cash-matched as well as it could have been. So the CIO took the responsibility of going through an asset restructuring to try to cash-match the portfolio. He got away from a total return concept and tried to get into a cash-matching sort of scenario.

The results of the second test are shown in charts 8 and 9. Again, there are a lot of positives that were negatives before. Here are some summary statistics: The mean went from a -5 to just about a break-even situation; volatility or standard deviation is significantly reduced from \$23 million down to \$11 million; the low result was cut in half -- \$22 million. There are still 11 trials that are negative. We looked at all the scenarios that produced

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negatives the first time around, and by instituting this new investment strategy, there was an average improvement of \$17 million on all the negative results. But there is a price to be paid for that -- on all the ones that were positive before, there was an average decrease of \$5 million on all those good scenarios. To use a baseball analogy -- basically, in the prior set of scenarios or the prior investment strategy, the CIO was either going to hit a home run or he was going to strike out. And he struck out more often than he hit a home run. Now he's hitting doubles and singles. He's not going to hit as many home runs, but he's going to get on base more often.

As the valuation actuary, I went through the results and, again using this 95 percent threshold, reduced the amount of reserve deficiency from \$29 million down to \$8 million, using exactly the same criteria -- the 95 percent threshold. This still wasn't quite good enough in the eyes of the investment officer. He got a feel for what we were doing and why we were doing what we were doing. We discussed the improved results at the final meeting (summarized on chart 10) -- what created them, what can we do next. Finally, the CIO took a proactive role, and he got into actively rebalancing the portfolios to try to understand the dynamics of the assets and liabilities. We then devised a new investment strategy that got into more of an active trading or rebalancing on a more active basis to take into account changes in market expectations and changes in interest scenarios. The detailed results are shown on chart 11 and the summary results shown on chart 12.

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We increased the mean. It went from a break-even to a positive \$2 million. We continued to reduce the standard deviation. We reduced the low a little bit, the number of negatives went down a little bit. The changes in the negative results are interesting. Of all the negatives from the prior one, we improved \$3 million per scenario. Interestingly enough, on the positives that's an improvement now. We improved all of the positive results through active trading of the earlier runs that were not actively traded by half a million dollars on the average, per scenario.

What this showed to me was that the investment officer, through proactive balancing of the portfolio, was able to add value to the enterprise without taking any extra risks. The bottom line is still \$8 million of extra reserves. We have an unprofitable situation here.

The conclusions that we reached through this exercise, or through this process, were that education and understanding are certainly needed.

It's a two-way street. We can learn as much from investment officers as they can learn from us. But you need to get the CIO involved in the process from the beginning. I see this terrible role that valuation actuaries play and that is: I am in command of the situation and thou shalt do this. There are shackles placed on investment officers. They are getting a sheet of paper that says, "You must perform this way." It doesn't let them do their thing.

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We need to get them involved in the process early on. We need to let them understand it. We need to make them make decisions that are integral to their investment management process: the setting of the scenarios, the investment strategy, and the capital market expectation. That's their job.

Also, we need to review the investment officers' strategic decisions as far as the liquidity requirements, the investment strategies, and so on. We should review the strategy, but we should not determine it.

Finally, the valuation actuary should leave the tactical decisions all to the CIO. That's his job. Given a wide or even narrow strategic plan, let him make the tactical decisions.

What we've ended up with in this simple case study example is that we reduced the reserve shortfall by \$21 million. Initially, without dialogue, I would have set up \$29 million of reserves. After discussion and relooking at the investment strategy, it went down to \$8 million. We improved the mean profit picture by \$7 million. We were a loser of \$5 million on the mean, and now we have a gain of \$2 million.

And most importantly here is that we reduced volatility or risk; the standard deviation went from a \$23 million standard deviation down to \$10 or \$9 million -- a significant decrease

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in risk. Through this process we've accomplished, I believe, the ultimate goal of the relationship between the valuation actuary and the CIO. Our goal is to minimize risk. We've done that. And his goal is to enhance value to the company. He's done that. Everybody's a winner. I believe it has to be this sort of interactive process for the valuation actuary and the CIO to have a good working relationship.

CHART 1

INVESTMENT MANAGEMENT PROCESS

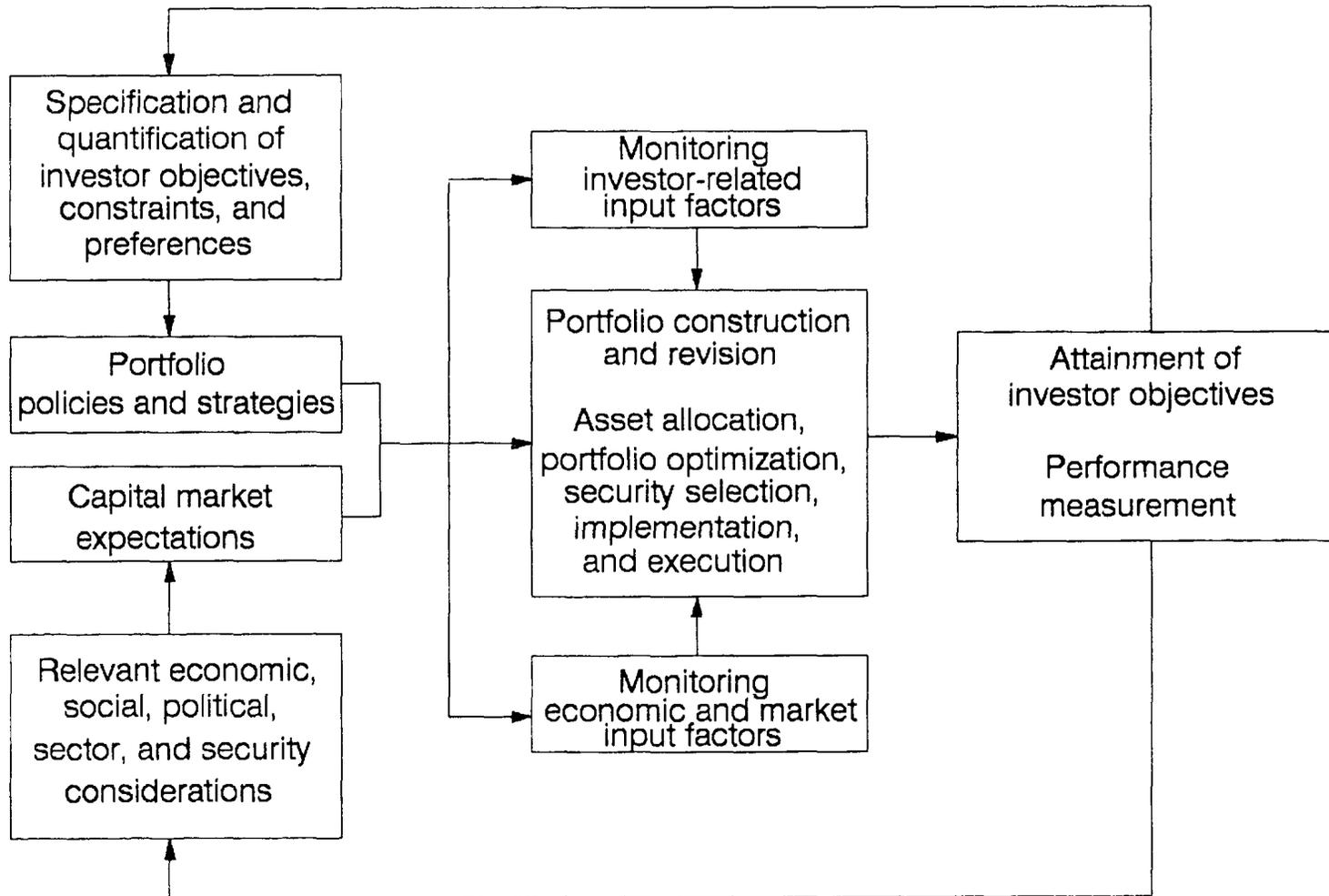


CHART 2

DETERMINATION OF PORTFOLIO POLICIES

- **Return Requirements/
Spread Management**
- **Risk Tolerance**
 - Quality
 - Interest Rate
 - Event
- **Liquidity Requirements**
- **Time Horizon**
- **Tax Considerations**
- **Regulatory Considerations**
- **Portfolio Strategy**
 - Active/Passive
 - Matching
 - Total Return

Valuation Actuary Must be Involved in this Process

CHART 3

INTERACTION BETWEEN VALUATION ACTUARY AND CHIEF INVESTMENT OFFICER

SITUATION

- SPDA Block of Business
- \$200 Million Reserves (CARVM)
- Market Credited Interest Rate
- "Total Return" Investment Strategy
- Valuation Actuary Concerned with Reserve Adequacy

CHART 4

INTERACTION BETWEEN VALUATION ACTUARY AND CHIEF INVESTMENT OFFICER

INITIAL MEETING

- Introduce Asset/Liability Projection Concept
- Discuss Interest Rate Scenarios
 - Make CIO responsible for this
- Project Liability Cash Flows
 - Relatively determinate
- Project Asset Cash Flows
 - Make CIO responsible for this

CHART 5

SPDA
TOTAL RETURN INVESTMENT STRATEGY
PRESENT VALUE OF PROFITS (in millions)

<u>Trial</u>	<u>P.V. Profits</u>	<u>Trial</u>	<u>P.V. Profits</u>
1	\$ 9	14	\$(8)
2	(1)	15	(1)
3	22	16	(30)
4	6	17	(28)
5	30	18	22
6	(35)	19	10
7	(29)	20	18
8	15	21	(49)
9	6	22	12
10	(40)	23	(44)
11	2	24	13
12	(25)	25	(23)
13	22		

CHART 6

SPDA
TOTAL RETURN INVESTMENT STRATEGY
PRESENT VALUE OF PROFITS (in millions)

Mean Result:	\$ (5) Million
Standard Deviation:	\$ 23 Million
Low Result:	\$(49) Million
Number of Negatives:	12

Valuation Actuary Feels \$29 Million
Needs to be Added to Reserves

CHART 7

CASE STUDY: INTERACTION BETWEEN VALUATION ACTUARY AND CHIEF INVESTMENT OFFICER

SECOND MEETING

- Discuss Results of First Projection
- Review Liability Cash Flows
- Define New Asset Portfolio Cash Flow Requirements
- Restructure Portfolio to Cash Flow Match
 - Make CIO responsible for this

CHART 8

CASH FLOW MATCH ASSET RESTRUCTURE
PRESENT VALUE OF PROFITS (in millions)

<u>Trial</u>	<u>P.V. Profits</u>	<u>Trial</u>	<u>P.V. Profits</u>
1	\$ 7	14	\$(4)
2	2	15	6
3	14	16	(22)
4	9	17	(2)
5	7	18	12
6	(9)	19	3
7	(8)	20	10
8	12	21	(20)
9	(5)	22	11
10	(20)	23	(21)
11	3	24	13
12	(1)	25	(6)
13	11		

CHART 9

CASH FLOW MATCH ASSET RESTRUCTURE
PRESENT VALUE OF PROFITS (in millions)

Mean Result:	\$.1 Million
Standard Deviation:	\$ 11 Million
Low Result:	\$ (22) Million
Number of Negatives:	11
Change in Negative Results:	\$ 17 Million Avg. Improvement
Change in Positive Results:	\$ 5 Million Avg. Decrease

Valuation Actuary Feels There is Still a
Need for an Additional \$8 Million in Reserves

CHART 10

CASE STUDY: INTERACTION BETWEEN VALUATION ACTUARY AND CHIEF INVESTMENT OFFICER

FINAL MEETING

- Discuss Improved Results
- CIO Takes Proactive Stance
 - Will actively rebalance portfolio to achieve cash match
- Devise New Investment Strategy

CHART 11

ACTIVE ASSET REBALANCING
PRESENT VALUE OF PROFITS (in millions)

<u>Trial</u>	<u>P.V. Profits</u>	<u>Trial</u>	<u>P.V. Profits</u>
1	\$ 5	14	\$(8)
2	2	15	5
3	14	16	(20)
4	3	17	(6)
5	18	18	12
6	(13)	19	8
7	(9)	20	16
8	10	21	(6)
9	4	22	5
10	(3)	23	(10)
11	3	24	13
12	(9)	25	(7)
13	12		

CHART 12

SPDA
ACTIVE ASSET REBALANCING
PRESENT VALUE OF PROFITS (in millions)

Mean Result: \$2 Million

Standard Deviation: \$10 Million

Low Result: \$(20) Million

Number of Negatives:10

Change in Negative Results: \$3 Million Avg. Improvement

Change in Positive Results: \$4 Million Avg. Improvement

Valuation Actuary Feels There is Still a
Need for an Additional \$8 Million in Reserves

