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SMALL PENSION PLANS

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MR. DAVID R. NESSELLE: The first and the most obvious question that comes to mind is just what is a small pension plan? Since there is no universal answer to the question, each panelist will define the term 'small' as it relates to the particular plans for which he provides actuarial advice. Since the panel's experience includes individual policy pension plans, group annuity plans and plans serviced by consultants, we will take a look at the problems concerning small plans. Our first speaker is Tom Mitchell. Tom is Second Vice President of Planning and Research at Midland Mutual. He has had extensive experience in all phases of Pension Operations and currently is active in providing pension actuarial services. Tom will emphasize small plans partially funded by individual insurance policies.

MR. G. THOMAS MITCHELL: I am with an insurance company marketing individual policy pension plans and small group annuity policies through a traditional agency system, with all field contacts through agents. We use prototypes almost exclusively. Actuarial methodology is heavily influenced by computer capabilities.

PLAN PROVISIONS

Most of the plans have benefit formulas based on percent of salary times years of service, typically integrated, but not often with a Social Security offset. Our salary averaging basis is the highest 5 consecutive years out of the last 10, with a frequently used option to eliminate benefit adjustments within 5 years of retirement. Benefit accruals are prorated over the period of participation. Actuarial equivalents, early retirement benefits and lump sum distribution amounts are based on natural actuarial equivalents using currently available annuity rates from the insurer. The plans frequently have death benefits equal to 100 times the monthly income. As a result of this, we are not concerned with the ERISA pre-retirement survivor annuity requirement.

SMALL PLANS

I will speak of small plans as one to ten life plans. These present some very unique actuarial problems. Some traditional actuarial techniques, appropriate to employers of one to four magnitudes larger, begin to disintegrate at this scale. Let us go back to the first principle of pension funding. Our aim is to have funds on hand to provide benefits. The realities of cash flow and the realities of extreme "fluctuations in experience" are of utmost importance. The client and his advisors are probably not sophisticated actuarially. On the contrary, the chief executive officer, typically, is in charge of the pension plan, is the owner of the business, and is also chief beneficiary of the plan. His interest in the plan is extremely personal.

Let me compare this to physics. One runs a 10,000 life case on the mathematics of classical mechanics, i.e., Newtonian principles and so forth. Whereas, the small case leads to quantum mechanics. The one life case is the hydrogen atom of the pension world. The aim for an extremely small plan is to obtain a satisfactorily high probability that all benefits can be paid. Our objective is not merely to provide for expected value contributions resulting in a 50-50 chance that all benefits will be paid. Statistical averaging does not operate within the plan. The statistical averaging operates only among many plans.

RUIN THEORY

I depart from the expected value method in favor of a ruin theory approach. The objective of the plan is to maintain a high probability of remaining in viable financial condition. In other words, a funding basis which is targeted at expected values, but which results in an inability to provide benefits 20% of the time would not be satisfactory. This is not an appeal to use very conservative assumptions, but to take a different attitude and mathematical approach. What are the likely things which can "go wrong"? i.e., provide funding that will meet likely circumstances.

This means looking at such things as what happens if a key person terminates at the actuarially most unfavorable time for the plan. Can the plan survive this? If the plan cannot survive one quite possible event, then I doubt if it is properly funded. This involves attitudes and plan design, as well as assumptions, and funding methods.

The key mathematical function in the critical analysis of funding methods for small plans should be the excess, if any, of present value of vested benefits on a cash-out basis, over assets.

ASSUMPTIONS

What do explicit assumptions mean on an extremely small case, for instance, a one-life case? Although the participant's salary is determined by many factors, in the short run it is, effectively, arbitrary. Over the years, it may bear no relationship to a smooth function. In some cases, the client actually works backwards from the pension contributions, employee benefit programs and shareholder dividends, etc., to work out a plan for distribution of cash flow from the business that is most beneficial to the parties involved. What then does a salary scale mean? The client can rightfully say that he knows what will happen or has not made up his mind. Therefore, he would say I have very little business trying to anticipate this choice. If he is working backwards to figure out reasonable compensation, his thoughts need to be coordinated with mine. Unfortunately, we do not have the time for a philosophical discussion with every client.

Similarly, what is the termination rate for the one life case? It has no statistical life of its own. The yearly termination rate must, by definition, be 0% or 100%. Termination in this case effectively creates a plan termination. This determines vesting and cash flow. For a two or three life case, the probability that termination of a key person creates a plan termination is still very high, and requires a complete rearrangement of the plan's finances, to say the least.

For instance, if the key person leaves before becoming vested, the plan may very well be terminated in order to create a vested situation. If he is terminated without vesting, we typically release sufficient funds so that the small costs for the remaining participants may be paid up for many years (11 years on one plan of ours). The termination risk is essentially on the one person. I would submit that a zero salary scale and zero termination rate may reflect the realities of the plan better than any other set of assumptions.

FLUCTUATIONS

Dealing with severe fluctuations of experience is another important aspect of small plans:

1. With the likelihood of more extreme fluctuations, consideration of how to smooth experience becomes critically important.

2. The client may not be able to handle a large increase in costs resulting from a large loss.

3. Large gains may be produced which produce zero contributions for a number of years.

4. It becomes critically important to have the money promised on hand - a large loss may leave the plan financially naked.

5. There can be extremely short time periods to maturity of liabilities on these plans, as low as 1 or 2 years.

Our basic approach is to go through a 10 or 15 year amortization of the actuarial gains and losses each year. A spread over individual lifetimes can produce a very high cost fluctuation where there is a near term maturity. Such a case merits our individual consideration of what will likely happen, including any actuarial gain or loss that may be developed by purchase of an annuity at retirement. This leads to a tailored recommendation encouraging maximum contributions, if needed, or in some cases, a contribution in excess of the maximum deductible.

We spread gains and losses over a 15 year period. I see no need to superimpose an additional smoothing method for assets. If we have trouble obtaining a good market value, then an actuarial asset valuation method obviously is needed. The smoothing implies that market fluctuations tend to be self correcting and to rebound, i.e. my best estimate of future value of the assets is not the market value since an increase in market value is most likely to be followed by a decrease. There is a school of "chartist" philosophy in the stock market that would hold this true. Other schools of thought including the "random walk" theorists hold this as entirely invalid.

LUMP SUM PAYOUTS

I work with plans which provide a lump sum distribution option. The participant has a basic right to a lump sum distribution on termination, with a safety clause which permits the trustee not to grant the option. However, this is intended to be an emergency clause only. This casts an entirely different light on cash flow and emerging liability problems.

Among other things, a termination can create cash demands long before normal retirement. Typically, most emerging liability computer programs use as a normal retirement date, the date on which it is assumed funds become due. It also appears to make sense to project a present value of

vested accrued benefits into the future. In addition, it is customary to purchase fully guaranteed annuities at retirement in small plans. This creates another lump sum cash problem. If guaranteed annuities are not purchased, the employee's security after retirement falls substantially. In particular, a retiring owner (possibly closing out his business at the same time) wants the security of retirement benefits. The employee's security is not what it might be in a larger plan, if the money stays in the trust.

The lump sum payout and purchase of annuity practices require a firm funding discipline, which is readily apparent to the client. However, they also create a much greater need for funding patterns, benefit accrual formulas, lump sum distribution formulas, etc., related to likely asset development rather than unfunded liabilities.

ACCRUED BENEFIT FORMULA

Regardless of funding method, the actual funds at hand generally do not vary much by method. If the present value of vested accrued benefits exceeds the funds on hand, there are termination liability and possible cash flow problems, especially if the excess is concentrated on one or two key people. I have some plans where the benefit accrual rate exceeds that of prorata on years of participation. One example is where accruals are prorated on years of service. Another example is a plan with a unit credit formula having a lid. The accrued benefit is defined in terms of the accumulated unit credits but not to exceed the lid. This creates a full accrual after 20 to 25 years of service. In both cases, a participant can leave with more funds than has been effectively accumulated for him. Accelerated accruals may be quite appropriate for clients with stable characteristics. However, I strongly advise against a very small plan having a faster rate of accrual than a "prorate on participation" accrual rule would provide.

SUBSIDIZED EARLY RETIREMENT

I have a client with about 25 employees who, for very good management reasons, provides for unreduced early retirement as early as age 62. The effective value of a participant's benefits can vary by as much as 26% based on age at retirement. In addition, as much as 1/3 of the values in the plan at any point can be concentrated on the chief executive officer. My actuarial approach was to assume a string of early retirement probabilities by age and adjust the actuarial values accordingly (in this case through a loading on the annuity purchase rate at retirement). However, when someone actually takes early retirement, since I used approximately a 50% anti-selection assumption, we get a significant actuarial loss. As long as I continue to monitor the early retirement experience, I feel I have a good handle on the plan, especially because

of the peculiarly good stability of this particiular employer. However, my perennial problem is that the client's accounting office, and the client's CPA simply do not believe that my high powered advice missed so badly when someone does retire. Explaining an early retirement loss is a recurring task. I have had some success explaining that because of the early retirement, the employer is relieved of future normal cost payments for that employee, i.e., the early retirement has in effect "called" these future claims. For the typical employer with a very small pension plan, subsidized early retirement (particularily on key people) does not make a lot of sense. The basic fact is that if the money is not there, the benefits cannot be there.

METHODS

We extensively use the individual level premium funding method with the participant's attained age upon entering the plan as a starting date for normal costs. Funding periods thus naturally follow the participant's remaining lifetime but without the commingling problems of aggregate methods. The client is not confused by unfunded liability figures. Possible emerging liability problems are greatly reduced. It becomes easier to handle implicit assumptions. Salary scale losses are not shown directly as losses, but are spread over the future lifetime of each employee in a natural fashion. On the other hand, a salary jump may create vested accrued benefits, but no unfunded liability.

However, computing additional normal cost pieces each year for a whole series of benefit changes creates a whole series of normal costs. This makes the calculations and verifying them (particularily on a takeover case) difficult. This is a distinct disadvantage to the traditional individual policy pension method. The method also produces a very low actuarial liability and creates inappropriate situations on full funding limitations. If the plan is going along at full funding and experiences a gain, there is a dollar reduction in contributions.

If there is a loss, it is spread over a period of years. Since there is a 100% reduction for gains and a spread amortization for losses, statistically these plans will tend towards underfunding. This compares with the early years of the entry age normal method where the full funding limitation is not relevant. We have extensively used implicit assumptions but are now moving away from them as our computer capability improves. Not using terminations or salary scales and using an attained age approach produces gain and loss figures that are misleading without further interpretation. Typical salary increases jack up normal costs but do not create an actuarial loss. Typical terminations kick up an actuarial gain. We can see a series of gains which the IRS could possibly question, while at the same time the actual total costs of the plan as a percent of the payroll are stable.

PLANS WITH LIFE INSURANCE BENEFITS. In the past we have used a traditional individual pension trust method. We compute estimated needed funds at retirement, deduct the cash value of the policy, to get a "cost of conversion". This leads to a typical actuarial valuation (on any method) of the auxiliary fund portion. Gross premiums for life insurance (less dividends) are added to the normal cost. The administrative difficulties of this are:

1. The necessity of life insurance figures.

2. Creating a dimension of complexity if the normal cost is associated with a policy level.

If we have done our homework as to the premium and dividend patterns for the policies being purchased, we can get reasonably level costs from entry to retirement, even assuming termination rates, salary scales, etc.

We are changing to what has been referred to as the "envelope" method. We value in two pieces:

1. Conventional provision for the retirement benefit along with associated vesting or early retirement adjustments.

2. Provision for the cost of insurance benefits and disability premium waiver benefits. We calculate this with a salary scale and termination rate. The benefit costs used in the calculation are a series of death benefit costs consisting of the projected death benefit coverage each year times an insurance cost rate based on a mortality table loaded for the cost of the insurance. This produces a present value of future death benefits (in the nature of paid up increasing term to 65). Using normal pension mathematics we compute the death benefit normal cost and an actuarial liability for the death benefit portion.

Finally, these two pieces are placed together to produce the overall actuarial valuation. This entirely avoids record keeping as to actual insurance dividends and individual yearly pieces. This method does double our calculations, but this is quickly made up for by its overall simplicity.

We ask the client to fund the plan by paying the insurance bills, and paying the balance of overall cost into the trust fund. A sales advantage is that we show a cost of having a death benefit closely related to the actual mortality and expense characteristics of the insurance being purchased. Under the old method, we showed the insurance premiums plus side fund costs. This shows a much larger psychological cost for the insurance in that the credit for the cash value produced by the insurance is lost in the shuffle. In fact it has never been computed.

QUALITATIVE INFORMATION

How much qualitative information can we obtain from a client? At what costs? How can it be obtained? In my case we are not organized to provide individual actuarial interviewing. At most there is a discussion with an agent.

If the qualitative information appears reasonable to us, we might possibly modify our approach, with appropriate hedging to make sure we will not be in trouble if it is not representative.

GAIN AND LOSS

The process of explaining gains and losses to small employers is different. A complex analysis by technical source is not warranted. The client is thinking in terms of personalities. The question is not what was our "salary scale loss" but what was the effect of Joe's quitting or Harry's retiring or Mary's transfer. My emphasis on gain and loss analysis is to relate them back to individual people, rather than analysis by actuarial sources.

MR. NESSELLE: Thank you, Tom. Our next speaker is Joe Macaulay. Joe is a pension actuary with John Hancock and he has had a great deal of experience in all aspects of group pensions. He is currently involved in providing pension plan valuations for group annuity plans. Joe says that his plans run from 4 lives to 14,000 lives.

MR. JOSEPH R. MACAULAY: PLAN DESIGN

My primary purpose here is to talk about the handling of small pension plans in a group pension environment. For my topic, I would like to consider small as 150 lives or fewer. I think it would be wise to indicate the types of plan that my company's Group Pension Department is involved with and their special characteristics, before we get into how we provide actuarial services for them. Unlike some of the other panelists, we have no true prototype plans and very few standardized plans. We have individually designed plans.

These plans fall into a number of categories. For a first stab in defining the categories, I would say flat dollar per year plans versus plans with benefits that vary by amount of salary. The flat dollar per year plans most typically are the union negotiated plans. Many of these are multi-employer plans in which there is cents-per-hour input so there is both a defined benefit with a defined input.

Within the salary based pension plans there are two primary breakdowns: the career average salary - annually accruing benefit plan and the final

average salary plan. The final average salary plans present more accrued benefit definition problems because they frequently have their salary benefit defined as a flat percentage with variations in how this percentage is spread and accrued. These plans frequently have a Social Security offset which generates the problem of determining which law is to be used and how the benefit is to be developed. There are also problems of record keeping. Many plans that do not integrate with a Social Security offset frequently integrate using Covered Compensation. A few plans are not offset or integrated. Probably slightly more than 40% of them are some variation of final average salary and the remainder is split about evenly between career average salary and the flat dollar per year plans. Quite a few plans are a combination of formats - some with a career average salary with a final salary minimum and some with a final salary with a career salary minimum. Often these complexities are brought about because they started out with formula one and maintained the old benefits when they changed the formula. Others were trying to respond to different constituencies with the sponsoring organizations. Another complexity is the fact that some final average salary plans are either partially or fully flat benefit plans because of low maximum benefit provisions or because of a low maximum salary used for the pension plan compared to the levels projected by the salary scale.

The special plan features which sometime cause valuation problems include the subsidized early retirement provision. In a few salary based plans there is also the possibility of not only an early retirement without actuarial reduction but a provision for a supplement until it is possible to receive Social Security benefits at 62 or 65. These are primarily in the larger plans since the smaller plans either cannot afford it or do not, initially, have the sophistication to cover this. A few plans in the 100 to 150 life size have this feature. The normal form of annuity under the plans varies from straight life through 100% joint and survivor. Five or ten years certain and continuous are probably the most popular normal form besides straight life. We normally value the normal form as stated in the plan, unless it turns out that some of the others are on a basis more generous than actuarial equivalents. We will then usually value the more expensive option, sometimes using a probability that the more expensive option will be selected.

Other than return of employee accumulations, lump sum special death and severance benefits are not prevalent in our plans, with the exception of many of the flat benefit plans. Frequently they have a dollar per year death or severance benefit.

In general, most of the small plans which I handle are truly designed as pension plans rather than being plans that try to maximize benefits in favor of certain high paid employees or ownership groups. They are pension plans of employers who are intending to provide a moderate

retirement benefit for both themselves and for their employees. This feature, if you want to call it that, does simplify some of our methods. Although, as I pointed out, our plan complexities seem to approach that of larger plans, these plans, by reason of small size, must be carefully valued because the averaging features of large numbers are not there.

ASSUMPTIONS AND METHODS

The methods and techniques we use on small plans are in general the same as we use for larger plans. This allows standardization of approach. Therefore, we might use methods which could not be cost justified if they were used only on small plans.

Like most actuarial organizations, we have a preferred actuarial cost method. However, the first point that I think should be covered is who chooses the funding method. We contend that it is the plan administrator who has the responsibility of choosing the method and setting the policy for how soon the unfunded liability should be amortized (with our helpful advice, of course).

This view is based upon a fairly tight reading of those sections of the law which describe the responsibilities of the plan administrator. However, we feel the actuary has the right to veto the choice of funding method if he considers it inappropriate for the plan being valued. We communicate this veto to the administrator and discuss with him its impact. This veto is the right and responsibility of each individual actuary on the cases which are assigned to him.

Our preferred method is the entry age normal method with frozen initial liability. For most cases we think this method is the most convenient, easiest to live with, and causes less confusion once it is installed. The initial description of the frozen intial liability sometimes causes a slight problem in discussion, but since it is the same problem we have with entry age normal there is no additional problem. We do not normally recommend aggregate cost funding method because it is our feeling that most employers would prefer the probable contribution flexibility that having an unfunded liability allows.

Usually we do not use the individual level premium method because most of our plans are large enough, so that the complexity caused by it and subsequent valuations would make it less convenient.
Most of the plans do not need the type of buildup of funds for a large retirement. Perhaps this is because we evaluate big-small plans and the "Pure Pension Plan" nature of most of the plans.

If an employer prefers, we are very willing to use the aggregate cost method. We do inform them that there is no funding flexibility. We are

also quite willing to use entry age normal but we usually will mention the numerous gain and loss amortizations and other schedules to be required after a few years under the method in the Funding Standard Account. There are cases for which we are very willing to use unit credit, but we will not normally use unit credit for final average salary plans. This is one area in which some vetos have occurred.

ASSET VALUATION

Asset valuation is a potential problem for most plans. A primary reason is that we still do not have finalized regulations.

Most of the small plans that we handle have one funding medium - deposit administration (DA). They do not usually have any outside assets and we have a fairly simple situation. We use the option covered under section (C).3 "Insurance Agreements: Allocated portion of Agreement" Part (ii) of the proposed regulations. We exclude both the assets and liabilities for retired lives for whom benefits have been purchased. We value the liability for all benefits not yet purchased and we use as assets the deposit administration fund balance valued on a book-amortized basis.

A few of our small cases utilize different funding vehicles. Many of these use an immediate participation guarantee (IPG) contract where the retired lives are still carried in the fund and where there is a contractual restriction on part of the fund. The proposed regulations leave our preferred method for those plans possibly in question. However, in comments provided for the IRS a number of respondents suggested that the IRS should clarify the language in this section and discussion with members of the Pension Technical Branch of the IRS indicates that our preferred method is acceptable. This method is to use the IPG fund of the plan as the assets and to value all of the benefits to be provided for both retired and not yet retired participants.

A few of our DA or IPG plans also have separate account or trust fund assets. Most of these contracts, however, are not in the small plan category. We value them using one of two methods. The first method is to use amortized values if they are invested in a bond or mortgage fund which provides amortized values. If they do not provide amortized values, we value them as we do for equity funds and use a 40% write up to market method. This method takes into account both realized and unrealized gains in the same manner so that there is no advantage in selling securities purely to window-dress the account.

There have been many discussions during the last few years about the use of implicit and explicit assumptions. We adopted a fairly strong position in favor of explicit assumptions at the time the Academy Guidelines came out and, with very few exceptions, all of our cases use explicit assumptions for all variables. Now, I think we should define the term "explicit"

and justify our preference for explicit assumptions. Our explicit assumptions make provision for inflation in interest rates, in salary scales, in Social Security projection and in expenses. Basically we have been using an average rate of inflation of approximately 4% in cost of living with a small amount of productivity tossed in on top of that. These are the bases for both our salary scales and our interest rates. We also use assumed national average wage growth and inflation rates for projecting Social Security Benefits for offset and for Covered Compensation.

We believe that this technique is, in general, more likely to be accurate and convenient. It also means that we do not have to review how good our assumptions are, if we are asked for a cost calculation to calculate a change in benefits. This is because implicit assumptions may be "right" with one set of benefits but "wrong" with another.

There is one aspect of explicit assumptions that has caused some problems for us. We could not see our way clear to using explicit assumptions that blended into the various contractual purchase rates at retirement, so we have used our explicit assumptions for purchases. As a result, there is an occasional incidence problem with regard to what money needs to be on hand to make an actual purchase since to some extent we are discounting for future dividends whose availability might not be consistent with the timing needs for purchasing of benefits. This is the primary difficult feature of our explicit assumptions. Amazingly, some of our pension representatives are objecting to our interest rates in a way that we would never have expected, by complaining that they are too high. There is a third problem brought about by explicit assumptions: the possible conflict between the law and IRS interpretations with regard to assumptions on flat benefit plans. We are not allowed to make assumptions of inflationary increases in the level of flat benefits, but, conversely, we cannot see our way clear to shading significally our interest assumptions to take into account the fact that we are valuing flat benefits. Therefore, this IRS interpretation is inconsistent with the methods that are considered appropriate by everyone I know, for valuing salary based plans, because the salary scale is consistent with assuming increases in flat benefits. However, the restrictions do not allow us to assume benefit increases, so the approach we follow is to use our best estimate assumptions and inform the administrators that we do not believe that they should make their contributions using minimum funding requirements but instead should fund rather heavily. In this way, they will not leave themselves in a position where a significant increase in input will produce a relatively insignificant increase in benefit in the future. This tells them they should back off their amortization target.

In developing our explicit assumptions, we make use of experience data to the extent we can. For most of the small plans in this group, we

certainly do not consider the plan experience data totally creditable. The actual earnings rate of the assets have the best credibility since that rate is based upon the General Account Investment Generation for all plans that we underwrite. For salary increases, we take into account the prior salary increases for the plan and compare these with the underlying wage pattern in the national economy over the period and what we feel the organization should be experiencing in a 4% inflation environment. We give about equal credibility between our past assumptions and the actual inflation adjusted experience. An equivalent technique is used for termination where we weigh prior experience and a generalized pattern on age and service turnover which is basically T - 1.

To aid the actuary in this analysis, my organization developed forms which merge the data and opinion into a recommended assumption which is issued as a starting point for the actuary's judgment.

The valuing of the ancillary benefits can be done within certain restrictions in two ways; either a term cost or a level premium. The latter method can be part of the underlying funding method or separate. While for most plans a level premium is preferred, we frequently use a term cost because it is acceptable under Academy guidelines if the benefit is not very significant and it is acceptable under the law. The most prevalent term cost technique for an ancilliary benefit is for the pre-retirement Joint & Survivor Spouse Benefit. Term cost is rather straight forward. If the level premium technique is used, it is based upon an average age at death and the probability of leaving a spouse times the average benefit that would be paid at death. The single premium is spread prior to retirement with the rest of the pension costs. The disability benefit is usually costed on a one year term basis. This is used for simplicity and to avoid problems of assumption-setting and explanation. Lump sum death benefits more frequently are funded by a level premium. The death benefits to which I am referring are primarily flat dollars times years of service under the flat benefit plans with negotiated input. There are a number of techniques to make these computations. The level premium technique is also used for special severance benefits.

In valuing early retirement, take the most straight-forward and easiest case first: a non-subsidized early retirement. It is possible that the true cost could be higher for a "non-subsidized early retirement" than normal retirement because there is not enough time to fund for the regular retirement benefits or the non-subsidized benefits may be set up using factors which are subsidized because of administrative convenience or difference between plan and valuation actuarial assumptions.

Regardless, a normal retirement age (NRA) is most probably assumed. For the subsidized early retirement, we would use an assumed average age of

retirement. If a Social Security supplement is payable, (this is not too common under small plans) we would make a slightly more refined estimate using incidence of retirement because the length of time prior to normal retirement age, or prior to Social Security eligibility age, is very significant relative to the cost involved. We would probably have to use a series of probabilities of retirement varying by age and possibly by service. The age selected is usually between 60 and the NRA due to Social Security eligibility. In the larger plans, actual experience may help determine the assumptions.

FREQUENCY OF VALUATION. Our normal procedure is annual valuations; we had a small case package a few years ago which had biennial valuations and we will continue a few on this basis. Skipping an annual valuation is reasonable if employee data remains consistent from year to year. This saves some expense.

Gain and loss analysis is very important for two reasons: one is that it provides a good quality control check on your valuation. If you can allocate properly among experience factors the reasons for difference in costs from year to year, then you probably have a pretty accurate calculation for your actual cost for this year. The only difficulty is that if last year's cost was wrong then this year's could be also. The other reason for a gain and loss analysis is that it gives you a measure of how good your individual assumptions were. We have a method which breaks down the possible gain and loss into components. The more straightforward items are, of course, interest, termination, and mortality. The gain and loss on account of changes in the benefits, which is primarily caused by changes in salary, is developed and then the other gains are done. We add them together and see how closely we come to this year's cost. These gains and losses are used whenever we review assumptions and we normally review assumptions every three years. We look at about one-third of our cases each year to avoid a work crunch. We relate the gains and losses to the assumptions to determine if assumptions should change. We also include both the gains and losses in an exhibit as part of each valuation report and may use them to explain to the plan administrator in the written part of our report why the funding levels have changed and sometimes to indicate future cost trends.

We have a fairly standardized report that is used for just about all plans independent of size. There are minor changes and probably customization in several of the very large plans. For all of the small plans, we use a fairly standard report. Normally it has a title or cover page, an index, and a one to three page report which makes mention of the contribution levels that are recommended, based upon the administrator's stated funding policy. It discusses, if necessary, any changes in costs due to significant gains or losses. It will also state the cost impact of any changes in either assumptions or plan benefits. Another section of this

report refers to any special cash flow needs of the insurance contract covering the plan. This report summarizes employee data and contains a plan description. Following this description is an exhibit which shows a reconciliation of participants from last year's valuation to this valuation broken down by the participant categories that were used.

The next section is a derivation of the Funding Standard Account, followed in most cases by a development of the unfunded liability. In another exhibit, the normal cost is developed for all of the benefits covered by the plan. After the normal cost exhibit is the exhibit of alternate recommended payments; three are normally shown. The three that we show are the maximum tax deductible payment, a recommended payment (based upon the employers stated funding policy with regard to amortization of the unfunded liability) and the minimum payment for the Funding Standard Account, including any credit balances and the required amortizations. An exhibit of gains and losses is then shown. After the gain and loss exhibit there is a display of requirements for contractual fund solvency. Finally, there is a complete statement of the funding methods and actuarial assumptions.

Basically this is our operating method and philosophy. We think it works well for us.

MR. NESSELLE: Thank you, Joe. Our last speaker will provide the consultant's viewpoint. John Muehl is a consulting actuary with Meidinger and Associates. Many of his clients have plans that would be considered small plans and he will be sharing some of his experiences with us.

MR. JOHN C. MUEHL: I would like to start by defining what I mean by a small plan. The definition used by a consulting firm - especially the major consulting firms - covers a larger group of plans than is usually included by actuaries working for insurance companies. A plan that covers no more than 100 lives is certainly thought of as a small plan, and plans as large as 200 to 250 lives can have characteristics of small plans.

Most major consulting firms are not structured to service the small plan efficiently. The very small plan - less than 25 lives - is not actively sought by most major consulting firms. Activity in the very small plan area seems to be diminishing by natural attrition - sometimes, unfortunately, because of plan termination. If the complexity of administration continues to increase, the number of lives included in the small plan definition will also increase.

What are some of the other characteristics of small plans, that is, plans with less than 250 lives?

1. Generally the company will continue even after the principal individual is gone, unlike the typical very small plan to which Tom referred.

2. The plan serves to satisfy a true retirement income need, rather than acting as tax avoidance for a few individuals.

3. The plan sponsor may be unwilling or unfamiliar with paying professional fees.

4. The plan sponsor's attorney and accountant often lack pension expertise, so the actuary is called on to perform a wider variety of routine services than may ordinarily be necessary.

5. The plan sponsor may not understand the pension environment. He is baffled by "unfunded liabilities," government reporting and disclosure, amendments to comply with regulations, and the actuarial valuation report.

6. The plan sponsor may not even understand his plan, and what it is designed to accomplish.

7. Plan design may be unduly complicated in order to take into account special cases, or to supplement deficiencies in other employee benefit areas.

In my opinion, one of the most important functions of the consulting actuary is the education of his client. The small plan sponsor may be very proficient and knowledgeable in his own business, but typically he knows little about his pension plan. The process of education extends to all areas of plan operation: calculating benefits, processing retirements, communications with employees, government reporting, plan objectives and all aspects of adequate plan funding.

The process of educating the plan sponsor goes beyond an explanation of the valuation method and assumptions and how they work. The actuary should make the plan sponsor aware of how events - both within the control of the plan sponsor and beyond his control - will affect the funding of the plan. The plan sponsor should be aware that things like salary increases, investment return, expanded operations, or encouraging employees to retire early or work past age 65, will affect his pension contribution.

Some of the characteristics of small plans that I mentioned earlier - the plan sponsor not understanding the pension environment or his own plan - can cause some problems in valuation and administration. Some of these problems are (1) the gathering of accurate data, particularly service data; (2) maintaining a data base to comply with ERISA break in

service and benefit statement rules, (3) re-employment of a retired participant; and (4) lump sum payout provisions.

Difficulty in gathering accurate service data is a common problem. The plan sponsor finds ERISA type service definitions incomprehensible. Therefore, a clear and concise data request, which translates the plan's service definition into common language, is essential. The data request for a plan using hours of service must address two areas. First, hours of service for the plan year just ended must be furnished for all plan members as of the valuation date, as well as plan members who terminated during the year. Service data for terminated members is needed to determine if the terminated member was vested and, if so, the amount of his vested benefit. Second, hours of service for new members must be furnished for each plan year from date of hire so that the new member's service can be determined correctly. New member service can cover five years or more.

A second plan design feature that can cause problems is determination of benefits for employees who are rehired. The plan sponsor will rely on the actuary to determine service for rehires, so establishing and retaining complete data is important. The proposed regulations on benefit statements make the retention of complete and accurate data a requirement. Records must be maintained which are sufficient to determine a member's accrued benefit. While the proposed regulation makes this the responsibility of the employer, as a practical matter, it will be up to the actuary to maintain the proper records.

In the past, we have prepared a simple benefit statement showing the estimated benefit at age 65 with no salary increases, and an estimated Social Security benefit. Plan sponsors have appreciated this employee communication device, and often are more anxious to receive the benefit statements than the valuation report. The proposed benefit statement regulations, if finalized as they currently stand, will require a re-thinking of the statement being provided. If the regulation is adopted without substantial change, we will likely continue to supply the statement as in the past and prepare a complying statement only upon the request of the participant.

Third, the amendment to the Age Discrimination in Employment Act (ADEA), which extended employment protection to age 70, may cause some unusual problems in the area of rehiring. If the plan provides for reinstatement of benefit service upon rehire, a retired participant who is reemployed can receive a large increase in pension by returning to work at a higher salary than when he first retired. The problem is particularly acute if the benefit formula has been improved in the interim. Thus, a potential additional liability exists for rehires. In a small plan, large distortions can occur. In discussing this with plan sponsors, we

have found them taking a more cautious approach, such as tying off the accrued benefit from the first period of employment and adding on a second accrued benefit.

Another potential problem caused by the amendments to ADEA involves the election of a method of payment. Suppose a participant retires, and is being paid a joint and survivor benefit with his wife as beneficiary. Then the retired participant returns to work after his wife dies. Upon re-retirement should he be allowed to elect a life-only benefit? This would be similar to allowing a participant who had elected a contingent annuitant form of payment to revert to life-only if the beneficiary died before the participant. *I do not have a good solution to this problem.*

A fourth area of plan design problems is lump sum payment provisions. Many of the problems associated with lump sum payments can be avoided with proper client education. One of the characteristics of the plans that I mentioned earlier is that the primary purpose is to provide a monthly pension for the life of a pensioner. A lower than current market rate of interest is used because of the long-term nature of the assumption. One by-product of the lower interest rate is to inflate the lump sum value. However, to allow the lump sum payment would defeat the retirement income objective of the plan or, if an annuity is purchased with the lump sum, it would provide a greater benefit than promised under the plan formula.

The choice of a funding method is generally left entirely to the actuary, since the client has little understanding of the difference in methods. I prefer a method that tends to fund accrued benefits rapidly, since the uneducated sponsor of a very small plan may terminate his plan on relatively short notice. I favor Entry Age Normal with a Frozen Initial Liability. This also simplifies the treatment of gains and losses. I try to give the client an explanation of how funding methods differ, and why I prefer the method I have chosen. Valuation of ancillary benefits is done using the same valuation method as retirement benefits. Approximate methods may be required to value the benefits efficiently.

I think that simplicity in valuing assets is essential. The value of assets may be the only number in the entire valuation report that the plan sponsor can understand. Consequently, market value, or a simple adjustment to cost value or market value are the most practical asset valuation methods for small plans.

Often plan assets will be invested in pooled fund accounts of a local or regional bank. I have yet to see a completely satisfactory method used by a bank to report the value of transactions in the pooled fund account. Often, income on pooled funds is omitted, leaving the plan sponsor with the feeling that his trust fund is earning a very low rate

of return. The plan sponsor has the impression that his fund manager is not doing as well as he actually is, and it is the consulting actuary's responsibility to correct that impression. For the uneducated plan sponsor, lower than expected investment results can cause dissatisfaction with the entire plan.

The proposed regulation on asset valuation has given me very little reason for concern. The only change I have found necessary to make is to impose the corridor limits for plans where I am not using market value.

The proposed regulations on the valuation of assets and Revenue Procedure 78-37 have classified the method used to value assets as a funding method. Additional care must now be given to the selection of the asset valuation method, because of the difficulty imposed by the Revenue Procedure in changing the method.

The selection of assumptions for the small plan presents a particularily challenging problem. No reliable experience data exists, yet there may be valid reasons why plan events,such as salary increases and investment return, will not follow broad economic trends.

In selecting assumptions, I focus primarily on a five- to ten-year time horizon, rather than the 40- to 60-year span sometimes mentioned, with an eye to the long-term consequences of the assumptions. I view the assumptions as a dynamic aspect of the valuation, to be changed gradually from time to time as conditions require. Considering the variability of the current economic environment, the assumptions I set today will be revised in three to five years, at most. If the assumptions have produced a reasonable cost pattern over that period of time, they have served their purpose.

The approach I use in selecting assumptions uses three steps:

First, select a consistent set of economic assumptions - investment return, salary increases, inflation, social security increases - and a published mortality table such as UP-1984. My current starting point is 7 percent interest - 7 percent salary scale. This is not exactly an explicit set of assumptions, but it is fairly close.

The second step is to draw from the plan sponsor any information he can give about anticipated turnover, salary increases, and occasionally, retirement rates. Since experience data is sparse and probably an unreliable predictor of future events, the judgement of the plan sponsor is the best source of information.

Third, based on any input the plan sponsor can give, modify the starting point assumptions, if necessary. The result of this process is a set of

assumptions which does not vary greatly from the original consistent set of economic assumptions. Where variances occur, there are valid reasons.

The valuation report is the showcase for the actuary's work and the justification for his fee. It should be written primarily for the plan sponsor and, as such, understandability is of key importance. It should contain the figures of most interest to the plan sponsor, presented in such a way that they are easy to find. Sadly, plan sponsors do not study actuarial reports in great detail. Often the plan sponsor is interested in only two items, the contribution for the year and his own anticipated pension.

I believe the format of the report is vitally important. The report should start with a summary of the key results of the valuation, with the range of contributions being the first item. Often the sponsor of a small plan will not read beyond the summary and will view the balance of the report as just filler material.

Preparing a list of the anticipated pension for each participant is a service that plan sponsors do appreciate. The plan sponsor must be warned, however, that the benefits on the list are estimates, and should be used only as such. The maintenance of a data base will increase the accuracy of the listings.

We have found the following order of presentation to be quite satisfactory:

1. Summary of key valuation results.

2. Valuation calculations, including the development of valuation assets, unfunded past service liability, normal cost, funding standard account, full funding limitation (if needed), range of contributions, and value of accrued and vested benefits.

3. Basic information, including actuarial assumptions, asset valuation method, actuarial cost method, summary of plan provisions, data reconciliation, and summary of participant data.

4. Benefit listings, showing each participant status (active employee, vested terminated, and retired), employee contributions, and anticipated normal retirements for the next several years.

In conclusion, small plans present many problems not found in other plans. One of the primary challenges to the consulting actuary is to educate and re-educate the plan sponsor concerning the pension environment and the nature of his plan.

MR. GORDON W. CLARKE, JR: Tom, regarding the envelope method that you discussed, you did not really describe which method it was. You said that you had gone from frozen initial to another method but that other method sounded more like a set of assumptions and I wondered if you would be more explicit about what the method really is.

MR. MITCHELL: I really did not describe an actuarial method. It was really a different way of dealing with the death benefit.

MR. CLARKE: Do you distinguish between policies having cash values and pure term insurance or do you treat them the same way?

MR. MITCHELL: Basically, what we are doing is splitting the policy into accumulation of assets and provision of mortality while absorbing some expenses. The method would work equally well with term insurance. While the client would be paying less for the term insurance he would not be developing any assets from it.

MR. CLARKE: What assets would you use?

MR. MITCHELL: The asset figure would then be the total assets of the plan including the cash values of the life insurance money.

MR. ROBERT E. MURPHY: I see the real need for doing an annual valuation for cases with less than 20 lives and where more than 500 lives are involved, the employer will demand an annual valuation. However, in view of the cost involved and the stability of the intermediate sized group and especially if the regulations come out saying once every three year filings of the 5500, what are your thoughts about doing a valuation every other year or every third year for your intermediate size cases?

MR. MACAULAY: The size of the case is not really the determinant of how frequently you need a valuation. The determinant is whether the data that you receive in a given year is sufficiently consistent with the data in the previous year so that the cost will be in the same range. Usually the cases that lend themselves to less frequent valuations are your stable, large corporations and not your small cases. So, it is a determination based on the data for the cases. If a plan is running on less frequent than annual valuations, we still want to see at least some census data to see if our figures look reasonable.

MR. HARRY S. LUTZ: I would like to direct this question to Tom. You stated that in your individual policy plans you usually provide for a guaranteed basis for personal retirement annutiies and that you also have a provision in most of these plans for lump sum settlements. My question is: "Which basis do you use for determining lump sum settlements--your valuation basis or your purchase basis and why"?

MR. MITCHELL: When we do a valuation, we make what we think is a reasonable estimate of future rates at which annuities can be purchased and these typically fall midway between fairly low rates guaranteed in insurance policies and the very high rates you can get nowadays. When we do lump sum options, actuarial equivalents and early retirement reductions, we always use current purchase rates available to the insured. These should be fairly close to current market conditions and they cannot gain very much by going outside the plan.

MR. GARY W. HERTEL: Tom, you said, I think, that you deal with prototypes, as we do. How are you revising the prototypes in the next few years in relation to the new revenue ruling 79-50 requiring that actuarial equivalency should be based on some pre-determined index out of the reach of the actuary or plan administrator.

MR. MITCHELL: That is still a problem. I have no easy solution. The problem is that if you prescribe something and it goes significantly away from market conditions, the option either becomes worthless or so valuable that it overwhelms everything else.

MR. NESSELLE: We have just had a defined benefit prototype approved at New England Life and we are using,as a definition of actuarial equivalent, a calculation based on the alternate non-participating rates that are in use by New England Life at the time the determination is made.

MR. MITCHELL: That works for the actual purchase rate at retirement. Does that work for a deferred retirement too? How would you discount it?

MR. NESSELLE: Unfortunately, we do not have a non-participating product. We have developed, however, factors based upon the same assumptions used in developing the alternate non-participating settlement option rates. We use these for terminations occurring prior to ages for which we have an immediate annuity rate.

MR. MITCHELL: The practical problem is when those rates change, somebody who might have been quoted a different figure the year before, thinks he has been robbed and perhaps he has.

MR. MACAULEY: John made mention of this problem on our asset valuation method with the still open asset valuation regulations and the revenue procedure. In reality, if you read the asset valuation regulations very closely, they actually say that any change in the description of the asset valuation method is a change in funding method. A number of commentators, when the comment period was open on asset valuation regulations, made the point that they either wanted the asset valuation method to be

considered an assumption or to be exempted from this. There is precedent for exempting things from the requirements of this revenue procedure. For example, the IRS will allow a change in the method of funding an ancillary benefit if the change is to a level premium approach from a term cost approach without their consent. Hopefully, when we get the final regulations on asset valuation, regardless of whether you have either added a class of investments because the employer has added a class of investments or whether you have decided to be a little more explicit in your description, the IRS will not require the moderately massive filing that is necessary according to the revenue procedure.

MR. ROBERT E. DOUGAN, JR: Joe, on this asset valuation regulation, as I recall for insurance contract plans, deposit administration and IPG contracts, you have to value the assets on a contract termination basis. Has this caused any problems with you or do you use the book value, or what would actually be there if they terminated the contract?

MR. MACAULAY: We do not value any of the fund-style assets on a termination basis and we do not believe that the regulations either require it or will finally require it. On an IPG plan there is a piece in the regulations that seemed slightly confusing and we discussed it with the IRS. We like, for an IPG Plan, to use the complete IPG fund as the assets and on our actuarial assumptions we value all of the benefits both active and retired. It is improbable that it would be the same as the amount that is restricted in the contract and so a strict interpretation of the proposed regulations would say that we could not use this method. We spent about an hour on the phone with a member of the technical branch of the IRS who indicated they intended to let us do what we wanted to do. This actually should not be much of a worry for the insurance companies in that the method we use is the method that is most consistent with the methods consultants use. But, no, we do not value any of the funds on a termination basis.

MR. ROBERT J. HESS: You have all mentioned retention of the employee records and I am wondering whether you retain a terminated employee in any way in the liabilities, or do you recognize the latent liabilities for a returning employee at all, in the case where he has an accrued benefit and comes back prior to a parity break?

MR. MUEHLE: I think this falls in the nature of an assumption and it is one that we really do not explicitly state in our list of assumptions. Our assumption is that a terminated employee will not return, so we are not carrying any additional liability for that. However, we are retaining records for that situation.

MR. JOHN L. HOFFART: When you use your split funded method and you need to allocate your fund by participant to get an individual level premium for the balance of the benefit that has to be purchased, how do you allocate that fund?

MR. MITCHELL: We try to look at how the funds got there; at the funding position of the plan. If it is essentially fully funded or it is up against a full funding limitation, then we can prorate it by the liabilities. If it is in a different position or has had some losses, we may have to invent a method for doing it which is reasonable.

MR. HOFFART: There are two methods, I think which are commonly used. Either in proportion to the present value of the benefits or present value of accrued benefits. Which is permissible? Or are they both?

MR. EUGENE H. FROST: I think what he is referring to is a spread gain method for individual level premium. It is not the traditional basis. I have been in contact with the National Office on this subject and the only methods they will accept are ones which produce a level cost if the assumptions are exactly realized. Under your allocation method, you must produce normal costs that are the same from year to year. So, you cannot use present value of accrued benefits, but you can use accumulated normal costs. There are two or three others. You can develop an assumed account balance, built up from year to year. But the criteria that they are using now, basically, is they want to use a method that will finally be approved in a regulation. You can use any of the six funding methods stipulated in ERISA without any problem, but of any of the modifications, the only ones they will approve, are ones that they think will be approved in the final regulations.

MR. NESSELLE: Along those lines, we have filed for a class ruling for a change of method to one which we call a modified aggregate method in which the assets are allocated in proportion to accrued liabilities. We include as part of the calculation a so-called cash value normal cost that is calculated from issue age, with the intention of keeping the overall cost of the plan as level as possible.

MR. LARRY BERNSTEIN: I have also been dealing with the IRS on the question of allocation of assets to participants. They expect to come out with a regulation near the end of the year. Their criterion is that if the assumptions of the plan were realistic or if the assumptions have always been realized from the date the plan was put into effect, then you will get level costs. This criterion will allow you to use only two types of allocation methods, both of which are now acceptable. One is to accumulate your past normal costs, using the valuation assumptions (i.e., interest, mortality, turnover and salary scale). This could result in a mess. The other method is entry age normal using the date of participation--not the date of hire. If you use date of participation, you will get a level cost if your assumptions are met.

MR. DOUGAN: Tom, if you do not allocate assets and if you do not use a spread gain method of some sort, then what you wind up with is an unallocated, unfunded liability. Does that make sense?

MR. MITCHELL: Yes. Precisely.

MR. DOUGAN: How do you treat this unfunded liability, both for your recommended contribution and for the Funding Standard Account?

MR. MITCHELL: You must spread it over 30 years unless it is from a gain or loss in which case you have to spread it over 15 years.

If there is a huge loss and somebody is near retirement, I have a problem. We can forget about actuarial methods and everything else. As I said, we could have a problem if there were a huge loss right before retirement. In doing it this way, the only way to increase the cost far enough would be to spread the gains and losses over the future lifetime instead. In that case, my method would be in trouble. Normally what we do is to treat the whole thing as an unallocated gain or loss. Every item that goes into it is spread over 10 years for the maximum from when it starts. After I have been doing this for 10 years, I have to remember which piece is fully amortized. But, I expect something else to happen between now and then. For the Funding Standard Account, it must be amortized over 15 years unless it is a plan change, then it is spread over 30 or 40 years. We keep track of a running maximum and minimum amortization each year, which is the prior amounts plus whatever pieces arose this year.

MR. MICHAEL LIBMAN: There is a spread funding method without allocating assets. We use individual level premium valuation for small cases and work out the present value of future normal costs on a tabular basis. This assumes that assets exactly equal the accumulation of the funds put in. Then we calculate an experience present value of the future normal costs, (that is, the present value of future benefits less assets on hand), and apply that ratio to the normal cost. This is a non-allocated asset method of spread funding. We have discussed it with IRS and it is acceptable to them. It avoids some of the complexities of the other method. Of course, you do not have individual asset accounts to show the plan's sponsor.

MR. MITCHELL: The other side of that coin is that we may have a plan that is not in any trouble but there is one person very close to retirement. The spread method suddenly kicks up every time somebody gets near retirement. So the average lifetime over which I would spread something is going to take some unusual values. It is a very unusual function and for a very small case it can be very inappropriate to say, "Well, last year you had a loss but you did not have to pay very much for it, but this year it is double and next year it will quadruple that".

MR. LIBMAN: As a consulting matter on those small cases where we are using this method, I go to great pains to stress to the plan's sponsor

the unfortunate consequences that asset investment losses close to retirement can have. Particularly in the 2 or 3 years just prior to somebody's retirement there is a separate statement in the transmittal letter of the report and in the report that this is no time to be taking risks with plan investments.

MR. NESSELLE: Have you had any problems with the IRS in determining the full funding limit that they insisted upon, using the accrued liability developed by the method?

MR. LIBMAN: There really is no accrued liability developed by the method.