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### PROBLEMS OF SMALL DEFINED BENEFIT PLANS

*Moderator: CHARLES E. FARR. Panelists: CHRISTOPHER H. WAIN,  
JAMES A. KENNEY*

Discussion of problems of small plans, excluding those peculiar to defined contribution plans. Both insured and non-insured plans. Small plans are defined generally as under 50 participants.

1. Plan design - special considerations
2. Administration
3. Valuation - data; appropriate actuarial cost methods; selection of assumptions; frequency
4. Regulatory and reporting problems

MR. CHARLES E. FARR: Our presentation will contain two sections of comments—those related to insured plans and those related to non-insured plans. Because the insured plan comments will be primarily aimed at individual policy pension trust (IPPT) business, it may be helpful to fill out the picture with an overview from the insured, non-IPPT vantage point.

1. Plan design - special considerations

Although it cannot be universally true, it has been said that small plans are sold, not bought; that the sale is of a tax shelter, not a retirement plan; that the employer in a small business is receiving personal financial counseling while his employees are not getting good retirement counseling; that it is a greed sale. It has been said of the small plan that the primary question of the employer is: "What is in it for me at termination of employment, at death or at retirement?" Secondly, the design of the small plan is heavily weighted by personal considerations, because the employer in a small firm knows all of his employees very personally and wants his plan designed initially to fit the personal needs of himself and his employees as they exist at that time.

Some of the design problems of very small plans arise because of their imbalance. Many such plans have one or two participants with very high benefits and the other participants have low expected benefits. These are the plans where those with high expected benefits generally determine the design of the plan and make it favorable to them. The design will normally include a lump sum cash option at termination or retirement, with there being no intention on the part of the participants with large benefits of taking an annuity.

Another design feature might be to have a special early normal retirement age to maximize the amount of the payment under the lump sum cash option at retirement. Any plan designed with a lump sum cash option, where the sum is a book value rather than a market value, has the

potential for financial instability. The impact on the plan of large book value payments can be to reduce the asset performance for the remaining, smaller participants in the plan.

Another problem in a small plan where there are not enough lives to give even a minimum spread of risk, is the inclusion of a lump sum death benefit in the event of death prior to retirement under an unallocated plan. The problem here arises when the amount of a death benefit is not related to the funding that has occurred. The impact on the plan of the payment of a book value amount at death can be similar to that of a payment of a lump sum amount at retirement, except that intelligent selection against the plan is less likely because of the unpredictability of death in the usual situation.

Another problem in design occurs under an insured plan where the value of the annuity at retirement is funded by level premiums, thus building up cash values. If, as is frequently the case, the situation at retirement permits the use of more favorable annuity rates to set up the reserves for the annuitant than the maturity value that has been funded, the cash value just before retirement or at retirement is attractive in lieu of the annuity.

Another problem in the design of such plans as those just mentioned arises where there are large salary increases the last few years before retirement and the retirement benefit is dependent upon such final salaries to some extent. A rapid increase in final salaries requires heavy funding in the last few years just before retirement.

## 2. Administration

The administration of a pension plan is filled with technical details. Who is eligible, when do they enter, what information must be retained and/or provided, how is service counted, what salary is counted, what are the benefit options, how is the benefit calculated, how is the cost determined, when do things have to be provided, etc., etc.? These are some of the many items that any pension plan administrator works with and the small employer seldom has the expertise or the time available to acquire the expertise to handle these items. ERISA landed in the middle of this situation and added much to the complexity that already confused the small employer. Such things as breaks in service, service definition, joint and survivor benefits, computation periods, benefit accrual, benefit determination, and so on are even less likely to be understood by the employer.

This has generally meant in the last few years an even greater reliance on those outside of the employer; mainly, the actuary, the agent, the group representative of an insurance company, the broker, the accountant, the lawyer, or the insurance company home office.

Some of the problems noted in an insurance company home office pension administrative unit are examples of those that can be encountered whether insured or uninsured.

- a. Many small plans base vesting accrual on 1000 hours, but the employer does not have a means to keep a record for reporting this item.

- b. Sub-chapter S corporations usually end up with a carefully tailored plan for just a few lives, which is difficult to administer.
  - c. In a small plan there are not enough occurrences of retirement, termination of employment or death for an employer to learn how to fill out the forms and report the occurrence to the insurer. This means administrative manuals of instructions necessary, but their importance is not always understood and they even get lost.
  - d. Small employers have a tendency to think all of the responsibility in connection with their pension plan is with the insurer and it is then largely up to the administrative person in the insurer's office to lead the employer in the right direction and to even make some of the administrative decisions for him.
  - e. Small plans covering doctors or lawyers or accountants frequently have a small number of participants with one or two lives reaping most of the benefit. Such plans have problems with plan provisions that have been especially designed after the one or two large participants terminate, retire or die.
  - f. Group representatives and agents are not very much interested in doing service work on small plans because of their normal compensation formula, which does not reward them very much for this activity.
  - g. Plan amendments and changes in plan design which require some different handling or change in data submission by the employer frequently do not get recognized and the administrative work continues in the office of the employer on the old basis because "that is what they always did."
  - h. Forms required by the government to be filed create a whole series of problems. The employer does not know what the form is, what it is for or why it must be filed, he does not know when it is supposed to be filed, he does not give it much priority, the employer frequently asks for help from the insurer or the local group office. The small employer usually does not have an accountant or tax consultant to help him. Every year the employer will need to be reeducated on what needs to be done and when. For small employers the infrequency of these procedures means that adequate checking systems are not established and Schedules A and B coming from the insurance company are frequently lost. Many employers are not even aware of such a thing as a summary annual report. They also are not aware of such things as reportable events. Sometimes employers are not even aware that they need to submit their plan for qualification.
3. Valuation -- data; appropriate actuarial cost method; selection of assumptions; frequency.

At least in my office we have encountered no real continuing problems with data. Hypothetical problems involve lives omitted, incorrect salaries, incorrect date of birth or sex or years of service. Other problems could be in connection with timeliness of data or current information as to assets and asset value.

We are willing to let the employer decide on the cost method if there is no emerging liability problem. In the absence of the employer preference and an emerging liability problem, this office has as a general rule to use the entry age normal method with frozen initial liability regardless of size. This office checks for an emerging liability problem at the start of a plan, especially if there are five lives or fewer in the group. If there is a problem, the cost method used is individual level premium. After the problem has gone the actuarial cost method is changed to the entry age normal method with frozen initial liability.

Our general approach to assumptions is that experience of a small group is not reliable. This leads to the use of a standard package of assumptions which may vary by industry. We follow certain rules for the threshold of believability of experience. These are necessarily rough and perhaps not statistically justifiable. However, if a case has at least three years of experience and has at least 100 life years of experience in those three years we are willing to use the employer's data as a reference in setting assumptions.

During the first three years of a case we record salary, termination information and continue to do so until that case qualifies for analysis. We decide on what assumptions to use. We do not argue or discuss them with the employer on the grounds that setting assumptions is our job and we must be responsible for them. We do the best we can to categorize at the start of a case what the initial assumptions should be and then we watch the case to see if there is a need to change.

It has been our attitude that a lump sum death benefit from the unallocated pension fund is not a proper benefit and we have refused to write contracts with such a provision.

#### 4. Regulatory and Reporting Problems

Small employers generally have less knowledge of what is going on. This means there is a problem in communication. We cannot justify the time and expense to educate the employer by visits, expensive reports, etc.

One current question concerns the ruling on actuarially equivalent options. Plans must describe, in a fashion not conducive to selection by the employer, the basis on which the optional incomes are equivalent.

We have problems with the tests to avoid "the rule of 40 and 4" vesting. Few plans try to avoid it, and even fewer succeed.

On the bright side, there are fewer conflicting decisions between districts than there were before. This is because of the revision of districts and of a revision in the review process. The regional review was eliminated and the system now has appeals offices. The reviewers also are more frequently using the same review checklist.

Another problem is that the IRS does not review plans for the DOL regs, so the IRS can pass a plan and sometime later it will be discovered that the plan conflicts with DOL regulations.

Small customers, because of a lack in expertise and attention, have continuing problems with the 5500 series of reports. We are experimenting with computerized completion of reports in some instances. It appears that much progress can be made in this area. We expect this to be expanded.

The hoped-for reduction in paper work by requiring reports only every three years may not be achieved for Schedule A and Schedule B. The report form for every three years is longer than before, and it is not clear that the interim Schedule A and Schedule B can be eliminated.

The new form for the summary annual report does not seem to be effective from the standpoint of giving the reader meaningful information.

MR. CHRISTOPHER H. WAIN: The principal problem of small defined benefit pension plans is ERISA, its implications and its implementation. The various required plan complexities, record keeping needs, reports, possible fines, and potential liabilities have caused a trend away from defined benefit plans -- and from retirement plans as well, for that matter. This has recently been aggravated by inflation. It has engendered a concern that defined benefit costs will escalate and the buyer will both be locked in and have little control of the situation. In the field of small pension plans, the plan typically has to be sold. These concerns and burdens discourage many agents from entering the field, as well as cause others to withdraw from it. ERISA and its implications, aided by inflation, then are discouraging both those who do the actual selling of the plans as well as the buyers. The result is socially undesirable. A defined benefit plan will do a better job of providing an adequate and realistic retirement income than any other type of plan.

I mentioned liabilities. The two most serious, financially and psychologically, are the liability if the plan terminates when benefits insured by the Pension Benefit Guaranty Corporation have not been funded and the fiduciary liabilities. The possible PBGC liability of 30% of net worth could in some cases impair a corporation's ability to borrow to carry on its business. With the fiduciary liability applicable to a variety of people and acts, with any participant or beneficiary of the plan or the Department of Labor having standing to sue, and with the remedies for violations including the right to impose punitive or exemplary damages, non-pension experts are scared.

The law did recognize that there would be problems for a small defined benefit plan, and provided an escape from some of them in the form of the "insurance contract" plan. This was designed to eliminate the need for an actuarial valuation for plans funded by income endowments or similar policies. These policies, of course, guarantee absolutely that if all their level premiums are paid when due, the retirement benefits specified will be absolutely payable. The insurance contract plan legislation also provided that in the event of termination of the plan or any participant in the plan, in effect the liability of the plan could not exceed the cash value of these policies. All this sounds great, but problems are present. A new one is that no regulations have been issued, so there is a peril in interpreting the law in the irregular situations that are normal for pension plans. An old one that has been aggravated is the cost inherent in having to issue over an individual's lifetime a policy every year or so to reflect salary increases. The aggravation comes from the requirement to include in the

plan employees with as little as six months of service and who are therefore subject to high turnover rates. Clients do not like the mass of paper that ultimately develops from the many policy issues. The concept of adjustable life may prove successful in improving this situation; the jury is still out on the net gain that can be achieved in the face of the other constraints adjustable life must satisfy.

A more basic problem of the insurance contract plan funded with income endowments is that the initial cost and the guaranteed maximum costs are relatively high because of the need to use conservative guarantees both in the pay-in and the pay-out periods. Also, net cost results are often higher than with other types of funding instruments because of the costs typically associated with life insurance policies. All of these problems, plus that of multiple issues, can be reduced with a flexible annuity that recognizes a schedule of purchase payments -- though it may be hard to get agents to sell a plan for the commissions typically paid by a flexible annuity. Anyway, the payment schedule of the annuity can be amended whenever benefits are changed to reflect the level payment cost of the change. One problem, though, is that flexible annuities often provide for interest on payments made only from the date the payment is received by the insurer. So if the payment is made on other than the due date, the fund accumulation at year end will not be the amount contemplated by the plan and contract. This, in turn, can be overcome by providing for a year end premium adjustment. An extra payment can be made if there is a shortfall and a refund or credit if there is an excess. Such an arrangement is actuarially feasible and can be justified as compatible with ERISA, but the IRS has not ruled on it.

Nuisance problems develop. One that has come to my attention is the handling of insurance policy dividends in split funded plans. Traditionally, they have been applied to reduce the gross premiums. These reduced premiums plus the auxiliary fund contribution have constituted the normal cost of the plan. But on two occasions the Pension Actuarial Branch of the Internal Revenue Service has held that dividends from insurance policies should be considered as actuarial gains subject to amortization as such and not as a return of premiums. Hopefully, an efficient solution to this matter will ultimately be worked out.

Many of the problems of a conventional defined benefit plan for a small employer can be overcome by a target plan. In this, retirement benefits are specified as a target amount. On the basis of reasonable interest assumptions before retirement and both mortality and interest after, a payment is made that will accumulate to the amount needed to purchase the benefit at retirement. If investment returns are superior to those contemplated in the assumptions, the employee will have a bigger retirement accumulation, and if worse, less. No actuarial valuation is needed, and no contingent liability is present at plan termination. The paperwork problems previously described are present. Also, present law limits the maximum contribution for an employee to the defined contribution limits of Code Section 415 -- 25% of earnings and an annually increasing dollar maximum. And 25% is too low to permit a reasonable retirement benefit for many who are close to retirement, especially if there is a significant past service liability.

In administration, there seem to be at least three basic problems. The first is getting accurate data consistent with the payments made to an insurer -- data on who has become eligible, what each participant is earning, and the like. It may be that when an insurer provides administrative

services for any type of plan it is being selected against. Possibly plans that have good bookkeepers elect to do all work but the valuation in their offices; others see the provider of services as a pigeon. A second problem is getting an understanding by the client of the results--why are not there separate accounts for each participant, why does not the side fund provide a death benefit? Why indeed should the employer be concerned about having results consistent with his plan when the IRS will never audit him? And finally, whether the communication problem is solved or not, there is the problem of expenses incurred versus fees charged. Any fees for a defined benefit plan are apt to seem high to the client. It is doubtful that the costs of serving all types of ERISA plans can be equitably and competitively absorbed in premiums. Unless superb management and agent control can be exercised, the costs of administrative services are apt to be much higher than could reasonably have been expected.

In conclusion, the problems of small defined benefit pension plans are many, substantially outnumbering the comfortable, solid solutions that have been reached. Whether they, and retirement plans for small employers generally, can persist will depend on the legislative and regulatory climate that develops in the next few years.

MR. JAMES A. KENNEY: Let me establish my frame of reference. I typically work with plans of less than 25 lives with 1 to 4 highly compensated individuals who are also the decision makers in the organization. Most of the plans are for professional corporations, and are individually trusteeed. The motivation for the plans is tax savings. This produces several corollaries:

1. A defined contribution plan also exists so advantage can be taken of the Code Section 415 limits.
2. The plans are integrated.
3. Plan sponsors want the maximum deduction.
4. Benefit design tends toward a percentage of final average compensation since this works best with Code Section 415 limit.

I would like to address the topic of plan design at the moment of plan installation. I have two sub-areas here. The first area is determining the level of benefits, and the second area is comments on integration with Social Security.

The major problem that I have discovered in determining the appropriate benefit level is the prior existence of a defined contribution plan. In this situation it is most difficult to determine the benefit level for the defined benefit plan. The limitation involved for the combination of a defined benefit plan and a defined contribution plan is referred to as the 1.4 limit. This means the sum of the defined contribution fraction and the defined benefit fraction cannot exceed 1.4. This limitation is defined in Code Section 415 of the Internal Revenue Code, and it is amplified in Revenue Ruling 75-481. Revenue Ruling 75-481 is an extremely important rule for those who have to deal with small defined benefit pension plans because it discusses how to handle the combination of a defined benefit plan and a defined contribution plan.

The defined benefit fraction is the projected annual benefit under the plan divided by the maximum allowable benefit. The projected annual benefit is computed assuming a constant future salary, no change in the terms of the plan, continued participation to normal retirement date, and all other relevant factors under the plan remain unchanged.

The defined contribution factor under the plan is the sum of all annual additions to the participant's account during the existence of the defined contribution plan divided by the sum of the maximum annual additions for all years of service. An annual addition is the sum of the employer contribution, the forfeitures, and the employee contributions in excess of 6%, or one-half of employee contributions if that is greater.

One important thing to note about the defined contribution fraction is that the denominator includes years of service prior to the establishment of the defined contribution plan. It also includes years prior to the time at which the employee began participation in the plan. This allows a client who incorporated a year or two before setting up a defined contribution plan to have a lower defined contribution fraction than if he had established a defined contribution plan right away.

A considerable number of problems arise in determining these fractions. It is not necessary to compute a defined contribution fraction if the defined contribution plan established is less than or equal to 40% of the limitations on the defined benefit plan. This might be the way to go if the highly compensated employees in the plan tend to be young (less than 40 or 45 years of age), in which case the maximum deduction can be achieved by installing a 100% defined contribution plan and a 40% defined benefit plan. Generally, this is not the case. The more highly compensated employees tend to be somewhat older than 40 or 45 and the maximum contribution for them tends to come under the defined benefit plan. This means that the defined contribution fraction must be determined under the prior plan if there was one.

The major problem in this area is that of obtaining the appropriate data. The following data is needed to compute the defined contribution fraction: salary data for all years of service for every participant in the plan, hire dates (incorporation date, if later) for all of the participants, history of contributions, both employer and employee, and forfeitures under the defined contribution plan. A lot of this data is difficult to obtain, and the question then arises what to do if the employer is not able to furnish this type of data. Revenue Ruling 75-481 in Section 9 provides a reasonable approximation for determining the additions to the numerator and denominator of the defined contribution fraction for the first limitation year beginning after December 31, 1975. It is important to stress that this approximation applies only to the first limitation year. The limitation year is, generally speaking, the plan year. It is essentially the period of time which is used to determine whether the plan is complying with the limitation under the 415 rule.

The reasonable approximation is determined as follows: The contribution to the numerator in the defined contribution fraction is the account balance at the end of the plan year preceding November 3, 1975 plus any annual additions under the defined contribution plan since that date, including the annual addition in the first limitation year after the effective date of ERISA. The addition to the denominator is the years of service up to and including the first limitation year times the maximum annual addition for that limitation year. By using the account balance rather than the sum of the annual additions prior to November 3, 1975, the employer loses a little ground because all the investment income that was earned by the employer contributions prior to that date is included in the numerator. However, because the denominator involves years of service times the maximum annual



addition for the limitation year in question, if the highly compensated employees had a salary that was higher in that limitation year than in previous years, a higher addition to the denominator will result producing a lower defined contribution fraction. It is important to note here that the definition of a year of service is the basic 1000 hour definition.

Those with experience in setting up defined benefit plans in situations where the employer has had a prior defined contribution plan, which was in existence prior to ERISA, know that getting the necessary data is a problem. The reasonable approximation rule is one of the most important rules discussed in Revenue Ruling 75-481.

The next problem is the client who does not have contribution or forfeiture or salary data for years beginning after December 31, 1975. The plan sponsor's only hope is to pray his plan is never audited because all of the years after December 31, 1975 are subject to the limitations under Code Section 415. The employer has to be able to demonstrate that during those years he did not violate the regulations. If he is missing data for this period of time, he is going to have difficulty showing that he did not violate these limitations. The IRS has not issued any guidelines on what to do if you do not have data for this period. The best thing to do would be to install a 40% maximum defined benefit plan and allow the defined contribution plan to remain the maximum plan.

Let us go now to the question of actually computing the defined benefit fraction, so that you can determine what type of plan and what benefit level you would like to install. When computing the defined contribution fraction, utilize years of service and not years of participation. Once the defined contribution fractions have been determined for every participant, the highest defined contribution fraction determines what level of defined benefit plan can be installed. When installing a plan which has a single level of benefits, the highest defined contribution fraction must be subtracted from 1.4 to determine the defined benefit fraction which is allowable.

An alternative to establishing a single level of benefits would be to install a 100% defined benefit plan and reduce the benefits available under the plan by using the Code Section 415 limitation rule in your defined benefit plan. This technique may seem to be a very valuable and valid technique, and many actuaries do utilize this. However, I suggest this could lead to a great deal of valuation headaches, because every year for the purposes of funding your plan you must determine anew the defined contribution fraction for every participant. You will wind up computing two types of defined benefits under the plan. One is what I refer to as a funding benefit or a funding projected benefit, and the other is an accrual projected benefit. This leads to a great deal of complexity in the valuation. The more highly compensated employees tend to have the highest defined contribution fractions. Therefore, a single benefit level plan will wind up giving more of a deduction towards the highly compensated employee.

When designing a plan, it is important to be aware of other restrictions on benefit level. One of the major other restrictions is the form of benefits. The restrictions in the Code Section 415 and Revenue Ruling 75-481 refer to a plan where the form of benefit is a straight life annuity. The reductions for other benefit forms can be found in Revenue Ruling 71-446, which concerns integration. However, there is a departure from the reductions utilized in Revenue Ruling 71-446 in two respects. The first concerns the

presence or absence of ancillary benefits such as a death benefit prior to retirement, disability benefits and the like. When integrating a plan and going by the reductions in Revenue Ruling 71-446, these maximum benefits must be reduced by the presence or absence of ancillary benefits. This is not true with the maximum limitations under the Code Section 415 as long as the plan is not integrated.

The second exception pertains to a joint and survivor normal form. Contrary to what many people think, there seems to be no requirement to reduce the maximum amount for the presence of the normal form joint and survivor benefit. Revenue Ruling 75-481, Section 302 (2), says that these maximums must be reduced for forms of benefit other than straight life annuity or a qualified joint and survivor annuity. Now, you could argue with this point because the qualified joint and survivor annuity is defined to be the actuarial equivalent of the normal form. Although the normal form is reduced to an actuarial equivalent, it is the reduced benefit which is then subjected to the maximum under the Code Section 415. The Committee reports on Section 2004 of ERISA which corresponds to the Code Section 415 makes this a little bit clearer, and I quote in reference to the maximum limitation: "Your Committee believes that it is socially desirable to encourage joint and survivor benefits. Accordingly, it is concluded no adjustment should be made for the provision of such a benefit."

Therefore, a full joint and survivor normal form could be utilized to maximize the deductions. However, there are quite a few problems with using this technique.

The first problem is that the plan takes an actuarial loss every time the participant gets married and an actuarial gain upon divorce, and this actuarial gain or loss is most severe if the participant is near normal retirement year. The risk inherent in this is a consideration when establishing this type of normal form of benefit.

Another problem is that doing a valuation accurately requires data on marital status and age of spouse. This can be dealt with by assuming an average age spread between the participant and his or her spouse. The applicability of averages gets very strained when dealing with highly compensated employees. Suppose there is a contribution on behalf of the highly compensated employee of \$70,000 and the employee will receive \$70,000 less in compensation than he would otherwise have received had the plan not been in existence. The employee has \$70,000 worth of interest in seeing that he gets the proper amount of benefit out of the plan. If his spouse is a year older than he rather than the 5 years younger that is being assumed, he is not going to get from the plan a value commensurate with his contributions.

Another problem is created by this relationship between plan sponsors and their method of charging each other for their contribution. There is really no direct relationship between the sum of the contributions which has been made for a particular person and the present value of his or her accrued benefit. This problem becomes particularly acute if one of the highly compensated employees of the plan terminates service prior to retirement age. If the present value of his accrued benefit is less than the sum of the contributions which have been made on his behalf, he is going to be unhappy. If the present value of his accrued benefit is greater than the sum of the contribution which has been made for him, the rest of the highly paid participants are going to be unhappy, because they are going to have to pay for it.

This leads to another aspect of plan design. It is important to prorate the normal retirement over participation rather than service for the purposes of defining the accrued benefits. This prevents a situation in which, after a plan has been set up and run for two or three years, one of the highly compensated employees who has been there for ten years terminates with the present value of his accrued benefit considerably bigger than the amount of contributions which should have been made for him. Proration over service often leads to a lower present value of accrued benefits.

One of the ways to deal with this which has been suggested to me is to have some sort of an agreement between the plan sponsors, a buy-out agreement of some sort. When a participant terminates, he gets a lump sum distribution (or the equivalent deferred annuity) of the difference between the accrued benefit value and the contributions which have been put in on his behalf. This is paid to him outside the plan as a termination bonus or termination payment.

I would like to turn to the question of integration in plan design. The two techniques that I find most appropriate for integrating a plan involve the flat benefit excess plan and the offset type of plan. For an excess only plan, the maximum benefit that can be offered under the plan is 37½% of final average salary in excess of the participant's Table I salary or the Table I salary of the oldest participant who could enter the plan under the terms of the plan. The 37½% must be reduced using the reductions in Revenue Ruling 71-446 which I mentioned earlier.

I would like to discuss the question "What does the plan sponsor save by integrating the plan?" The main reason to integrate the plan is to save money on the contributions for the lower paid. The savings under the plan for any participant who is above the Table I salary is the integration percent times the Table I salary times deferred annuity at retirement divided by a temporary annuity to retirement. I will compare this later with the savings under an offset plan.

For an offset plan, the type of structure which most easily correlates with the limitations is the benefit defined as X percent of final average salary minus Y percent of the primary insurance amount. In this case Y cannot exceed 83-1/3%, so the trick under this type of definition is to find the value X which will provide the maximum benefit for the highly compensated employee. This is not always possible to do if the plan has more than one highly compensated employee. The integration savings under this type of integration arises because the replacement ratios for the higher paid are lower than the replacement ratios for the lower paid. If the replacement ratio were constant for everyone, there would not be any integration savings and an offset type of plan really would not make any sense. If everyone's replacement ratio was the same, the percent of everyone else would be exactly the factor under the benefit level you are designing for. However, because the replacement ratios for the lower paid are greater than the replacement ratios for the higher paid, a savings results from integrating this type of plan, and the savings worked is the following: Assuming an 83-1/3% integration, the savings is 83-1/3% times the difference between the replacement ratio for the lower paid and the replacement ratio for the higher paid times the salary of the lower paid person times the deferred annuity divided by a temporary annuity. I would like to go through an example to make this a little bit clearer, since it is a tricky concept:

If you have a doctor who is making \$98,000 a year with a primary insurance amount of roughly \$18,000 a year, his replacement ratio is 18½%. If you have a nurse who is making \$13,000 a year with a primary insurance amount of \$5,400 a year, then her replacement ratio or his replacement ratio is 41½%. This means that the offset savings on the nurse is 83-1/3% of the difference between 41½ and 18½% times her salary times the annuity divided by temporary annuity. This turns out to be roughly 19% of salary times the ratio of the two annuities. On the other hand, the excess plan savings on the nurse would be 37½% times the Table I salary for this nurse times the ratio of these two annuities. Thirty-seven and one-half percent is roughly twice 19%; therefore, if the Table I salary is greater than 1/2 of the nurse's salary, the excess type of plan saves more than an offset plan does. For this example, the excess approach will save more than an offset approach.

An alternative approach to integrating the defined benefit plan is to integrate the defined contribution plan. When setting up two plans, one a defined benefit plan and one a money purchase pension plan, integrate the money purchase pension plan. This is a valuable technique for two reasons. First, the percent of benefit level which you can provide in a defined benefit plan does not need to be reduced for the presence of ancillary benefits such as a pre-retirement death benefit. If the plan sponsor is interested primarily in avoiding taxation, he will want some sort of guarantee that the money he puts in prior to retirement will come back to him or his beneficiary. It is important to install a death benefit. However, if that benefit is installed and you integrate the defined benefit plan, the benefit level you can offer under the plan must be reduced. This can be avoided by integrating the defined contribution plan.

The second advantage of integrating a money purchase plan is the savings available right away. Most of the lower paid do not come anywhere near the Social Security wage base; therefore, most of them do not get anything from the excess portion of the money purchase plan and up to 7% can be provided under the plan.

#### VALUATION

I would like to discuss now some of the valuation problems that arise under these types of plans. I will begin by giving a very brief summary of the type of method and assumptions that I prefer to use under these plans. I like to use the individual level premium actuarial technique without supplemental present value, no salary scale, withdrawal rates, or pre-retirement mortality, and 5% to 6% interest, with the 10 year certain and life form of benefits.

One of the hottest valuation problems concerning a combination of plans goes back to the question of what to do when your plan sponsor has been operating a defined contribution plan prior to the installation of the defined benefit plan. "Can you fund for a benefit greater than the projected annual benefit under Code Section 415?" Even though this might sound like a rather silly question, the following technique has been suggested. A defined contribution plan that is less than the defined contribution maximum is going to be installed. Project for each participant a defined contribution fraction as of his retirement date rather than as of the valuation date. Subtract that from the 1.4 to get a projected defined benefit fraction and calculate a projected funding benefit which is based on this projection of the defined contribution fraction. This will be the benefit that the person could get

at normal retirement if he stayed with the plan and contributions under the defined contribution plan were made according to a scaled down level of contributions. So you could fund for this benefit although you cannot offer this benefit under the plan. There is a difference here between benefit accrual and funding. Code Section 415 relates to contributions and to accrual of benefits. It does not necessarily prohibit funding for a benefit greater than the projected annual benefit. Edward Burrows in the enrolled actuary meeting in January of 1979 recommends the use of this method. After reading his remarks I called an actuary at the national office of the Internal Revenue Service to ask him whether he thought this was an appropriate funding technique or not. He said that he thought that it was, as long as the plan provides for 100% benefit subject to reductions through the Code Section 415 limits. However, he asked me not to quote him by name. He also indicated that the Revenue Service has not promulgated any rulings or regulations on this issue.

Another problem with setting up a 100% benefit plan subject to the Code Section 415 regulations is that this might give rise to backloading on accrual of benefits.

A third, more practical, problem revolves around the actual valuation. This method requires computation of two benefits for every participant in the plan. The first benefit is a projected funding benefit and that is the benefit which you are valuing. The second benefit is a projected accrual benefit and this is the benefit which you are using to determine the participant's accrued benefit on the date of the valuation. So as you can see this at least doubles the valuation work because every year the defined contribution fraction both at the date of valuation and at the projected retirement date must be recomputed. Other problems follow: What happens if your participant retires early? What happens if your participant defers retirement? What happens under these various circumstances where the defined contribution fraction is other than what you figured it would be when you calculated his benefit for the purposes of funding?

Another problem that arises in valuations is getting data from the client. He doesn't understand what eligibility is, he doesn't understand that the compensation has to be for the plan year, and not the calendar year or the fiscal year. Sometimes plans are defined using compensation while a participant and the plan sponsors do not understand this concept and try providing total compensation instead.

Another type of data which you will need to do the valuation is plan asset data. The trustee is extremely important. If your client has a corporate trustee you are going to get much cleaner data, most likely, than you would if he is an individual trustee. Another problem with financial data concerns what you do with so-called dubious assets, assets that have no ready market value.

One of the major problems for a consulting actuary revolves around a question of fees. The amount of tax savings that the sponsor is obtaining may not justify a large actuarial fee. The plan sponsor may be unwilling to pay rates to another professional similar to the rates that he is charging his clients. Much of this is due to the lack of understanding of what is involved.

Since the client likes a fixed or maximum fee, I consider the following items before quoting: Number of employees in the company, number of participants in the plan, individually trusteeed, who is doing the tax forms other than the Schedule B, other plans involved, and the complexity of the retirement plans involved.