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Accounting for the cost of pension plans; text and explanatory comments on APB Opinion no. 8

American Institute of Certified Public Accountants (AICPA)

Five articles on

Accounting for the Cost of Pension Plans

Text and Explanatory
Comments on APB Opinion No. 8

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Accounting for the Cost of Pension Plans

Preface

Although APB Opinion No. 8 contains a somewhat unusual amount of background information and explanation, most CPAs find that its application presents considerable problems. As Messrs. Phoenix and Bosse say in the first of the articles reproduced here, "Although significant reliance may be placed on the work of an actuary, the accountant should become familiar with the actuarial concepts and methods so that he can understand the data prepared by the actuary and reach his own conclusions."

For this reason, The Journal of Accountancy *has published five different pieces dealing with this Opinion. These are now brought together in one volume, along with the Opinion itself, for the convenience of accountants who must deal with it in actual practice.*

The authors of these articles are particularly well fitted to provide guidance and assistance to practitioners in this area. Phoenix and Bosse were partner and principal, respectively, in the same CPA firm (Haskins & Sells) as John Queenan, who was chairman of the APB subcommittee which drafted the Opinion, and they worked closely with him throughout the lengthy process. Ernest L. Hicks, partner in Arthur Young & Company, was author of the research study on which the Opinion was based. William A. Dreher, a director of Arthur Stedry Hansen, Consulting Actuaries, and Frederick P. Sloat, principal of Lybrand, Ross Bros. & Montgomery, are Fellows of the Society of Actuaries. The latter acted as consultant to the Accounting Principles Board during its deliberations

on Opinion No. 8. Thanks are due to the Lybrand Journal *for permission to reprint Mr. Sloat's article, which has also appeared in* The Journal of Accountancy.

These articles are not intended to make every CPA who reads them into a pension cost expert, but they should give him sufficient familiarity with the concepts and problems involved to enable him to approach an audit with some confidence and to recognize the situations in which analysis or advice by an actuary or other expert is needed.

A Discussion of the Background and Requirements of APB Opinion No. 8

By Julius W. Phoenix, Jr., and William D. Bosse

Part I

Opinion No. 8 of the Accounting Principles Board, issued in November 1966, is both long and comprehensive. It includes 15 separate sections, an appendix briefly describing actuarial techniques, and a glossary devoted principally to the actuarial terms used throughout the Opinion. The scope of the Opinion results from the need to consider many interrelated factors affecting estimation of pension cost for accounting purposes. The complexities of estimating pension cost arise primarily from the many uncertainties inherent in the long periods separating the time of estimation from the time of payment of benefits to employees. Underlying the estimates are annuity and compound-interest computations. Mathematical probability factors are used to deal with such uncertainties as employee death or termination and changes in compensation.

The major difficulties in estimating pension cost are in selecting the pertinent data relating to employees as a group, designing the actuarial computation and formulating assumptions regarding such matters as earnings of pension-fund assets. The process usually requires the technical skill, experience and judgment of an actuary. Although significant reliance may be placed on the work of an actuary, the accountant should become familiar with the actuarial concepts and methods so that he can understand the data prepared by the actuary and reach his own conclusions as to whether the provision for pension cost complies with Opinion No. 8 (see page 4, for some key definitions).

All complexities and difficulties notwithstanding, the basic accounting for pension plans recommended in the Opinion is relatively easy to understand.

To begin negatively, provisions for pension cost should not be based

on contributions to the pension fund, nor should they be limited to the amounts for which the company has a legal liability. They should not fluctuate widely as a result of pension-fund investment gains and losses or from other causes unrelated to the employee group.

Turning to the positive, the provision for pension cost should be based on an actuarial cost method that gives effect, in a consistent manner, to employee group data, pension benefits, pension-fund earnings, investment gains or losses, and other assumptions regarding future events. The actuarial cost method selected should result in a systematic and rational allocation of the total cost of pensions among the employees' years of active service. If the actuarial cost method selected includes past service cost as an integral part of normal cost, the provision for pension cost should be normal cost adjusted for the effect on pension-fund earnings of differences between amounts accrued and amounts funded. If the actuarial cost method deals with past service cost separately from normal cost, the provision for pension cost should include normal cost, an amount for past service cost, and an adjustment for the effect on pension-fund earnings of differences between amounts accrued and amounts funded.

As can be seen later, the most controversial issue in developing the Opinion had to do with the amount to be included for past service cost.

SOME KEY DEFINITIONS

For convenience, some terms are delineated here. "Normal cost" is the portion of the annual pension cost that, under the actuarial cost method in use, is related to years after the date of an actuarial valuation of the plan. "Past service cost" refers to the portion of the total pension cost that, under the actuarial cost method in use, is identified with periods prior to the adoption of the plan. Similarly, "prior service cost" refers to the portion of the total pension cost that, under the actuarial cost method in use, is identified with all periods prior to the date of an actuarial valuation of the plan. Therefore, "prior service cost" includes, as of the date of its determination, the past service cost, the normal cost for years prior to that date, and increases in pension cost arising when the plan may have been amended to change the benefits or the group of employees covered. Since "prior service cost" is based on present value on the date of determination, it reflects the effect of other factors to that date, such as assumed earnings or interest equivalents, pension benefits paid to date, and gains or losses under the experience to date. Essentially, it is determined at any time in the same way that a past service cost would be determined if the plan were then being put into effect for the first time.

The Opinion at times makes reference to a specific part of prior service cost, the most usual being "the amounts of any increases or decreases in prior service cost arising on an amendment to the plan." Since such an amount is dealt with like a past service cost, unless otherwise indicated by the context, the term "past service cost" is used in this article to refer to both past service cost arising on the adoption of the plan and the amounts of any increases or decreases in prior service cost arising on amendments of the plan.

Previous Pronouncements

Before discussing the Opinion further, it might be well to review briefly the previous official pronouncements of the American Institute of Certified Public Accountants on the subject of pension plans.

The first pronouncement was made in Accounting Research Bulletin No. 36 issued by the committee on accounting procedure in November 1948. It was entitled "Pension Plans—Accounting for Annuity Costs Based on Past Services." Although this Bulletin dealt with only one small segment of the pension accounting problem, it did focus on the most troublesome area, both conceptually and practically, that accountants have had to face in dealing with this complex accounting subject.

ARB No. 36 was included without substantive change as Chapter 13a, "Pension Plans—Annuity Costs Based on Past Service," of ARB No. 43, Restatement and Revision of Accounting Research Bulletins. In ARB No. 43, Chapter 13a, the committee on accounting procedure expressed its belief that "even though the calculation is based on past service, costs of annuities based on such service are incurred in contemplation of present and future services, not necessarily of the individual affected but of the organization as a whole, and therefore should be charged to the present and future periods benefited. This belief is based on the assumption that although the benefits to a company flowing from pension plans are intangible, they are nevertheless real. The element of past service is one of the important considerations in establishing pension plans, and annuity cost measured by such past service contribute to the benefits gained by the adoption of the plan. It is usually expected that such benefits will include better employee morale, the removal of superannuated employees from the payroll, and the attraction and retention of more desirable personnel, all of which should result in improved operations."

The position of the committee on accounting procedure was reaffirmed by a later generation of that committee in Accounting Research Bulletin No. 47, issued in September 1956. Bulletin No. 47, however, was more specific about how past service cost should be treated and also introduced the factor of vested benefits. The committee expressed its preferences that "costs based on current and future services should be systematically accrued during the expected period of active service of the covered employees," and that "costs based on past services should be charged off over some reasonable period, provided the allocation is made on a systematic and rational basis and does not cause distortion of the operating results in any one year." The committee recognized, however, that its preferences were not universally accepted and went on to say that "as a minimum, the accounts and financial statements should reflect accruals which equal the present worth, actuarially calculated, of pension commitments to employees to the extent that pension rights have vested in

the employees, reduced, in the case of the balance sheet, by any accumulated trusteed funds or annuity contracts purchased." The committee did not explain what it meant by the term "vested" and did not make any recommendation concerning appropriate actuarial cost methods or recognition of actuarial gains and losses. This void is filled by Accounting Principles Board Opinion No. 8.

Development of Opinion No. 8

When the accounting variations found in practice made it evident that Accounting Research Bulletin No. 47 was not an adequate guide for accounting for the cost of pension plans, the Accounting Principles Board decided that the subject needed further study and authorizd an accounting research study to be made. This study was undertaken by Ernest L. Hicks, who performed an outstanding job in putting together the many accounting complexities surrounding pension plans.

The study was completed and published in 1965. A subcommittee[1] of the Accounting Principles Board began its analysis of the subject when preliminary drafts of the research study became available. Early in 1966, after the initial volume of comments on the study subsided, the subcommittee presented to the full Board a discussion outline of suggestions, problem areas and possible opinion content.

During its meetings through June of that year, the Board devoted much time to discussion of the subject. A regular attendant at Board and subcommittee meetings was Frederick P. Sloat, a member of the American Academy of Actuaries, whose assistance and advice were invaluable. Along the way, the subcommittee initiated a series of meetings with representatives of the actuarial societies, the bar association, utility associations and the Financial Executives Institute.

It is important to emphasize the diligence with which the Board sought the views of responsible members of the business community before reaching the point of taking any final votes on the contents of the Opinion. It is equally important to emphasize the degree of interest and the spirit of co-operation with which the business community responded to the request of the subcommittee. This dispelled any doubt concerning the business community's genuine interest in what the Accounting Principles Board is doing. It does have views that should be considered by the profession and it does want to help.

The exposure draft was issued in July 1966. The comments received as a result of the exposure draft were gratifying. Replies were received

[1]John W. Queenan, chairman, Marshall S. Armstrong, LeRoy Layton, and Oral L. Luper.

from over 300 of those on the exposure list, including many of the top executives of leading corporations around the country. All comments were read, analyzed and catalogued. After consideration of these comments and a further meeting of the Board, the exposure draft was converted into the final Opinion in November 1966.

From the authors' observations, the Board appreciates the efforts expended by companies in commenting on its proposed opinions, especially where the comments are supported by reasons and analysis.

It may be helpful to an understanding of the Opinion to discuss its major objective and what is likely to be its principal accomplishment—the elimination of inappropriate fluctuations.

Major Objective of Opinion No. 8

Pension cost is an important cost of doing business. Except in rare cases, when a company commits itself to pay pensions to its employees upon their retirement, the cost of those pensions may be expected to continue as long as the company has employees. Furthermore, and this is important, pension cost year by year should not be greatly out of line with the size or compensation of the employee group. For example, it does not appear reasonable for a company with a stable or growing employee group to have pension cost of $50,000 one year, $100,000 the next and $10,000 the next. Although not usually so extreme, fluctuations of this sort did occur in many cases found in practice.

These fluctuations were due largely to the effect given to three things: (1) actuarial gains and losses, (2) the funding of pension plans and (3) legal safeguards typically written into the plans. The primary accomplishment of the pension Opinion probably will be to eliminate the fluctuations due to these factors.

A brief comment about each:

First, actuarial gains and losses. In recent years, some companies made substantial reductions in their annual provision for pension cost when investment gains were realized by the pension fund, when the estimated future earnings rate of the fund was increased or when accumulated appreciation in pension-fund investments was recognized in the actuarial valuation.

These occurrences represent some examples of what are described in Opinion No. 8 as actuarial gains. To eliminate the fluctuations in pension cost caused by these gains, the Board concluded that actuarial gains—and, in like manner, actuarial losses—"should be given effect in the provision for pension cost in a consistent manner that reflects the long-range

nature of pension cost." The recommended way for accomplishing this is, with certain exceptions, to "spread" or "average" these actuarial gains and losses over a period of years.

Second, funding. Some companies based their provision for pension cost on the amount funded—that is, the amount paid to the pension fund. The amounts funded frequently varied widely from year to year because of working capital availability, tax considerations and other factors. The Opinion makes it clear that, under accrual accounting, amounts funded are not determinative of pension costs.

Accrual accounting is based on the assignment of costs among years on the basis of the economic benefits derived from the incurrence of the cost. Funding arrangements may not, and often do not, follow the pattern of economic benefits. Funding is a matter of financial management and may be discretionary; it is not a matter of accounting principle, however.

Third, legal safeguards. Somewhat related to funding is the influence of legal safeguards that limit the company's liability for the payment of pensions to the amount in the pension fund. As a matter of business prudence, most companies include a clause in their pension plan to the effect that the company may, in its discretion, discontinue the plan or discontinue contributions. In these cases, the employees have no rights to any benefits beyond those that can be paid from the assets in the pension fund. Relying on these clauses, some companies took the position that they had no liability for pensions and therefore did not need to record pension cost beyond the amounts contributed to the pension fund. The Board concluded that clauses such as these could not, as a practical matter, be brought into play by a business that expected to continue to operate in today's economy. In short, these clauses should have little effect on the incurrence of pension cost. Except in rare instances, therefore, they should be ignored in determining the amount of pension cost to be provided.

While many other matters are covered in the Opinion, the conclusions about actuarial gains and losses, funding and legal safeguards will probably have the most widespread effect on accounting for the cost of pension plans.

These conclusions are essential to eliminating the wide fluctuations in pension cost that were largely responsible for the Opinion's being written in the first place.

Interest Equivalents

Before proceeding to a discussion of the basic Opinion recommendations, a peripheral issue should be clarified.

In many places, the Opinion refers to "amounts equivalent to interest" or "interest equivalents." As used in the Opinion and in the actuarial profession, "interest" is a simple way of referring to the earnings, assumed or actual, of a pension fund. The need to take interest equivalents into account in computing the pension-cost provision arises when the actual pension fund differs from a theoretical fund and when the amounts funded differ from the amounts which have been recorded for accounting purposes.

Under the present-worth basis used for pension-cost accounting, it is assumed that amounts equivalent to prior service cost and normal cost will be contributed to a fund and that the fund will produce earnings (interest) at an assumed rate. If contributions for these amounts are not made, they will not be available to produce earnings, and it becomes necessary to make an additional provision equivalent to what the earnings would have been if the contributions had been made. This assumption is extended to past service cost even though it is known at the outset that the amounts will not be funded until sometime in the future, or not at all.

For this reason, the Opinion calls for the pension-cost provision to include an amount equivalent to interest on unfunded prior service cost. Such interest may be included as a separate component of the provision or it may be included in the amortization of the past service cost (subject to the 10 per cent maximum). Whenever past service cost is being amortized and the prior year pension-cost provisions have not been funded, an amount equivalent to interest on the unfunded provisions should be added to the provision for the year in addition to any amount included in the amortization. Conversely, when the amounts funded exceed the prior year pension-cost provisions, a reduction of the provision for the year is needed to reflect the interest equivalents on the excess amounts funded.

What Constitutes Pension Cost?

The preceding discussion is about the recommendations designed to eliminate fluctuations and about the need for interest equivalents. Agreement concerning these matters was reached by the Board with relative ease. Also, there was never any disagreement that pension cost should be accounted for on the accrual basis, and that the entire cost applicable to an accounting period should be provided. There was disagreement about what constitutes the entire cost applicable to an accounting period. The different views are explained in the Opinion. For purposes of this article, suffice it to say that one view was that pension cost should "take into account all estimated prospective benefit payments under a plan with respect to the *existing employee group*" whereas the principal other view

was "that pension cost is related to the pension benefits to be paid to the *continuing employee group as a whole*" (emphasis added).

Under either view, annual pension cost would include normal cost. The difference between the two views essentially revolved around what to do about past service cost.

The Board agreed, as had the predecessor committee on accounting procedure, that past service cost relates to periods subsequent to the adoption or amendment of a plan and should not be charged against retained earnings as something applicable to the past. Some members of the Board believed this cost should be specifically recognized in annual provisions over a period of years, although there were some differences in views concerning the period to use. Other members of the Board believed it unnecessary to make specific provisions for past service cost if all benefit payments could be met on a continuing basis by annual provisions representing normal cost plus an amount equivalent to interest on unfunded prior service cost.

There was merit in both positions. Although the Board stated a preference for past service cost being amortized, it concluded that it should not at this time rule out either approach as an acceptable measure of cost. Accordingly, in the interest of attaining the substantial improvement in accounting for the cost of pension plans that would result from the other conclusions of the Opinion, the Board framed the Opinion in terms of a minimum method based on the normal-cost-plus-interest concept and a maximum method based upon the amortization-of-past-service-cost concept. One result of this conclusion is that any period may be selected for the amortization of past service cost, as long as the total annual provision falls between the minimum and maximum.

Many would term the minimum-maximum approach to be a flaw in the Opinion, and it is fair to say that few, if any, of those working with the Opinion felt that it was a completely satisfying answer. If the minimum-maximum approach is a flaw, however, the authors believe that the flaw is more apparent than real because, as the Opinion is written, it allows a company to fit its accounting for the cost of its pension plan to the facts and circumstances in its particular case and to record the pension cost most realistic for it.

Minimum—Maximum

Before discussing the mechanics of the minimum-maximum methods, three general observations should be made.

First, the difference between the two methods is essentially in the extent to which past service cost is included in the pension-cost provision. Under the defined minimum, only interest on unfunded prior service cost (plus any indicated provision for vested benefits) is included. Under the

defined maximum, 10 per cent of the past service cost is included. Normal cost is the same under both.

In two frequently used actuarial cost methods, the "individual level premium" and "aggregate" methods, past service cost is not measured separately. That is, past service cost is included in normal cost. Because there is no amount of separately computed past service cost, the defined minimum and maximum are the same under these methods.

On the other hand, in other frequently used actuarial cost methods, such as the "unit-credit" ("accrued benefit"), "entry age normal," and "attained age normal" methods, past service cost is measured separately. It is only when methods such as these are used that there is a difference between the defined minimum and maximum. Furthermore, if the past service cost has been fully amortized, there is no difference between the defined minimum and maximum.

The second general observation is that the Opinion contemplates that the defined minimum, the defined maximum and the provision for the year will all be computed using the actuarial cost method selected. For example, if the pension-cost provision is based on the unit credit method, the defined maximum should also be based on that method and not on the entry age normal method, which usually would give a greater maximum amount.

The third general observation has to do with an apparent misconception about the defined minimum and maximum.

There has been some comment to the effect that any pension-cost provision is acceptable under the Opinion so long as it falls between the minimum and the maximum each year. This may be described as a bouncing-ball effect—that is, the pension-cost provision can bounce up and down between the two limits. This view of the Opinion is a mistaken one.

The Opinion contemplates that in all cases the provision for pension cost will be based on an acceptable actuarial cost method, with all variable factors consistently applied. Furthermore, the treatment of actuarial gains and losses, the actuarial assumptions and the like, should conform with the recommendations of the Opinion, and should be applied consistently from year to year.

As to past service cost, if the vested-benefit provision is not required, the Opinion contemplates that the company will select interest-only or some amortization plan not exceeding 10 per cent and apply whatever it selects consistently. If this is done, pension-cost provisions will not bounce around from year to year, unless caused by such factors as size, composition or compensation of the employee group. If the vested-benefit provision is required, it could cause some variations from year to year. However, as will be seen from the example given later, the effect is not likely to be material.

Computing the Defined Maximum

In many cases, the maximum defined in the Opinion is the same as the maximum allowed for federal income tax purposes. Generally speaking, the Internal Revenue Service will allow a deduction for the normal cost of a qualified plan plus not more than 10 per cent of the past service cost. This is also the general maximum limitation included in the Opinion. Differences between the maximum tax deduction and the maximum pension-cost provision can arise, however, as a result of unrealized appreciation or depreciation, or as a result of the application of the actuarial cost method. Probably the outstanding example of the latter is where the unit credit actuarial cost method is used for tax purposes. When this method is used, actuarial gains usually reduce the pension-cost deduction in the year they occur or in the following year. In these cases, it may be necessary to make accounting adjustments to effect a spreading or averaging of the gains.

It is important to note that the 10 per cent limitation applies separately to past service cost at the adoption of a plan and to changes in prior service cost that result from amendments of the plan. For example, disregarding interest equivalents, if a company adopts a pension plan with past service cost of $100,000, the maximum accounting provision would be normal cost plus $10,000 (10 per cent of $100,000) of past service cost. If the company later amends the plan to increase benefits and the cost of the increased benefits related to service prior to the amendment is an additional $50,000, the maximum would be normal cost plus $15,000 (10 per cent of the total of $150,000) until such time as the original past service cost has been fully amortized; after that time the maximum becomes normal cost plus $5,000 (10 per cent of the $50,000 increase). This can be significant when there is a series of increases in benefits over a period of time.

As previously indicated, whenever the funding differs from the cost provision, the cost provision must be increased or decreased by interest equivalents on the difference between the amount provided and the amount funded. An illustration may be helpful. When a company adopts a pension plan, it may fund immediately all of the past service cost. It might do this, for example, in order to gain the advantage of the tax-free income from the investment of the funds by the pension trust. Because the pension-cost provision with respect to the past service cost is limited to 10 per cent, there will be a deferral on the balance sheet for the other 90 per cent. Again taking past service cost of $100,000, $10,000 would be included in the pension-cost provision for the year and the other $90,000 would appear as a deferred charge. In this situation, the accrual for the following year would be reduced by the earnings of the $90,000. If the assumed interest rate was 4 per cent, the cost provision for the succeeding year

would be reduced by $3,600. Because of these reductions, the amortization period will be somewhat longer than ten years.

Conversely, if the company decides to make the maximum pension-cost provisions but does not immediately make contributions to the fund or makes contributions in smaller amounts than provided, there will be an accrued pension cost on the balance sheet. The pension-cost provision for subsequent years should include an amount equivalent to interest on whatever amount is shown as an accrual on the balance sheet.

Accounting for pension cost under the defined-maximum method is illustrated by Exhibit A, page 15. The plan used in Exhibit A has the same past service cost, normal cost and benefits as the plan in Exhibit B, pages 16-18, to illustrate the defined-minimum method. The sameness can be seen in the initial data given under "Prior Service Cost," which is identical in the two exhibits. The pension fund, balance sheet and provision for pension cost are, of course, different. This would be expected to be so in practice. Taken together, the two exhibits illustrate how the defined maximum and minimum might differ for the same plan. Although an attempt was made to make the exhibits realistic, certain liberties were necessary to illustrate different factors in applying the two methods.

Exhibit A would serve to illustrate other amortization methods by substituting the method to be used for the 10 per cent maximum.

Computing the Defined Minimum

Under the defined-minimum method, the annual provision for pension cost is the total of normal cost, an amount equivalent to interest on any unfunded prior service cost, and, under certain conditions, a provision for vested benefits. The provision for vested benefits embraces an objective that differs from those generally found in present practice. It warrants some elaboration.

First, it is essential to get a clear understanding of what is meant by "vested benefits." Vested benefits are defined in the Opinion as "benefits that are not contingent on the employee's continuing in the service of the employer." This is consistent with the assumption of a continuing pension plan for a company with indefinite life. The amount in the pension fund, therefore, has no effect in determining the total amount of vested benefits as contemplated under the Opinion. The definition also excludes any escalation in the amount of benefits through plan-termination and similar provisions. Accordingly, "vested benefits" includes benefits that, as of the date of determination, are expected to become payable (a) to employees then retired, (b) to former employees then terminated and (c) to active employees to the extent that the benefits, or any portions

thereof, are not contingent on continued employee service. The value of vested benefits is computed on a present-value basis, giving effect to the usual probability assumptions concerning mortality and retirement (and sometimes also to other assumptions), but not to turnover or future changes in levels of compensation.

The Board concluded that pension-cost provisions should look forward in an orderly way to the creation of a pension fund or balance-sheet accrual at least equivalent to the actuarially computed value of vested benefits. That is, the employer ultimately should maintain a fund or accrual at least sufficient to allow the payment of all benefits to all its employees who have fulfilled all the service and age requirements to be entitled to such benefits—whether or not the employees stay with the company.

When provisions equivalent to the total of normal cost and the interest equivalents are made, the amount of pension cost that will be accumulated (whether funded or not) will vary widely depending on, among other things, the actuarial cost method selected and the relative ages of the employees of the company. The amount of vested benefits will vary widely, depending on the vesting terms of the plan. Some plans do not include any vesting prior to the employee's retirement. Other plans call for vesting immediately upon entry into the plan. Between these extremes there are many variations. Frequently a plan will call for vesting of a portion of the benefits when the employee has reached the age of 40 years and has ten years of service. Depending on the combination of these various factors existing in any particular case, the pension cost provided on the basis of normal cost and interest may exceed the actuarially computed value of vested benefits at any and all times. In other situations, it may fall short of the actuarially computed value of vested benefits for a period of time, or forever.

In many cases, the pension fund and balance-sheet accrual may temporarily fall below the actuarially computed value of vested benefits but yet be based on an accounting method that will eventually satisfy this test. For example, when a plan is amended in a way that benefits are increased, the actuarially computed value of vested benefits may increase substantially and may exceed the pension fund and balance-sheet accrual. It may be, however—and this is not unusual—that continued cost provisions on the basis of normal cost and interest equivalents will in time again bring the pension fund and balance-sheet accrual to the point that they exceed the actuarially computed value of vested benefits at the higher level.

In recognition of this, the Board initially concluded that pension-cost provisions based on normal cost and interest equivalents would be acceptable if they would result over a reasonable period of time in a pension fund and balance-sheet accrual that would exceed the actuarially com-

EXHIBIT A
Illustration of Defined-Maximum Method

	Year 1	2	3	4	5	
Prior Service Cost (Same as Exhibit B):						
Beginning	$88,000	$ 90,000	$100,000	$110,000	$164,000	A
Increase at amendment of plan				40,000		B
"Interest" growth	3,200	3,600	4,000	6,000	6,560	4% of A + B
Normal cost	8,000	8,000	8,000	11,500	11,500	C
(Less) benefits paid	(1,200)	(1,600)	(2,000)	(3,500)	(4,000)	D
Ending	$90,000	$100,000	$110,000	$164,000	$178,060	
Pension Fund:						
Beginning	$ —0—	$ 14,800	$ 25,792	$ 36,824	$ 74,797	E
Earnings	—0—	592	1,032	1,473	2,992	4% of E
Contribution	16,000	12,000	12,000	40,000	25,000	F
(Less) benefits paid	(1,200)	(1,600)	(2,000)	(3,500)	(4,000)	D
Ending	$14,800	$ 25,792	$ 36,824	$ 74,797	$ 98,789	
Balance Sheet:						
Beginning	$ —0—	$ —0—	$ 4,000	$ 8,160	$ (8,014)	G
Provision for pension cost	16,000	16,000	16,160	23,826	23,179	H
(Less) contribution	(16,000)	(12,000)	(12,000)	(40,000)	(25,000)	F
Ending	$ —0—	$ 4,000	$ 8,160	$ (8,014)	$ (9,835)	
Pension-Cost Provision for the Year:						
Normal cost	$ 8,000	$ 8,000	$ 8,000	$ 11,500	$ 11,500	C
10% of past service cost	8,000	8,000	8,000	8,000	8,000	10% of A, Yr. 1
10% of prior service cost on amendment of plan				4,000	4,000	10% of B, Yr. 4
"Interest" on difference between accruals and funding	—0—	—0—	160	326	(321)	4% of G
Provision for the year	$16,000	$ 16,000	$ 16,160	$ 23,826	$ 23,179	H

Plan was adopted at beginning of year 1, amended to increase benefits at beginning of year 4.

Pension-cost provisions, benefit payments, and contributions are assumed to be made at the end of the year in computing "interest."

The assumed "interest" rate is 4% and there are no variations from this or any other actuarial assumptions.

EXHIBIT B
Illustration of Defined-Minimum Method

	Year 1	2	3	4	5	
Prior Service Cost (Same as Exhibit A):						
Beginning	$ 80,000	$ 90,000	$100,000	$110,000	$164,000	A
Increase at amendment of plan				40,000		B
"Interest" growth	3,200	3,600	4,000	6,000	6,560	4% of A + B
Normal cost	8,000	8,000	8,000	11,500	11,500	C
(Less) benefits paid	(1,200)	(1,600)	(2,000)	(3,500)	(4,000)	D
Ending	$ 90,000	$100,000	$110,000	$164,000	$178,060	
Pension Fund:						
Beginning	$ —0—	$ 10,000	$ 20,000	$ 30,200	$ 44,628	E
Earnings	—0—	400	800	1,208	1,785	4% of E
Contribution	11,200	11,200	11,400	16,720	16,744	F
(Less) benefits paid	(1,200)	(1,600)	(2,000)	(3,500)	(4,000)	D
Ending	$ 10,000	$ 20,000	$ 30,200	$ 44,628	$ 59,157	G
Unfunded Prior Service Cost:						
Beginning	$ 80,000	$ 80,000	$ 80,000	$119,800	$119,372	H = A + B-E
"Interest" thereon	$ 3,200	$ 3,200	$ 3,200	$ 4,792	$ 4,775	I = 4% of H
Balance Sheet:						
Beginning	$ —0—	$ —0—	$ 200	$ 428	$ 469	J
Provision for pension cost	11,200	11,400	11,628	16,761	17,581	S
(Less) contribution	(11,200)	(11,200)	(11,400)	(16,720)	(16,744)	F
Ending	$ —0—	$ 200	$ 428	$ 469	$ 1,306	K
Actuarially Computed Value of Vested Benefits:						
Beginning	$ 10,000	$ 19,000	$ 28,750	$ 40,000	$ 75,000	L
Increase at amendment of plan				20,000		M
"Interest" growth	400	760	1,150	2,400	3,000	4% of L + M
Benefits vested during year	9,800	10,590	12,100	16,100	17,200	
(Less) benefits paid	(1,200)	(1,600)	(2,000)	(3,500)	(4,000)	D
Ending	$ 19,000	$ 28,750	$ 40,000	$ 75,000	$ 91,200	N

Plan was adopted at beginning of year 1, amended to increase benefits at beginning of year 4.

Pension-cost provisions, benefit payments, and contributions are assumed to be made at the end of the year in computing "interest."

The assumed "interest" rate is 4% and there are no variations from this or any other actuarial assumptions.

EXHIBIT B (continued)
Illustration of Defined-Minimum Method

	Year 1	2	3	4	5	
Excess of Vested Benefits Over Pension Fund and Balance Sheet Accrual:						
Beginning excess	$10,000	$ 9,000	$ 8,550	$ 9,372	$ 29,903	O = L-E-J
Ending excess before additional provision for vested benefits	9,000	8,750	9,800	30,372	32,043	P = N-G-K + R
Decrease (increase) during year	$ 1,000	$ 250	$ (1,250)	$ (21,000)	$ (2,140)	Q
Calculation of Additional Provision for Vested Benefits:						
Test 1: 5% of beginning excess	$ 500	$ 450	$ 428	$ 469	$ 1,495	(1) = 5% of O
Test 2: Amount needed to reduce beginning excess by 5% (not less than —0—)	$ —0—	$ 200	$ 1,678	$ 21,469	$ 3,635	(2) = (1)-Q
Test 3: 40-year amortization of past service cost of $80,000	$ 4,041	$ 4,041	$ 4,041	$ 4,041	$ 4,041	
40-year amortization of prior service cost of $40,000 arising on amendment of the plan				2,021	2,021	
"Interest" on difference between accruals and funding	—0—	—0—	8	17	19	4% of J
Total	4,041	4,041	4,049	6,079	6,081	
"Interest" on unfunded prior service cost	3,200	3,200	3,200	4,792	4,775	I
Additional provision under Test 3	$ 841	$ 841	$ 849	$ 1,287	$ 1,306	(3)
Additional provision for vested benefits —Least of tests 1, 2, or 3	$ —0—	$ 200	$ 428	$ 469	$ 1,306	R

EXHIBIT B (continued)
Illustration of Defined-Minimum Method

	Year 1	2	3	4	5	
Pension-Cost Provision for Year:						
Normal cost	$ 8,000	$ 8,000	$ 8,000	$ 11,500	$ 11,500	C
"Interest" on unfunded prior service cost	3,200	3,200	3,200	4,792	4,775	I
Additional provision for vested benefits	—0—	200	428	469	1,306	R
Total provision	$11,200	$ 11,400	$ 11,628	$ 16,761	$ 17,581	S

Plan was adopted at beginning of year 1, amended to increase benefits at beginning of year 4.
Pension-cost provisions, benefit payments, and contributions are assumed to be made at the end of the year in computing "interest."
The assumed "interest" rate is 4% and there are no variations from this or any other actuarial assumptions.

puted value of vested benefits. The Board adopted 20 years as a reasonable period for reaching this objective.

The exposure draft of the Opinion was written along these lines, and would have made necessary a 20-year projection of vested benefits. During the exposure period, a number of comments were received from actuaries and others to the effect that a 20-year projection would be impracticable because of the need for additional assumptions as to the future and because of the added expense of making the projection. While this view was not held by all actuaries, the practicalities of the matter could be served without destroying the accounting objective. This was done by establishing a current test that would not require projections for future periods of time.

In general, the provision for vested benefits is designed to assure that any excess of the actuarially computed value of vested benefits over the pension fund and balance-sheet accrual will decrease by at least 5 per cent each year before taking into account any net increase during the year in the excess of vested benefits. Five per cent a year was selected because in the long run it produces substantially the same result as the original 20-year projection. A simple rule calling for a 5 per cent annual reduction would be unrealistic because it could require the provision to include all additional amounts becoming vested as a result of an amendment of the plan or of an abnormally large group of employees who attain higher vesting levels in any particular year. To avoid this undesirable result, the formula had to be more complex.

There are two circumstances when a company need not be concerned with vested benefits in providing for pension cost. One is where the ac-

tuarial cost method does not develop a separate amount for past service cost. The other is where the provision comprises normal cost and amortization of past service cost over 40 or fewer years. In other words, consideration of any provision for vested benefits is necessary only in connection with actuarial cost methods that develop a separate amount for past service cost and then only in connection with a method that extends the amortization of that past service cost beyond 40 years. If past service cost is included in normal cost or is being amortized, the accumulated total pension cost provisions necessarily will equal or exceed the actuarially computed value of vested benefits at or before the time the past service cost is fully amortized. In the two circumstances described in this paragraph, the only concern about vested benefits is for disclosure if their actuarially computed value exceeds the pension fund and balance-sheet accrual at the end of the year.

Even if the circumstances just described do not exist, a provision for vested benefits may not be needed. Such a provision is not required under the Opinion unless the actuarially computed value of vested benefits exceeds the pension fund and balance-sheet accrual at both the beginning and the end of the year. In other words, if such an excess does not exist at either the beginning or the end of the year, no provision for vested benefits is required. Also, if the excess at the end of the year is at least 5 per cent less than the excess at the beginning of the year, no provision for vested benefits is required.

On the other hand, if an excess exists at the beginning and at the end of the year and the ending excess is not at least 5 per cent less than that existing at the beginning of the year, a provision for vested benefits is required.

The provision for vested benefits is the least of the following: (a) 5 per cent of the beginning excess, (b) the amount needed to reduce the beginning by 5 per cent or (c) an amount that would make the total pension-cost provision equal to that which would result if 40-year amortization of past service cost were used.

Accounting for pension cost under the defined-minimum method is illustrated by Exhibit B. As indicated earlier, the basic plan data under "Prior Service Cost" is identical with that in Exhibit A illustrating the defined-maximum method. It might be helpful to point out that the contributions shown in Exhibit B represent normal cost and the interest equivalents for each year plus any additional provision for vested benefits accrued at the end of the preceding year. In practice it is likely that the additional provision for vested benefits would be contributed, if at all, at the same time as the normal cost and interest equivalents for the year. Exhibit B was prepared as it is, however, so that the interest equivalent on the balance-sheet accrual could be illustrated.

As can be seen from Exhibit B, the value of the pension fund is an

essential factor in the computations. The Opinion does not specify how the fund should be valued. The authors believe that the fund should be valued by the actuary in a manner consistent with the treatment given to investment gains and losses and unrealized appreciation and depreciation in computing the other elements of pension cost.

For purposes of determining the excess of vested benefits, however, they believe that the pension fund may be valued at market even though the full amount of appreciation or depreciation has not been recognized in the pension-cost provisions. If so valued, methods should be employed to minimize the effects of short-term market fluctuations. Whatever valuation method is adopted should be followed consistently.

In concluding the discussion about the defined-minimum method, another general observation might be helpful. It is doubtful that the provision for vested benefits will be material to most companies using the defined-minimum method. Where it is not material and continuing provisions of normal cost and interest equivalents are expected to meet the vested-benefits objective within 20 years, the authors believe it would be appropriate to omit the additional provision for vested benefits. Since that objective will be met without such additional provision, it seems reasonable not to vary the basic normal-cost-plus-interest pattern.

Where the ultimate goal of the vested-benefits test will not be met without additional provisions for vested benefits, however, such provisions should be made even though they are not material in any given year. Here the cumulative effect of the additional provisions for the vested benefits becomes an important consideration.

In view of the earlier discussions of differences between amounts accrued and amounts funded, and other matters that may result in the recognition of pension cost for accounting purposes in periods other than those in which it is recognized for tax purposes, it may be desirable, in concluding this article, to point out that the Opinion calls for appropriate consideration to be given to the allocation of income taxes among accounting periods.

Part II

Actuarial Cost Methods

An actuarial cost method is an interest and annuity type of cost allocation that gives effect to probabilities affecting the amount and incidence of future pension benefits. Although the various methods were developed by actuaries primarily as funding techniques, most of them

are also appropriate for accounting purposes. The Opinion deals with the acceptability of these methods for accounting purposes.

Five often-used actuarial cost methods are specifically deemed acceptable for purposes of providing for pension cost in financial statements, when these methods are applied in conformity with the other conclusions of the Opinion. These five acceptable methods are listed in Exhibit A, page 22. Other methods may also be acceptable if they are "rational and systematic" and result in a "reasonable measure of pension cost from year to year." "Pay-as-you-go" (which is not an actuarial cost method) and "terminal funding" are rejected because they do not recognize pension cost prior to retirement of employees.

Several basic conditions apply to the use of any method. The method should be applied consistently from year to year, the amount recognized for past and prior service cost should be reasonably stable from year to year, and the actuarial assumptions should be reasonable for all factors that have a significant effect on the long-range estimates of pension cost. (The Opinion does not specify all of the actuarial assumptions that may be necessary in pension-cost calculations. In fact, only the more commonly used assumptions are mentioned. The selection of assumptions should be related to the facts and circumstances of each pension plan and employee group.)

There are two major aspects of actuarial cost methods that should be kept in mind. First, some methods deal with past and prior service cost as a separate item; other methods include any such cost in normal cost. Second, some methods (accrued benefit cost methods) assign cost based on specific benefits deemed to be earned ("earned," that is in the limited sense that the employee service on which such benefits are based has been rendered) by each employee; other methods (projected benefit cost methods) assign cost based on an allocated part of all projected future benefits for each employee or group of employees. These distinctions are shown in Exhibit A.

Other differences between methods generally relate to the treatment of prospective changes in compensation, the recognition of gains and losses, and the allocation of the cost on an individual or group basis. Further discussion of the various characteristics of the different methods is beyond the scope of this article. Each of the methods is discussed in Appendix A of the Opinion.

As an aside, it might be well to point out that in determining the actuarially computed value of vested benefits (pages 24-25) for purposes of the defined-minimum method or for purposes of disclosure, the Opinion contemplates that the accrued-benefit-cost-method approach will be used. This method, in its usual form, results in the determination of accumulated values based on service actually rendered and, if applicable, present compensation levels. When a projected benefit cost method (which takes

into account estimated future service and future compensation) is used for accounting purposes, it may be necessary to compute separately or to approximate the actuarially computed value of vested benefits.

Actuarial Valuations

Actuarial valuations are made as of a specific date. They may be used, however, for projections of results either forward or backward from that date. Consequently, the amount of pension cost for several periods may be estimated from a single actuarial valuation, sometimes in conjunction with the preceding valuation. Where shifts in employee age and service distributions and group size are not significant from year to year, it is possible for a single valuation to provide the foundation for pension-cost estimates for several years.

An actuarial valuation will rarely be made as of the balance sheet date. Consequently, a computation of the actuarially computed value of vested benefits as of that date usually will not be available. Also, the value of the pension fund may be reported only as of the valuation date. Since a computation of the excess of the actuarially computed value of vested benefits over the total of the pension fund and net balance sheet accruals may be needed under the Opinion as of the end of the year (and sometimes also as of the beginning of the year), a practical problem is created when any of these amounts is not available as of that date. There are several possible solutions to this problem. The authors agree with the solutions indicated by Ernest L. Hicks in footnote 2 to Schedule 2 in his JOURNAL article. (See page 44):

> . . . the appropriate as-of dates for the [actuarially computed value of vested benefits, pension fund, and net balance sheet accruals] will de-

EXHIBIT A
Acceptable Actuarial Cost Methods

	Past Service Cost	
	Separate Amount	*Included in Normal Cost*
Accrued Benefit Cost Method—Unit credit	X	
Projected Benefit Cost Methods:		
Entry age normal	X	
Individual level premium		X
Aggregate		X
Attained age normal	X	

pend on the circumstances. Consistency is a primary consideration. Under one approach, the [actuarially computed value of vested benefits] would be as of the valuation date, and the amounts [of the pension fund and net balance sheet accruals] would be as of the end of the employer's fiscal year. If the amount of the pension fund is regularly reported only as of the valuation date, it should be satisfactory for the [actuarially computed value of vested benefits and pension fund] to be as of that date; the [net balance sheet accruals] might then include the amount funded or accrued for the fiscal year, reduced by any portion funded before the valuation date. Under still another approach, all three amounts would be as of the valuation date. Only in very rare circumstances (such as when a material, extraordinary change in the level of vesting is known to have taken place after the valuation date) would a valuation made within the employer's fiscal year be updated.

The same basic actuarial cost method may be used for both funding and cost-provision purposes even when the funding and cost provisions differ. A single actuarial valuation could serve both purposes by applying auxiliary adjustments when necessary to comply with the Opinion.

Actuarial Gains and Losses

Actuarial gains and losses arise from changes in the assumptions concerning future events used in pension-cost estimates and from differences between the estimates based on the assumptions and the actual results. Important among such assumptions are those relating to:

1. The fund earnings (interest), including both realized and unrealized investment gains and losses
2. The turnover of the work force
3. The mortality of active and retired employees
4. Compensation levels, retirement ages and other factors concerning employees.

As indicated in the previous article, the treatment to be accorded actuarial gains and losses under the Opinion is likely to cause one of the most significant changes from past practice. The elimination of significant year-to-year pension-cost fluctuations resulting from actuarial gains and losses is a major objective of the Opinion.

Actuarial gains and losses should be dealt with "in a manner that reflects the long-range nature of pension cost." Annual determinations of pension cost are necessarily estimates. Actuarial gains and losses are, at best, an indication of the short-term accuracy of the estimates and may themselves be estimates. There is no assurance that changes in assump-

tions or trends based on current experience will be valid for very long. Under the Opinion, therefore, actuarial gains and losses are treated as if they were an integral part of the overall assumptions concerning the future.

Consistent with the view that pension costs are long-range costs, the Opinion holds that actuarial gains and losses should be spread in a consistent manner over a reasonable period of years or determined on some average basis, either through the routine application of the actuarial method or by separate adjustments.

The spreading or averaging of actuarial gains and losses is accomplished by the normal application of some actuarial cost methods and, as a consequence, likely would be automatically recognized in accordance with the Opinion. This is the result when the application of a method measures normal cost by allocating to the current and future years the difference between (1) the present value of all benefits expected to be-

WHAT SHOULD BE INCLUDED IN THE ACTUARIALLY COMPUTED VALUE OF VESTED BENEFITS

Comments by Frederick P. Sloat, a member of the American Academy of Actuaries

If a retirement benefit would stay with an employee if he were to terminate service on the valuation date, it is one that is "not contingent on his continuing in the service of the employer"; therefore, it is a "vested benefit" and its entire value should be included in the actuarially computed value of vested benefits. If the benefit would be forfeited upon such termination of service, none of its value is included.

As an illustration of some of the situations that are frequently encountered, assume that the actuarial assumptions are such that—for 100 employees in a given group who have already met the age and service requirements for vesting and, thus, have vested benefits—the following is expected to happen:

Number who will stay in service and retire at normal retirement	50
Number who will stay in service and retire at early retirement	24
Number who will terminate service at the current or a future date and later receive retirement income	12
Number who will die while in service	10
Number who will terminate service at the current or a future date, but die before receiving any retirement income	4
	100

The value of the retirement benefits for the group will reflect each situation and the probability of occurrence and will be determined on the accrued benefit (unit credit) cost method. Thus, it will include the value of normal retirement benefits for the 50% who will retire at normal retirement, the value of early retirement benefits for the 24% who will retire at early retirement and the value of deferred benefits to be vested in terminating employees for the 12% who will terminate service and later receive retirement income. It will, in effect, include nothing for the 10% expected to die in service or the 4% expected to terminate service and die without receiving benefits.

come payable to current and former employees and (2) the value of the assets of the plan. Since these two values would normally comprehend any actuarial gains or losses, the actuarial gains and losses are thereby effectively spread. The pattern of spreading is complex, recognizing such factors as remaining service lives, compensation, and the various actuarial assumptions. Any of the projected benefit cost methods may be applied in this manner, although some may be applied differently.

Net cumulative *gains* may also be spread by applying them to reduce the unamortized past or prior service cost *before* computing amortization or interest equivalents. Under the Opinion it is not acceptable to recognize actuarial gains in a manner that shortens the amortization period. Therefore, if past or prior service cost is being amortized, the reduced amount of unamortized past or prior service cost should be accounted for over the remaining amortization period. Since the Opinion calls for spreading over at least ten years, it would appear that this method should

A plan may provide a special benefit, greater than the actuarial equivalent of the normal retirement benefit, for an employee who terminates service after having met the service required by the plan for such special benefit. In the actuarial assumptions above, say that 30 of the 74 who will reach normal or early retirement will, at some earlier date, be eligible to receive this special benefit if they terminate service, that 9 of them now have the necessary service and that only 3 out of the 9 will be expected to so terminate. In such event, the value of the special benefit will be included only for this 3 per cent.

If partial vesting were to apply in event of current termination, say 60 per cent of the total benefit, only that per cent of the total array of values is included, the other 40 per cent being omitted in the same way as for employees who would not be subject to current vesting.

If vesting can be forfeited by the employee's election of a refund of his own contribution, the probability of such election should be taken into account.

Even though a plan provides retirement benefits on a final average salary formula, the benefit for an employee terminating service would be based on current earnings. This is like partial vesting and only the value of benefits based on current earnings would be included.

For plans that do not provide specific amounts of benefits for each year of service, the benefit that would apply in event of current termination of service would be included and valued on the accrued benefit cost method.

A plan may include death, disability or other benefits in addition to retirement benefits; if such a benefit would no longer apply if the employee were to terminate service, its value would not be included with the value of vested benefits. If it would apply after vesting, however, the full value of such benefits would be included for those employees currently eligible for vesting.

Where the accrued benefit cost method is already being used, such as under regular group annuity funding, the value of vested benefits will usually be the value of all benefits (or the fractional portions of the benefits, in the case of partial vesting) for service to date for employees who have met the vesting requirements. Where any other actuarial cost method is being used, a corresponding accrued benefit cost method value is needed for all vested benefits.

not be used if the remaining amortization period is less than ten years. It should be noted that the Opinion does not say that net cumulative *losses* may be added to past or prior service cost. If past or prior service cost is being amortized, however, and the remaining amortization period is between 10 and 20 years, there should be no objection to doing so.

Separate Adjustments for Actuarial Gains and Losses

If actuarial gains and losses are spread or averaged as a separate component of the annual pension-cost provision, they are considered to be adjustments of the normal cost computed under the actuarial method in use. Spreading may be by simple straight-line allocation of each year's net gain or loss over a period of 10 to 20 years, or more complex methods may be used. A historical moving average may be used, or future expectations may be considered in conjunction with past and current experience in developing an average. The objective of avoiding significant year-to-year fluctuations should be a central consideration in selecting or evaluating any method of spreading or averaging.

Exhibit B, page 27, illustrates the application of a ten-year straight-line spreading technique and a five-year moving-average technique to given data. In practice it may not be necessary to record the adjustments annually. For example, if it were concluded that a difference of about $5,000 between the actual and the spread or averaged gains and losses would not be material, deferrals would be needed in the Exhibit B illustrations only in years seven and nine, and the amounts deferred could be absorbed in a few years.

A combination of techniques may be appropriate. For example, the spreading approach might be applied to items not expected to recur frequently, such as a change in the interest assumption, while averaging might be applied to such recurring items as mortality and turnover adjustments. Consistency of application from year to year is important.

Unrealized Appreciation and Depreciation

The effect of unrealized gains and losses in the pension fund frequently has been omitted from estimates of annual pension cost. In some cases, turnover of fund assets has caused the spread between cost and market value to be reasonably narrow, with little unrealized appreciation or depreciation. In other cases, however, the amounts have been significant.

Under the Opinion, unrealized appreciation or depreciation of pension-fund assets (other than debt securities expected to be held to

EXHIBIT B

ACCOUNTING FOR THE COST OF PENSION PLANS

Application of Spreading and Averaging Techniques to Actuarial Gains and Losses

Spreading Technique—10-Year Straight-line Basis:

	Gain (Loss)		
Year	*Actual*	*Applied to Reduce Provision*	*Deferred to Future Years*
1	$ 5,000	$ 500	$ 4,500
2	2,000	700	5,800
3	6,000	1,300	10,500
4	(1,000)	1,200	8,300
5	7,000	1,900	13,400
6	3,000	2,200	14,200
7	(8,000)	1,400	4,800
8	1,000	1,500	4,300
9	10,000	2,500	11,800
10	1,000	2,600	10,200

Averaging Technique—5-Year Moving-Average:

	Gain (Loss)			
Year	*Actual*	*5-Year Total*	*Applied to Reduce Provision*	*Deferred to Future Years*
−4	$ 1,000			
−3	4,000			
−2	(2,000)	See Note		
−1	3,000			
1	5,000	$11,000	$2,200	$ 2,800
2	2,000	12,000	2,400	2,400
3	6,000	14,000	2,800	5,600
4	(1,000)	15,000	3,000	1,600
5	7,000	19,000	3,800	4,800
6	3,000	17,000	3,400	4,400
7	(8,000)	7,000	1,400	(5,000)
8	1,000	2,000	400	(4,400)
9	10,000	13,000	2,600	3,000
10	1,000	7,000	1,400	2,600

Note: Before year 1, the gains and losses were recognized in the year of determination; they are used here, however, to develop a starting point in the averaging computation.

maturity and redeemed at face value) is considered to be an element affecting fund earnings and, like other actuarial gains and losses, should be recognized in estimating pension cost. The objective to be met is a "rational and systematic basis that avoids giving undue weight to short-term market fluctuations." Unrealized appreciation or depreciation may be recognized by the spreading or averaging techniques described for

other actuarial gains and losses or by other appropriate techniques. For example, unrealized appreciation and depreciation may be dealt with indirectly by adjusting the assumed rate of interest. Or, the value placed on fund assets for actuarial valuation purposes may be regularly adjusted to reflect an assumed long-term growth rate.

Whether unrealized appreciation and depreciation are included with other actuarial gains or losses, or dealt with as a separate item, the method of determining the amount to be recognized is an important consideration. When unrealized appreciation or depreciation is spread or averaged in an appropriate manner, the total market value of the pension-fund assets may be used. In such circumstances, however, it would be desirable to have a continuing buffer guarding against a decline in market value of such magnitude as to cause the cumulative pension-cost reductions for appreciation to exceed the gain reasonably expected to be realized in the long run.

When the amount of appreciation to be recognized annually as a reduction of pension cost is based on an assumed long-term growth rate, a buffer can be provided by limiting the total of cost and recognized appreciation to a specified portion of the fund's market value.

Because current fluctuations in market value may be abrupt and frequent, the Opinion implies that appreciation need not be recognized if the carrying value of the fund is 75% or more of its market value; however, the 75% referred to in the Opinion is not intended to be a fixed rule.

Here, again, consistency from year to year is important.

Other Gain and Loss Considerations

Under the Opinion certain actuarial gains and losses should be recognized in the year they occur. A characteristic of these gains and losses is that they "arise from a single occurrence not directly related to the operation of the pension plan and not in the ordinary course of the employer's business." The examples of these gains and losses given in the Opinion are those resulting from plant closings and business purchase acquisitions. A plant closing might give rise to an immediately recognizable gain to the extent of previous accruals made unnecessary by the elimination from the plan of people formerly employed at the closed plant.

Employees coming into a plan by reason of an acquisition may make necessary immediate recognition of the additional cost. When purchase accounting is followed for the acquisition, any additional pension-cost accrual needed should be treated as an adjustment of the purchase price. On the other hand, when pooling-of-interests accounting is followed for an acquisition, the companies are assumed to be continuing their prior existence; therefore, any additional pension cost related to prior years'

services should be treated like an increment of prior service cost arising on the amendment of a plan.

Gains and losses that are immediately recognizable, it should be noted, do not arise from transactions relating to assets of the pension fund. As mentioned previously, these gains and losses are considered to be inherent in the long-range estimates of pension cost.

In variable annuity and similar plans, the pension benefit formula gives effect to changes in the market value of a specified portfolio of equity investments in the fund. Consequently, the pension benefits themselves change with changes in such market values. The Opinion recognized this type of plan by stating that pension-fund investment gains and losses should not have an effect in computing pension cost if they will be applied in determining pension benefits.

Changes in Accounting Method

The Opinion discussion of changes in accounting method refers only to changes from one acceptable method to another. The Board concluded that any adjustments arising from such a change should be recognized in the current and future years and should not be given retroactive effect.[1] A change in accounting method includes any change in the actuarial cost method, in the method or period for dealing with past and prior service cost, or in the method or period for dealing with actuarial gains and losses or unrealized appreciation and depreciation. A change in assumptions is considered to reflect a new circumstance and hence is not a change in method; however, the accounting for changes in circumstance should, like changes in method, be given effect in the current and future years (except, of course, actuarial gains and losses resulting from changes in circumstances of the type previously discussed as being properly recognized in the year they occur). Both method and circumstance changes are subject to the disclosure recommendations of the Opinion.

The transitional procedure for change from a method previously considered acceptable under Accounting Research Bulletin No. 47 but no longer acceptable under the Opinion conforms with the general procedure set forth in the Opinion for a change from one acceptable method to another. The consequences of any such change are therefore also related by the Opinion to current and future cost estimates and should not be applied retroactively.

Because of the complexities of determining initial past and prior service cost for employers who previously followed methods, such as pay-as-

[1] It should be noted that this conclusion of the Board appears to be controlling for purposes of applying Paragraph 25 of subsequently issued Opinion No. 9, "Reporting the Results of Operations."

you-go and terminal funding, that do not comply with the Opinion and because of the need to deal with any inadequacies of cost previously recognized under these or other methods, the transitional procedure includes a "fresh start" approach. Any prior service cost not covered by the pension fund or balance sheet accruals at the date the Opinion is effective (or such earlier date as it is first applied) may be treated as though created by a plan amendment on that date. This approach may be used by any company, including those who can identify the various amounts of initial past and prior service cost. The 40-year amortization in the defined-minimum method may also be considered to begin at the effective date of the Opinion.

Any unamortized prior service cost as of the effective date of the Opinion should be computed under the actuarial cost method to be used for accounting purposes in the future.

Treatment of Overfunding

Any overfunding existing at the effective date of the Opinion is to be treated as an actuarial gain in the same manner as any overfunding arising later. There is a distinction between (a) overfunding and (b) funding in excess of the amounts that would have been required under a method complying with the Opinion. Overfunding refers only to a fund (together with unfunded accruals, less prepayments and deferred charges) that is in excess of all prior service cost assigned under the actuarial cost method to be used in the future. If a condition of overfunding exists, the amount of such overfunding is to be considered as an actuarial gain and spread to the future. As to (b), the Opinion rejects the reversal of pension cost recognized in prior years, even though recognized in amounts greater than necessary under the Opinion.

Balance Sheet Presentation

The amount to be included in the balance sheet as an accrued liability or a prepaid expense is usually the difference between the cost provisions and the amounts paid. Unamortized prior service cost should appear in the balance sheet only if it is a legal liability.

A simultaneous asset and liability position should appear in the balance sheet whenever pension-plan arrangements impose a specific legal obligation that exceeds the total of the amounts paid or accrued. For example, if a company is liable for vested benefits, without limitation to amounts funded, accounting recognition of the unfunded, unaccrued portion of this obligation as a liability on the balance sheet is necessary; to

the extent not appropriately included in cost provisions, the cost of such benefits should appear as a deferred charge to operations of future periods.

A practical way to account for such situations is to determine, at the end of each year, the amount of the legal liability not yet covered by the pension fund and balance sheet accruals. A liability and deferred charge equal to this amount would then be recorded (or the corresponding amounts as of the end of the preceding year adjusted for the net change) and classified with any other pension-cost accruals and deferred charges appearing in the balance sheet.

Disclosure

The Board concluded that the effect of the typical pension plan is of such magnitude as to be a material consideration in evaluating financial position and results of operations and should therefore be disclosed. There may be cases, however, where the effect of the pension plan is not such as to require disclosure—for example, plans covering only a relatively small portion of the employees.

Disclosure of the amount of unamortized past or prior service cost, as is often found in present practice, is not necessary under the Opinion.[2] There are several reasons for the Board's conclusion. As discussed earlier, past and prior service cost is not derived in all actuarial methods. Also, some methods assign a greater past or prior service cost than would be assigned under the unit credit method for benefits based on age, compensation, salary and other conditions existing at the end of the year. As a result, the amount of past or prior service cost could vary considerably—or be non-existent—without any differences in either facts or assumptions, depending entirely on the actuarial cost method used. For these reasons, disclosure of unamortized past or prior service cost may be misleading to some and may not be useful for meaningful analysis by others.

In lieu of disclosure of unamortized past or prior service cost, the Board recommended the disclosure of the excess of the actuarially computed value of vested benefits over the total of the pension fund and any balance sheet accruals, less any pension prepayments or deferred charges. The disclosure of such excess of vested benefits is meaningful because it should be comparable among companies, except for real distinctions between plan arrangements and employee groups, and because it relates directly to the minimum objective the Opinion sets forth for all plans. This disclosure may be necessary even though the defined-minimum method is not being followed; in fact, it could conceivably be necessary

[2] However, at the time of the authors' last contact with the staff of the Securities and Exchange Commission, the Commission had not changed its requirements for the disclosure of unfunded or otherwise unprovided for past or prior service cost.

when the defined-maximum method is used—for example, upon adoption or amendment of a plan a large portion of the past and prior service cost could represent vested benefits if the plan calls for early vesting. When the company has several plans, the disclosures may be presented in summary form.

Regulated Industries

The Opinion does not refer specifically to regulated industries. The absence of any such reference makes the Opinion applicable to companies in regulated industries within the framework of the principles set forth in the addendum to Accounting Principles Board Opinion No. 2, "Accounting for the 'Investment Credit.' "

Employees Included

The Opinion calls for inclusion in the pension-cost computations of data for all employees who may reasonably be expected to receive benefits under a pension plan. This should be done without regard to technical "eligibility." Extreme situations found in practice illustrate the need for this conclusion of the Board. In some plans, employees are not "eligible" for coverage or, for other reasons, data for them are not included in the cost calculations until they reach age 35 or 40, or until they have 10 or 15 years of service. In some plans, "eligibility" may not occur until the time of actual retirement. Pension-cost provisions that exclude data for employees who may reasonably be expected to receive benefits could be substantially smaller than the appropriate provision for the year.

However, the combination of low unit cost for the younger employees and the high turnover often experienced frequently results in relatively small amounts of pension cost for the employees excluded from the cost calculations. The cost applicable to excluded employees also tends to be offset by the higher cost provided for employees included. The net effect of exclusion is unlikely to be material in plans where the period of exclusion is only two or three years. Where the exclusion is based on a longer period of service, or is based on an age factor, the possibility of material effect is increased. When the effect is not material, employees may be omitted from the cost computations during their early years of service. Although materiality is always pertinent in applying Board Opinions, the Board covered the point explicitly in this case.

In this connection, it should be remembered that materiality should be judged in relation to results of operations and financial position rather than in relation to the pension-cost provision itself.

Several Plans

Many companies have more than one pension plan. Sometimes each plan covers a different group of employees, but often two or more plans cover a portion or all of the same employee group. Generally, each plan should be considered a separate accountable undertaking and should not be combined for purposes of determining compliance with the Opinion. However, two or more plans covering substantial portions of the same employee group may be combined for that purpose if "the assets in any of the plans ultimately can be used in paying present or future benefits of another plan or plans." For example, upon a major revision of the pension structure, a new plan may be established to provide benefits for service after its effective date, with the old plan continuing to provide benefits for service previously rendered. In this situation, if any assets ultimately remaining in the old plan could be used to provide benefits under the new plan, the two could be treated as one in applying the Opinion.

A different accounting method may be used for each plan so long as each method conforms with the Opinion.

Multiemployer Plans

Often multiemployer plans combine a cents-per-hour or similar defined contribution with stated benefits. The movement of employees among employers and the differing employee age and service distributions that exist among employers make it difficult, if not impossible, to correlate the defined contribution with the cost of the stated benefits related to employees' services for any individual employer. Any future adjustment of the defined contributions would be negotiated with all employers—not separately with an individual employer based only on his experience. Hence, the defined contribution ordinarily would be the best available measure of pension cost.

Insured Plans

Insured plans generally use one of three contract forms: (1) individual policies (cost usually determined under the individual level premium method), (2) group deferred annuity contracts (cost usually determined under the unit credit method, but generally without a turnover factor) and (3) group deposit administration contracts (similar to a trust-fund arrangement—cost may be determined by any of several actuarial cost methods). The following discussion is directed to those insured plans that use only individual policies or group deferred annuity contracts as

the basis for determining pension cost and for funding the plan. Employers having such plans for small employee groups are unlikely to have ready access to actuarial advice. Group deposit administration contracts are not discussed because they should be accounted for in the same manner as noninsured plans.

Most of the factors of pension-cost estimation are present in plans using individual policies and group deferred annuity contracts. Some of the factors may not be apparent because they are included in the determination of the premium structure or are dealt with subsequently as "dividends" or "termination credits."

Individual policies usually include past or prior service cost in normal cost whereas group deferred annuity contracts usually deal with it as a separate factor which may be paid in varying amounts at the employer's discretion. In the latter case, separate adjustments may be needed to comply with the Opinion.

Because policy dividends generally arise from "averaged" gains of the insurance company, these dividends may be applied to reduce the provision for pension cost in the year received or credited if they do not vary significantly from year to year. If they do, a further averaging or spreading should be applied for accounting purposes.

Problems in accounting for many insured plans arise in respect to termination credits and the period before coverage. Termination credits arise when, as is typical, a turnover assumption is not used. In these cases, some of the cash values built up or the premiums paid for employees who leave before their benefits have vested will be returned in the future as termination credits. The period before coverage is often set to exclude employees during the high turnover period that immediately follows employment; if so, future termination credits will tend to be minimized. When termination credits occur, they should be spread or averaged if necessary to avoid significant year-to-year fluctuations in pension-cost provisions.

The most difficult problem in accounting for the cost of insured plans arises in cases where the financial statements would be materially affected by the omission of pension cost applicable to employees during the early years of their employment. In these cases, it will be necessary to estimate an additional pension-cost provision for the omitted employees. A reasonable estimate for accounting purposes often may be made without an actuarial valuation and without using an actuarial cost method.

Before setting out to estimate what the additional pension-cost provision would be for omitted employees, it would usually be desirable to take a look at the broad picture of the plan, including the employee group and the premiums paid, to see whether the *entire* pension cost is material to the company's operations and financial position. There are cases where the provision for pension cost could be doubled or tripled

without its having any material effect on the financial statements.

Although the authors are unable to cite any statistics, their discussions with members of the actuarial and accounting professions, as well as their own experience, have led them to believe that the omission of pension cost for employees during the early years of employment is not likely to have a material effect on the financial statements in many cases, particularly for smaller companies.

A simple test of materiality could be made by estimating the additional pension-cost provision for omitted employees to be that proportion of the premiums due for the year which the number (or compensation) of omitted employees bears to the corresponding amount for included employees. The resulting estimated amount (which usually would be larger than a refined estimate) could be compared with income before taxes and other pertinent factors to determine materiality. A variation of this approach could be to base this estimate on only the proportion of omitted employees expected to remain with the company until they become insured.

If preliminary tests indicate that the effect of omitting employees is material, or leave the matter in doubt, more refined techniques should be applied. Should this be necessary, the following techniques are possible ways to deal with the problem.

For each employee not yet covered, the estimated premiums to be paid after coverage could be totaled and then accrued by allocation over his remaining service life. The estimated premiums might be obtained from the insurance agent or based on the premiums being paid for the youngest covered employee. Premiums paid after coverage could be charged against the accrual. If the employee subsequently terminates, any amount accrued in excess of premiums paid would be treated as an additional termination credit. In time, this form of accounting would include all covered employees in the cumulative accruals. This approach could be modified by excluding employees with less than two or three years of service if the effect, giving due regard to turnover, were not material. Interest equivalents on the accruals should be added if the effect would be material.

Another approach would be to estimate what the premium would be if the employees were covered immediately after employment. This amount could be accrued during the years prior to coverage, and the amount thus accumulated could be spread to the years after coverage as a credit against premiums charged to expense. Again, interest equivalents on the accruals should be added if the effect would be material.

The effect of turnover, in rather simple form, could be applied by a variation of the approaches just discussed. Assume, for example, that the computations are to exclude data for employees who do not have one full year of service, and that the plan coverage begins after five years of

service. Further assume that, say, 25 per cent of employees with one year's service are expected to continue in service and become covered. In the four years before coverage, the additional cost for employees after one year of service could be based on 25 per cent of the total amount computed for the year the employees attained one full year of service. If the company had ten employees attaining one year's service in the current year and the estimated annual premium for each was $200, the additional cost would be $500 ($10 \times \$200 \times 25\%$). This amount would be accrued each year before coverage even though one or more of the employees terminated. In the first year of coverage and thereafter, the accruals during the preceding four years could be spread over the average remaining service lives of any of the ten employees who are still active, or the accruals could be spread as actuarial gains.

The procedures suggested do not include all of the factors that could be applied in computing the pension cost applicable to employees in years before coverage. Adjustments for such actuarial factors as past service cost and interest or annuity computations could be introduced. These would increase the complexity of the computations and likely would require the services of an actuary.

The additional cost provision for vested benefits, or disclosure of vested benefits, would not normally be a problem with individual policy plans. It is not likely that benefits vest before the benefits are covered by premium payments. This factor should be reviewed, however, for possible applicability to these plans.

Conclusion

In conclusion, the authors would like to express a thought that may seem inconsistent with much of what has been said in this and the preceding article. Many of the rules and formula-type sections of Opinion No. 8 represent virgin territory in accounting for the cost of pension plans. Nevertheless, the accounting followed by most companies heretofore probably will conform with the Opinion in all material respects. There will be many cases, of course, where important changes will have to be made. By and large, these will be cases where the CPA has already been concerned about the pension cost but has not taken a strong stand because of what he has found to be generally accepted in practice. APB Opinion No. 8 should change that.

The authors hope that Opinion No. 8 will not be viewed as a rule-bookish structure that encloses the accountant in a maze of formulas limiting the exercise of judgment to interpretation, but rather that it will prove to be a working tool that will result in a substantial step forward in accounting for the cost of pension plans.

Pension Cost and the Auditor

By Ernest L. Hicks

In Opinion No. 8, "Accounting for the Cost of Pension Plans," the Accounting Principles Board dealt with the applicable *accounting* principles and practices. The Opinion also has important *auditing* implications.[1]

In examining financial statements, a certified public accountant's broad objective is to form a basis for an opinion as to whether the statements present fairly the issuing company's financial position and results of operations in conformity with generally accepted accounting principles consistently applied.

There are several factors which may cause an auditor to lose sight of this objective when he tackles the accounts bearing on pension cost and to give either undue emphasis or inadequate emphasis to this phase of the examination. One factor is the change in accounting outlook occasioned by the issuance of Opinion No. 8. In the past, most employers have recognized as the pension expense for an accounting period the amounts paid for pensions, either directly to pensioners or to a funding agency. Under Opinion No. 8, such a procedure may no longer be acceptable. (Hopefully, however, payments and accruals will not differ.) Another factor which may obscure the audit objective is the complexity of the Opinion, which resulted from the necessity, recognized by the Board, of dealing in detail with various aspects of the determination of pension cost. Still another such factor is the participation of actuaries. Opinion No. 8 recognizes their role in Par. 7, which states in pertinent part: "The computation of pension cost for accounting purposes requires the use of actuarial techniques and judgment. Generally pension cost should be determined from a study by an actuary, giving effect to the conclusions set

[1] The author is responsible for the opinions expressed. He has, however, had the benefit of the views of individual members of the Institute's committee on auditing procedure whose assistance he acknowledges.

forth in this Opinion. . . ." One may not properly conclude, however, that because the actuary occupies stage center the auditor may leave the scene. As is true with respect to other determinations entering into financial statements, an auditor should satisfy himself that pension cost determinations have been made, to the extent that the effect on the financial statements (rather than the effect on pension cost itself) is material, in conformity with generally accepted accounting principles—specifically, in conformity with Opinion No. 8.

Despite factors which may make the problem of auditing pension expense seem different from other auditing problems, the fundamentals are the same. The auditing procedures are those which the auditor, as a matter of professional judgment, considers necessary in the circumstances. The basic guide for his judgment rests, as it does for other financial statement items, on that auditing standard of field work which specifies that the auditor is to obtain ". . . sufficient competent evidential matter . . . to afford a reasonable basis for an opinion regarding the financial statements under examination."

The evidential matter to be obtained regarding pension cost relates to the amount of the expense provision and the amount to appear in the balance sheet, to consistency in the method of determination and to the adequacy of the disclosure concerning pension matters.

An auditor undertaking to obtain evidential matter relating to pension expense will do well to remember that his need for information does not exceed his client's need. The client, through the executive responsible for the financial statements, bears the primary responsibility for the determination of the amount of pension cost to be recorded and for the related financial statement presentation and note disclosure. The executive ordinarily looks to an actuary to apply the actuarial judgment and make the actuarial calculations. The actuary furnishes reports on his valuations to the client. Consequently, the auditor may find in the client's files all the information required for an audit. Or, he may need to obtain additional information, acting on behalf of his client as much as for audit purposes. (For example, the auditor may have to inquire as to the actuarial value of vested benefits, an amount not ordinarily reported by actuaries in the past.)

The importance of the actuary's role can hardly be overstated; consequently, his competence and professional standing are important to the auditor (as, indeed, they are to the mutual client). If the auditor does not know the qualifications of a particular actuary, he may learn a good deal by inquiring among persons likely to know of the actuary's work. Such persons may include bankers, the actuary's other clients, other actuaries and other independent accountants. By and large, actuaries should not be offended by the fact that such inquiries are made; on the contrary, they should welcome the inquiries, recognizing that their purpose is to

permit the auditor to minimize his procedures concerning pension cost.

In addition to an actuary's reputation for competence and independence, his professional organization affiliations may be important indicators of his qualifications. Many, perhaps most, of the actuaries whose calculations are of concern to independent public accountants are members of either the Society of Actuaries or the Conference of Actuaries in Public Practice, or both; these organizations have been in existence for many years. In addition, most of the members of those groups are also members of the American Academy of Actuaries, formed in 1965.

All of these organizations provide guides for the professional conduct of members. The following excerpt from the guides issued by the American Academy of Actuaries is of particular interest to CPAs:

"The member will recommend for the use of his client or employer premium or contribution rates, dividends, standards of valuation, or other related actuarial functions only if, in his opinion, they are based on adequate and appropriate assumptions and methods. If, nonetheless, other assumptions or methods are specified by the client or employer, the member will include a qualification thereon in any applicable certification, communication, or report which he may be called upon to issue over his name.

"The member will submit unqualifiedly an actuarial calculation, certificate, or report only if he knows it to be based on sufficiently reliable data and on actuarial assumptions and methods that, in his judgment, are consistent with the sound principles expounded in recognized texts, sources, or precedents relevant to the subject at hand. In the absence of such knowledge, or if the member believes that other expert review is also desirable, his submission will include appropriate qualifications of his findings."

The extent of the actuary's participation in the determination of pension expense—as distinguished from the determination of expense components such as normal cost and amortization of past service cost—will depend in part on the preferences of the employer and of the actuary. Some employers may wish their actuaries to become deeply involved in the expense determination; others will be reluctant to ask the actuaries to do anything not done in the past because additional cost may be involved. On the other hand, some actuaries may take the initiative in carrying out the expense calculations required under Opinion No. 8, believing that by doing so they may simplify matters for themselves, their clients and the auditors.

Whatever the extent of the actuary's participation, the auditor may wish to discuss the actuarial report. Unless the auditor is also an actuary, he should not substitute his judgment for that of a qualified actuary in actuarial matters. Nevertheless, discussion may assist the auditor in satisfying himself (1) that there is a common understanding among client,

actuary and auditor as to the implications of Opinion No. 8 and (2) that appropriate consideration has been given to its provisions.

Trust Fund Plans

The auditor's consideration of the appropriate accounting for a client's arrangement for providing pensions starts with a review of the pertinent documents and of the client's determination as to whether or not they constitute a pension plan covered by the provision of the Opinion (Par. 8). If the plan is covered, a second question is whether it is a defined-contribution plan for which the contribution is also the expense or a plan for which the annual provision should be determined in accordance with the conclusions of the Opinion applicable to defined-benefit plans (Par. 38, 39).

This article is concerned with defined-benefit plans. The paragraphs immediately following outline the major auditing considerations under Opinion No. 8 for a plan of the trust fund type.

Materiality. The auditor should be guided by the materiality of any possible effects on the financial statements (rather than on pension cost) of the matters with which he concerns himself while examining the accounts relating to pension cost.

Plan Identification. The exact name of the plan is important if the client has two or more plans.

Accounting Basis. The client will need to choose a basis for accounting for the cost of the plan under Opinion No. 8. Considerations include: minimum provision (Par. 17a), maximum provision (Par. 17b), actuarial cost method (Par. 24), prior (past) service cost (Par. 12, 17), actuarial gains and losses (Par. 30-33).

Date of Actuarial Valuations. The actuarial valuation used in determining pension expense for a fiscal year is ordinarily made as of a date some months (occasionally 12 or more) in advance of the end of such year. If valuations are not made annually, the possible effect of changes in matters such as plan benefits, wage levels or employment made since the date of the most recent valuation should be considered.

Actuarial Cost Method. Actuarial cost methods are discussed in Par. 19-24.

Actuarial Assumptions. The auditor should bear in mind that (1) the effect of the assumptions, taken together, rather than the effect of any single assumption, is the important consideration and (2) the stipulation in Par. 24 that assumptions ought to be "reasonable" leaves room for the

exercise of judgment on the part of the actuary. The auditor may inquire whether, in the actuary's opinion, the assumptions are reasonable for determining pension cost to be recognized in the financial statements. Unless the assumptions, taken together, appear to be *unreasonable*, the auditor should not be expected to question them. As an extreme example, if the sole consideration in selecting a set of assumptions had been an intention to develop the least possible provision for pension cost, the assumptions probably would be considered unreasonable.

Actuarial Gains and Losses. Actuarial gains and losses, including unrealized appreciation or depreciation of pension fund securities, are discussed in Par. 25-33.

Employee Data. The employee data used by the actuary are usually furnished by the employer.

Pension Fund Data. The pension fund data used by the actuary (including data as to unrealized appreciation) are ordinarily furnished by the trustee.

Employees or Benefits Excluded. In many instances, employees entitled by classification to participate in a plan (for example, salaried employees in a plan for such employees) are excluded from actuarial valuations in order to simplify the calculations. Exclusion may (but need not) be related to ineligibility for participation in the plan and may be based on age, length of service or both (Par. 34-36). In some instances, benefits provided by a plan (such as health insurance for retired employees) are omitted from the calculations. Ordinarily, excluding employees during an initial period of service in which turnover is high—for example, three years —would not significantly change the annual provision. In other circumstances, or if benefits have been omitted, the auditor may wish to obtain from the actuary an estimate of the maximum probable effect on the amounts determined in the valuation. If the estimated effect is material, further inquiry may be necessary.

Contributions. Entries made to record contributions of the employer and, in a contributory plan, of employees are matters for consideration.

Balance Sheet. If there is a legal obligation for pension cost in excess of amounts paid or provided in the accounts, recognition in the balance sheet may be required (Par. 18).

Consistency. If significant matters have been treated differently in the current year from in the prior year, a question of consistency is raised.

Disclosure. The disclosures to be made, if material, are discussed in Par. 46.

Contracts With Life Insurance Companies

When plans are funded through life insurance companies, the auditing considerations vary depending on the type of contract used.

Deposit Administration Contracts. When a deposit administration contract (or a similar arrangement called an "immediate participation guarantee contract") is used, the auditing considerations are substantially the same as for a trust fund plan. The employer may retain a consulting actuary to make the actuarial valuations. If not, the valuations are made by an actuary employed by the insurance company.

Other Contracts. Another type of pension plan uses a group annuity (deferred annuity) contract. Under this type of plan, the rate structure for determining both the normal cost and the past service cost is specified in the contract. In such a case, the payments for normal cost should be acceptable, under Opinion No. 8, for inclusion in expense. Past service cost is ordinarily amortized, but the payments may vary at the employer's discretion. This can lead to differences between payments and expense charges. In addition, termination credits, which are usually deducted immediately in making payments, may need to be amortized for accounting purposes. Usually, the insurance company's procedures in arriving at dividends meet the requirements of the Opinion (Par. 30).

When individual annuity or life insurance policies are used, the premiums are determined under the insurance company's rate structure and include provision for past service cost. As in the case of a group annuity contract, termination credits may require special consideration but dividends should not.

The auditing considerations described earlier for trust fund plans are for the most part also applicable for plans funded through life insurance companies.

Split Funding. Some plans use more than one type of funding. For example, past service benefits may be funded through a trust fund and current service benefits through a group annuity contract. In such instances, the applicable auditing considerations depend on the circumstances.

Confirmation

In some circumstances (for example, if the auditor desires a record of matters discussed in a meeting), the auditor may wish to confirm certain matters directly with an actuary.

SCHEDULE 1

Pension Expense for the Year[1]

	Minimum (Opinion No. 8, Par. 17a)		*Maximum (Opinion No. 8, Par. 17b)*	*Other Basis*
	Col. I	Col. II	Col. III	Col. IV
1. Normal cost	$_____	$_____	$_____	$_____
2. Amortization of actuarial (gains) losses[2]	(_____)	(_____)	(_____)	(_____)
3. Adjustment for unrealized (appreciation) depreciation[2]	(_____)	(_____)	(_____)	(_____)
4. Employee contributions[2]	(_____)	(_____)	(_____)	(_____)
5. Interest on unfunded prior service cost	_____	XXXX	XXXX	_____
6. Provision for vested benefits (Schedule 2, Item 6c)	_____	XXXX	XXXX	_____
7. Amortization (including interest) of past service cost and prior service cost increments[3]	XXXX	_____[4]	XXXX	_____
8. 10% of past service cost (until fully amortized)	XXXX	XXXX	_____	_____
9. 10% of prior service cost increments[3] (until fully amortized)	XXXX	XXXX	_____	_____
10. Interest on prior year accounting provisions not funded	XXXX	_____	_____	_____
11. Interest on excess of prior year funding over accounting provisions	XXXX	(_____)	(_____)	(_____)
12. Other	XXXX	XXXX	XXXX	_____
13. Total—Col. I and/or Col. II	$_____	$_____	XXXX	XXXX
14. Pension expense—Lesser of Col. I or Col. II; total of Col. III or Col. IV	$_____		$_____	$_____

[1] To be completed only to the extent required.

[2] Applicable if not taken into consideration in determining the normal cost.

[3] Increases or decreases in prior service cost which arise when a pension plan is amended and which are analogous to past service cost.

[4] Amortization (including interest) on a 40-year basis (until fully amortized).

SCHEDULE 2

Vested Cost Not Funded or Otherwise Recognized in the Accounts[1]

	At End of Fiscal Year	At Beginning of Fiscal Year
1. Actuarially computed value of vested benefits (Opinion No. 8, p. 103)[2]	$_____	$_____
2. Amount of pension fund[2]	_____	_____
3. Unfunded amount (1 minus 2)[3]	_____	_____
4. Amount of balance sheet pension accruals less pension prepayments or deferred charges[2]	_____[4]	_____[5]
5. Amount of vested cost not funded or otherwise recognized in the accounts (3 minus 4):		
(a) At end of fiscal year	$_____[4]	XXXX
(b) At beginning of fiscal year	XXXX	$_____[5]
6. Amount for minimum expense calculation (Opinion No. 8, Par. 17a):		
(a) 5% of 5b	$_____	XXXX
(b) Excess, if any, of 5b over 5a	_____	XXXX
(c) Excess, if any, of 6a over 6b—Amount for Schedule 1, Item 6	$_____	XXXX
7. Amount to be disclosed (Opinion No. 8, Par. 46, Item 4):		
(a) Amount in 5a	$_____	XXXX
(b) Increase or decrease in 4 upon final determination	_____	XXXX
(c) Amount to be disclosed (7a minus or plus 7b)	$_____	XXXX

[1] Amounts need not be determined if vested cost has been fully funded or otherwise recognized in the accounts. Approximations are acceptable if detailed calculations have not been made.

[2] The date of the actuarial valuation seldom coincides with the employer's balance sheet date. Consequently, the appropriate as-of dates for the amounts on lines 1, 2 and 4 will depend on the circumstances. Consistency is a primary consideration. Under one approach, the amount on line 1 would be as of the valuation date, and the amounts on lines 2 and 4 would be as of the end of the employer's fiscal year. If the amount of the pension fund is regularly reported only as of the valuation date, it should be satisfactory for the amounts on lines 1 and 2 to be as of that date; the amount on line 4 might then include the amount funded or accrued for the fiscal year, reduced by any portion funded before the valuation date. Under still another approach, all three amounts would be as of the valuation date. Only in very rare circumstances (such as when a material, extraordinary change in the level of vesting is known to have taken place after the valuation date) would a valuation made within the employer's fiscal year be updated.

[3] For plans funded by means of group annuity (deferred annuity) contracts, the actuarially computed value of vested benefits not yet purchased may be substituted for line 3 if information for lines 1 and 2 is not available.

[4] Preliminary.

[5] Final.

Calculations

The accounting calculations called for under Opinion No. 8 may involve a number of elements in varying combinations; consequently the calculations may seem unduly complicated. Schedules 1 and 2 (pages 43-44) have been prepared to illustrate how the elements may be combined for a trust fund plan.

Conclusion

Pension cost is an important element in the financial statements of many companies. By focusing attention on the accounting principles, Opinion No. 8 has raised related auditing questions. The purpose of this article has been to highlight the major questions and to point out that they should be resolved within the framework of the auditor's usual approach to auditing matters.

Alternatives Available Under APB Opinion No. 8: An Actuary's View

By William A. Dreher

With the issuance of Opinion No. 8 of the American Institute's Accounting Principles Board ("Accounting for the Cost of Pension Plans"), both accountants and management should develop a particular familiarity with the actuarial decisions influencing period costs and with alternatives available under the Opinion. For every company with a pension plan, *at least*[1] six decisions having actuarial connotations must be made:

1. What actuarial assumptions are appropriate?
2. Which actuarial cost method is most suitable?
3. Over what period, if at all, should prior service costs[2] be amortized?
4. How should actuarial gains and losses be reflected?
5. What method of recognizing unrealized appreciation or depreciation on common stocks is preferred?
6. How should the unaccrued actuarial value of vested benefits be computed?

How these issues are resolved can have a substantial effect on reported

[1] Other decisions of substantial importance face the company with multiple pension plans, informal arrangements equivalent to a pension plan, or foreign subsidiaries whose financial results are consolidated with those of the parent.

[2] Opinion No. 8 also refers, in some paragraphs, to "past service costs." "Past service costs" are those related to benefits arising from service before the effective date of the plan or before a plan amendment and are included in the "prior service costs" determined as of any valuation date.

annual costs, both because of the ranges of acceptable actuarial factors and because of the latitude allowed by the Opinion.

This article is intended to explore the available alternatives, identify some of their implications and provide a relative measure of their effect on the financial statements. It is *not* intended to solve the particular problems faced by individual companies; these matters require an intimate knowledge of all relevant circumstances and individual interpretation by the company's accountant and actuary.

Although each decision requires separate consideration, a few general considerations should be borne in mind:

1. The components of the pension accounting decision are interrelated. This requires that management first decide on its pension accounting policy and then select from the available alternatives those consistent with this policy. To do otherwise could lead to a contradictory and misleading result: for example, combining an actuarial cost method which allocates a greater proportion of the total pension expense to the employee's later years of service with actuarial assumptions which place a high value on the plan's liabilities.

2. The decisions on pension accounting questions should be consistent with the company's total accounting policy. For example, where inventories are stated on the Lifo method, basing pension costs on conservative assumptions is more compatible with one derived from optimistic assumptions. Likewise, for a company that depreciates assets on an accelerated basis, such as double-declining-balance, a program of 20-year amortization of past service liabilities is more consistent than a policy of no amortization.

3. For many companies the actuarial methods, assumptions, and procedures used in the past will comply fully with the requirements of Opinion No. 8 and can be continued without change. For others, past practices may not be precisely in line with Opinion No. 8, but with such immaterial effects on financial statements that the accountant is not likely to take exception.

4. The actuarial methods and assumptions used to justify the tax deductibility of a company's pension contribution may not be the preferred basis for determining the pension cost accrual in the company's financial statements. For example, some companies have obtained Internal Revenue Service acceptance of conservative actuarial methods and assumptions designed to permit the widest acceptable range of tax deductions, while determining the actual annual contribution amount by a second actuarial valuation which incorporates a more liberal set of assumptions and, possibly, a different actuarial cost method. In

such situations, the second valuation might be a more suitable basis for the pension cost accrual.

Actuarial Assumptions

As the bricks and mortar of pension funding and cost accounting, actuarial assumptions are the primary determinants of the financial effects of the actuarial cost method, the amount of net actuarial gains or losses and the timing of pension cost accruals.

The judgments leading to an actuary's selection of assumptions are both art and science—a judicious blend of qualitative and quantitative interpretations. In exercising his responsibility, the actuary uses recognized professional standards to interpret current and historical information about the pension plan, its beneficiaries and the pension fund in the context of the sponsoring company's funding and accounting policies.

Although actuarial assumptions do not change a pension plan's ultimate cost, their effect on period costs can be so substantial that both auditors and management accountants need to develop a familiarity with each assumption's relative cost sensitivity, particularly in view of the variances that can result under the alternative gain and loss adjustment techniques approved by Opinion No. 8. These variances are so wide as to permit either a substantial acceleration of the recognition of pension costs or an almost indefinite deferral of a significant part of their impact on a company's financial statements. If the assumptions are not properly selected, the purposes of Opinion No. 8 might be defeated.

Opinion No. 8 does not deal extensively with actuarial assumptions, in contrast to its explicit identification of the acceptable approaches or the range of alternatives for cost methods, treatment of actuarial gains and losses, and amortization of prior service costs. The key comments about actuarial assumptions are indirect. Paragraph 24 of the Opinion contains the most significant reference; after defining the actuarial cost methods, it states that they will be acceptable "when the actuarial assumptions are reasonable." What constitutes reasonableness? Should the actuary emphasize current or long-term considerations? To what extent should the sponsoring company's financial and accounting policies be reflected? It is apparent that Opinion No. 8 offers a wide latitude for the choice of actuarial assumptions deemed appropriate by the actuary, satisfactory for the company and acceptable to the accountant.

The actuarial assumptions most frequently included in the valuation basis of a pension plan are: the interest rate, mortality rates—before and after retirement, turnover rates, the salary scale and the retirement age.

Within the same pension plan it is not uncommon to use different

assumptions for subgroups of participants. For example, the assumed mortality rates, turnover rates and salary scale for salaried men may differ from the assumptions for women or hourly paid men.

Depending upon the plan's benefit and funding provisions, other actuarial assumptions may be required for: disability rates, disabled life annuities, widows' remarriage rates, administrative expenses and Social Security benefits.

Assumptions Most Frequently Used

Although the assumed interest rate usually commands greater management attention than any other assumption, other assumptions may have a greater period cost effect. Depending on the actuarial cost method, the extent of funding and the characteristics of the employee group, a ½% experience variation from the assumed interest rate will usually change the pension cost accrual in later years by no more than 10% to 15%.

The range of cost effects for the mortality rates usually assumed by actuaries is not great: for mortality rates after retirement, the range is probably 15% or less; for mortality rates before retirement, the variation will usually not be more than 10% for typical groups of employees.

Rates assumed for the frequency of employee turnover have a powerful effect on initial pension cost accruals. One of the most difficult rates to determine, the turnover assumption, can result in a 35% or 40% difference between initial pension cost estimates and the ultimate results of experience. For a particular plan and group of employees, of course, a much narrower range of initial cost variation would be likely—even from the judgments of different actuaries.

The actuarial valuations of some pension plans have made no provision for turnover in determining pension costs, as a measure of conservatism comparable to using a low interest rate, allowing unrealized asset appreciation to accumulate without recognition, etc. The effect of such conservatism is to create a cushion for financing periodic benefit increases or a reservoir of actuarial gains to reduce pension cost provisions in later years.

The salary scale used to project an employee's future earnings is an area of significant actuarial uncertainty. With an obviously greater effect when a plan's benefits are related to a final salary rather than to career average salary, the salary scale assumption has a more pronounced effect upon a plan having benefits integrated with Social Security benefits. Depending on the type of plan and the impact of inflation, initial pension costs may differ from actual long-term results by 40% to 50%. As noted

above in respect of turnover rates, range of cost variations for a particular plan may be expected to be much narrower.

The assumed retirement age is a factor of increasing importance, since more and more pension plans are being amended to include (1) early retirement benefits that exceed the actuarial equivalent of the accrued normal retirement benefit and (2) temporary benefit supplements prior to the employee's qualification for Social Security benefits. The significance of this assumption is also influenced by the plan provisions about benefits for employees who work past the normal retirement age; some plans give additional benefits for service after age 65 while others do not. Early retirement at an average age of 63 can increase pension cost 15% to 20% above the cost of benefits for retirement at age 65; conversely, retirement at an average age of 67 can reduce costs, compared with a retirement age of 65, by 10% to 15%.

The effect of the other actuarial assumptions mentioned above may also be significant, depending on the benefit formula and other plan provisions.

Although each assumption and its relative cost effects have been discussed separately, it is important to recognize that experience variations may tend to offset one another. Accordingly, no conclusions about the reasonableness of cost determinations can be drawn from a look at a single assumption. Even where an assumption looks out of line, it may in reality be appropriate to special circumstances of the particular employer.

It is necessary to remember that an original error in estimating pension costs has only a temporary effect. If experience reveals the actuarial assumptions to have been wrong, the resulting actuarial losses or gains will produce a correction that ultimately increases or decreases future pension cost provisions by a greater magnitude than would have been required by an accurate initial assumption.

Cost Effects of Excluding Some Employees

Paragraphs 34, 35 and 36 of Opinion No. 8 discuss the impact on costs of excluding employees not yet eligible for membership in a pension plan. It is normal actuarial practice to exclude these employees; in fact, some actuaries are inclined to exclude all employees with short service, even if they are already eligible for the pension plan.

The cost effect of the exclusion may be material, depending upon the plan's service period for eligibility, upon whether benefits are based on total service or the length of plan membership, and upon the turnover rate among short service employees. The longer the exclusion period, the greater the probability that costs may be significantly affected. Where employees are eligible for the pension plan after three years of service or

less, the effect of exclusion is not likely to distort the results of the actuarial valuation. If the eligibility period is five years or more, exclusion of short service employees may not be appropriate, particularly if there is an unusually low turnover rate and employees receive benefits for all service with the employer. However, in plans where this condition exists, there may be a compensating overstatement of costs in another actuarial assumption.

Actuarial Cost Methods

Opinion No. 8 accepts as satisfactory for accounting purposes every actuarial cost method approved by the Internal Revenue Service for qualifying the tax deductibility of contributions to a pension fund. Use of the same cost method for both funding and accounting is not mandatory; in fact, as noted previously, the use of different methods may be desirable under some circumstances.

Actuarial cost methods are devices for assigning a portion of the pension plan's cost to a particular period. They do not affect the total amount of benefits paid by the plan, but they do materially affect the incidence of pension cost provisions.

The actuarial cost methods explicitly endorsed by Opinion No. 8 are: the accrued benefit (or unit credit) method, the entry age normal method, the individual level premium method, the aggregate method and the attained age normal method.

The major characteristics of each of these methods are summarized in Figure 1, pages 52-53, which also includes a description of terminal funding, a cost method not acceptable for Opinion No. 8 purposes.

The diversity of period cost effects under these cost methods is shown in Figure 2, page 54, from which it can be seen that some methods weight the cost heavily in the early years, and some in the later years. Note that beginning accruals under the most accelerated method are more than twice those under the slowest method.

Either the accrued benefit or the entry age normal method is used for most plans. A small percentage uses the attained age normal method, which is a hybrid of the accrued benefit and aggregate methods. The individual level premium and aggregate methods have never been popular, probably because they combine the cost of benefits for both prior and future service and, consequently, give the company less flexibility in selecting the amount of annual contribution into the pension fund.

Some of our clients compute their annual pension fund contribution by another cost method, called the projection method. This method, in our opinion, fits the guidelines prescribed in Paragraphs 23 and 24 of Opinion No. 8 and should accordingly be acceptable for determination of

FIGURE 1

DESCRIPTIONS OF ACTUARIAL COST METHODS ADAPTED FROM APPENDIX A OF APB OPINION NO. 8

Methods Which Determine Past Service Cost and Normal Cost

Accrued benefit cost method—unit credit method

Future service benefits are funded as they accrue. Thus, the normal cost under this method for a particular year is the present value of the units of future benefit credited to employees for service in that year. Prior service cost under the unit credit method is the present value at the valuation date of the units of future benefit credited to employees for service prior to the valuation date. As to an individual employee, the annual normal cost for an equal unit of benefit each year increases because the period to the employee's retirement continually shortens and the probability of reaching retirement increases. As to the employees collectively, however, the step-up effect is masked, since older employees generating the highest annual cost are continually replaced by new employees generating the lowest. For a mature employee group, the normal cost would tend to be the same each year.

Entry age normal method

Under the entry age normal method, the normal costs are computed on the assumption (1) that every employee entered the plan at the earliest time he would have been eligible if the plan had always been in existence and (2) that contributions have been made on this basis from the entry age to the date of the actuarial valuation. Normal cost under this method is the level amount (or level percentage of compensation) to be contributed for each year. Prior service cost under this method is the amount of the fund that would have been accumulated had annual contributions equal to the normal cost been made in prior years and all actuarial assumptions been precisely accurate.

Attained age normal method

The attained age normal method is a variant of the aggregate method and the unit credit method in which past service cost is recognized separately. The cost of each employee's benefits assigned to years after the inception of the plan is spread over the employee's future service life.

pension cost provisions. The projection method can be most easily described as a cash-flow technique. By applying appropriate actuarial assumptions (including assumptions about the number, age and salary of employees who will enter the plan in future years), each future year's benefit payments, participants' earnings, pension fund income and accrued actuarial liability can be calculated. The annual contribution (or pension cost provision) under the projection method is expressed as the level percentage of participants' earnings that will cover all benefit payments and accumulate, at a specified future date (such as 30 years after

Normal cost contributions under the attained age normal method, usually determined as a percentage of payroll, tend to decline but less markedly than under the aggregate method.

Methods Which Include Past Service Cost in Normal Cost

Individual level premium method

The individual level premium method assigns the cost of each employee's pension in level annual amounts, or as a level percentage of the employee's compensation, over the period from the inception date of a plan (or the date of his entry into the plan, if later) to his retirement date. Thus, past service cost is not determined separately but is included in normal cost. The individual level premium method generates annual costs which are initially very high, but ultimately drop to the level of the normal cost determined under the entry age normal method. The high initial costs arise because the past service cost (although not separately identified) for employees near retirement when the plan is adopted is in effect amortized over a short period.

Aggregate method

The aggregate method applies on a collective basis the principle followed for individuals in the individual level premium method. That is, the entire unfunded cost of future pension benefits (including benefits to be paid to employees who have retired as of the date of the valuation) is spread over the average future service lives of employees who are active as of the date of the valuation. In most cases this is done by the use of a percentage of payroll. The aggregate method does not deal separately with past service cost (but includes such cost in normal cost). Annual contributions under the aggregate method decrease and ultimately approach those under the entry age normal method, but the rate of decrease is less extreme than under the individual level premium method.

Method Not Acceptable to the APB

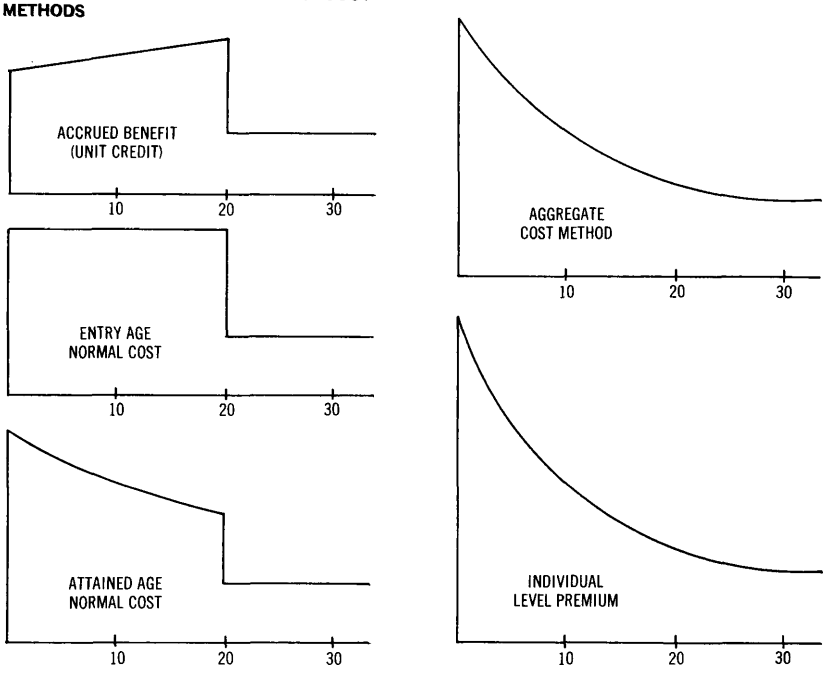
Terminal funding method

Under terminal funding, funding for future benefit payments is made only at the end of an employee's period of active service. The annual contribution under this method is the present value of all future benefit payments to employees retiring during the year. This method is not acceptable for determining pension cost provision.

the actuarial valuation), a fund equal to the actuarial liability at that date for all benefits related to the prior service of active and retired employees then participating in the plan. The level percentage resulting from the projection method calculation is multiplied by the earnings of current plan participants to determine the cost provision or pension fund contribution for the current year.

The magnitude of the accounting and funding differences of the various methods can best be illustrated by comparing their results over a representative period of time. Assuming a simple benefit formula and

FIGURE 2 ANNUAL COST-PATTERNS FOR A TYPICAL PLAN UNDER VARIOUS COST METHODS



1,000 active plan participants, Figure 3, page 55, shows prior service costs, normal costs, contribution rates, and fund accumulation rates under the methods described in Opinion No. 8. Costs under the pay-as-you-go financing technique (which is not an actuarial cost method, since it requires no accumulation of assets) are included to indicate the actual retirement benefits payable under the assumed conditions. It might also be noted that the funds accumulated by the terminal funding method represent the actuarial value of future payments to all employees retired at each valuation date.

The relationships in Figure 3 indicate only the pattern of cost effects for different actuarial methods and time periods. Different combinations of benefit formula, actuarial assumptions and covered population would obviously affect both the magnitude of costs and the proportionalities between methods, but would not significantly change the total pattern.

Some of the conclusions that may be drawn from Figure 3 are:

1. The contribution rate drops substantially at the end of the amortiza-

FIGURE 3 COMPARISON OF EFFECTS OF VARIOUS ACTUARIAL COST METHODS ON HYPOTHETICAL PENSION FUND

NORMAL RETIREMENT BENEFIT: $35 per month; no other benefits. PENSION FUND INVESTMENT YIELD: 2½%. POPULATION AND ACTUARIAL ASSUMPTIONS: 1,000 active lives, no retired lives initially; retirement rate 1% per year, death and withdrawal rate 9% per year; new entrant rate at age 30 sufficient to keep active lives at 1,000; interest rate 2½%.

				1	2	3	4	5	10	15	20	30	40	Limit
ANNUAL BENEFIT OBLIGATION				$ —	$ 800	$ 2,100	$ 3,500	$ 5,300	$ 17,300	$ 30,000	$ 40,600	$ 54,400	$ 65,600	$ 63,000
ACCRUED BENEFIT (UNIT CREDIT or STEP RATE), with past service costs amortized over 20 years														
Costs:	Past Service	Normal	**Contributions**	1	2	3	4	5	10	15	20	30	40	Limit
Initial	$ 431,900	$26,400	Yearly*	$ 53,400	$ 54,400	$ 55,300	$ 56,000	$ 56,700	$ 58,800	$ 60,000	$ 60,900	$ 34,900	$ 33,000	$ 33,600
Ultimate	1,207,000	33,600	Cumulative+	54,700	111,000	168,300	226,300	284,700	570,000	831,300	1,070,100	1,213,200	1,225,500	1,207,000
ENTRY AGE NORMAL, with past service costs amortized over 20 years														
Costs:	Past Service	Normal	**Contributions:**	1	2	3	4	5	10	15	20	30	40	Limit
Initial	$ 661,300	$27,100	Yearly*	$ 68,500	$ 68,500	$ 68,500	$ 68,500	$ 68,500	$ 68,500	$ 68,500	$ 68,500	$ 27,100	$ 27,100	$ 27,100
Ultimate	1,471,900	27,100	Cumulative+	70,200	141,300	212,900	284,700	356,600	707,400	1,035,100	1,343,700	1,476,900	1,487,900	1,471,900
ATTAINED AGE NORMAL, with past service costs amortized over 20 years														
Costs:	Past Service	Normal	**Contributions:**	1	2	3	4	5	10	15	20	30	40	Limit
Initial	$ 431,900	$50,900	Yearly*	$ 77,900	$ 75,900	$ 74,100	$ 72,500	$ 71,000	$ 65,300	$ 61,500	$ 59,000	$ 29,100	$ 28,000	$ 27,100
Ultimate	1,471,900	27,100	Cumulative+	79,800	158,800	236,600	313,100	388,300	737,500	1,039,100	1,302,000	1,459,600	1,480,700	1,471,900
AGGREGATE—past service costs included in normal cost														
Costs:	Past Service	Normal	**Contributions:**	1	2	3	4	5	10	15	20	30	40	Limit
Initial	$ 0	$95,600	Yearly*	$ 95,600	$ 89,900	$ 84,700	$ 80,000	$ 75,800	$ 59,200	$ 43,300	$ 37,800	$ 31,600	$ 29,000	$ 27,100
Ultimate	1,471,900	27,100	Cumulative+	98,000	191,700	281,100	366,500	447,800	794,100	1,090,200	1,251,700	1,438,800	1,472,000	1,471,900
INDIVIDUAL LEVEL PREMIUM—past service costs included in normal cost														
Costs:	Past Service	Normal	**Contributions:**	1	2	3	4	5	10	15	20	30	40	Limit
Initial	$ 0	$126,500	Yearly*	$126,500	$112,400	$101,500	$ 92,800	$ 85,000	$ 57,200	$ 42,000	$ 34,000	$ 28,000	$ 27,100	$ 27,100
Ultimate	1,471,900	27,100	Cumulative+	129,600	247,200	355,300	455,600	548,700	918,600	1,160,900	1,315,900	1,475,900	1,487,900	1,471,900
TERMINAL FUNDING—not acceptable for accounting purposes; see Figure 1														
Costs:	Past Service	Normal	**Contributions:**	1	2	3	4	5	10	15	20	30	40	Limit
Initial	$ 0	$ 0	Yearly*	$ —	$ 10,100	$ 15,200	$ 18,500	$ 23,000	$ 39,000	$ 42,300	$ 44,200	$ 55,900	$ 50,400	$ 50,800
Ultimate	502,100	50,800	Cumulative+	None	9,500	23,200	39,100	58,300	178,200	289,000	364,700	455,000	536,100	502,100

SOURCE: "Fundamentals of Pension Funding," by C. L. Trowbridge, F.S.A., *Transactions of the Society of Actuaries*, Volume IV, page 36.

KEY CODE: *Beginning of year; +End of Year

tion period under the methods that treat past service costs separately.

2. When the population of active and retired plan members has stabilized —i.e., when (a) the number of employees hired each year equals the number leaving employment during the year and (b) the number of employees retiring each year equals the number of retirees who die during the year—the total benefits payable annually are $63,000, the pay-as-you-go amount. Under each of the actuarial cost methods, this annual obligation is covered by the sum of the fund's current earnings plus the current normal cost.
3. At fund maturity, the normal cost and the fund accumulated are the same for all acceptable methods except the accrued benefit method.
4. There is an inverse relationship between normal costs and fund accumulation; if the ultimate normal cost under one cost method is higher than another, the ultimate fund accumulation will be lower.
5. After about 25 years the pension cost and the accumulated fund do not change materially from year to year under any of the acceptable cost methods. (This would not be true if the number of covered employees was changing or if the amortization of prior service costs had not been completed.)
6. When fund maturity is achieved, the difference between the normal cost under any two cost methods is exactly equal to 2½% (the assumed actuarial interest rate) of the difference in accumulated funds under the methods.

Amortization of Prior Service Costs

The major and, in certain senses, the only way in which Opinion No. 8 restricts the freedom of companies to accrue as pension cost the amount funded during the year is related to prior service costs. This new requirement has no significance for companies using the individual level premium or aggregate actuarial cost methods, since neither method defines prior service cost separately. For companies using the accrued benefit (unit credit), entry age normal, or attained age normal methods, however, it is now necessary to settle upon or reaffirm a company policy regarding amortization of prior service costs and to include in the financial statements an annual pension cost provision consistent with that policy. It is true that a company may elect not to amortize prior service costs, but in mathematical terms this is simply a decision to amortize over an infinite future period.

The range of available alternatives is broad: a company may accrue as much as 10% of prior service costs, until they are fully amortized, or

as little as an amount equivalent to interest on any unfunded prior service costs. If, however, the accrual related to prior service costs is less than the amount which will complete the amortization in 40 years, an additional accrual may be necessary.

The test to determine whether an additional accrual will be required is complicated, and has created confusion in many minds, including a few actuarial minds. For this reason alone most smaller companies, and many of the larger, should consider a policy of amortization over 40 or fewer years. In view of the relatively small additional accruals resulting from a 40-year amortization policy compared with the "interest only" approach, this becomes a highly practical solution (see Figure 4, below). Stated very briefly, an additional accrual may be required if the actuarially computed value of vested benefits at the end of the year exceeds the sum of (1) the pension fund's assets and (2) various balance sheet items related to the pension plan.[3] The amount of the additional accrual is the lesser of (1) the amount by which 5% of the unprovided value of vested benefits *at the beginning of the year* exceeds any *reduction* during the year in such unprovided value and (2) the amount that would increase the total accrual to the level required by a 40-year amortization schedule.

Choosing an accounting or funding policy for prior service costs involves many of the considerations affecting the selection of actuarial assumptions and an actuarial cost method: What degree of conservatism is desirable? What are the practices of competitors? What are the responsibilities of current company management toward its successors? Of what significance is the expected rate of return on internally invested assets? Questions of primary importance for determination of pension funding

[3] See pp. 67-70 for further discussion of this topic.

FIGURE 4

ANNUAL PENSION PROVISION FOR AMORTIZING $1 MILLION OF PRIOR SERVICE COST OVER VARIOUS AMORTIZATION PERIODS, ASSUMING 4% INTEREST RATE

Amortization Period	Annual Amount
15 Years	$89,900
20 "	73,600
25 "	64,000
30 "	57,800
35 "	53,600
40 "	50,500
Infinite (Interest Only)	40,000

policy include: How rapidly should the pension fund accumulate? What is the outer limit on the ultimate size of the fund? What are the benefit security expectations of employees, and how fully should the company achieve them?

It is obvious that there is no single set of answers suitable to all situations, but there are various schools of actuarial thought that influence the approach to an individual client's problem.

Some actuaries believe that all prior service costs should eventually be fully amortized, and would recommend an amortization period of at least 15 years, but not more than 40 years. There are no published statistics about the amortization periods actually being used by companies which have elected a policy of full amortization, but general observation suggests that a large majority are on 20-, 25- or 30-year schedules. An indication of the financial effect of different amortization schedules is given in Figure 4.

Other actuaries believe that it is unnecessary to provide more than interest on unfunded prior service costs if the pension plan is expected to continue in existence indefinitely. A point of view receiving much attention in the actuarial literature of recent years contends that the ideal pension plan contribution may be the sum of (1) normal cost (calculated by the entry age normal cost method) plus (2) interest on unfunded prior service costs. Its proponents argue that the resulting annual contributions to the pension fund will eventually accumulate assets that will equal the actuarial value of all accrued benefits and satisfy the employees' desire for security of their pension expectations.

An intermediate view recommends an initial policy of amortization but continually tests the progress of the pension fund against the actuarial value of all accrued benefits (computed either by the "termination liability" or the "going concern" definition—see p. 68). As a balance is approached, the amortization schedule can be lengthened or replaced by an "interest only" policy. Among the practical considerations favoring this approach are:

1. No plan can be confident of perpetual existence; many, in fact, are likely to be profoundly affected by merger, reorganization or termination of the sponsoring company.
2. Actuarial assumptions are not guaranteed to be accurate and a contingency margin in the pension fund is prudent.
3. Despite the appeal of the "normal cost plus interest only" theory, it does not apply to all employee populations. Even when it is sound for the long term, the rights and expectations of original plan members may require that the pension fund grow toward the desired funding objective as rapidly as prudence permits.

4. Actuarial valuations do not usually take long-range inflationary trends into account. A relatively rapid accumulation of pension fund assets invested in common stocks can create a contingency fund to dampen the effects of inflation on pension costs.

Actuarial Gains and Losses

General. The actuary deals with predictions about uncertain future events and one of the few certainties in his profession is the certainty of error. The variances between assumed pension costs and the results of experience are known as actuarial gains if the original estimate proves to have been high, or actuarial losses, if it proves to be low.

An essential element of a pension fund valuation is an acceptable means of adjusting for the actuarial gains and losses. Opinion No. 8 offers three alternative devices for reflecting actuarial gains and losses in the annual accrual of pension cost:[4]

1. Spreading over current and future normal costs
2. Averaging and applying to the current normal cost
3. Adjusting the provision related to prior service costs.

Selection among these alternatives is one of the most significant decisions required of company management in setting its pension accounting policy. Not only may pension cost provisions be materially affected from year to year, but in extreme situations the effect of actuarial gains and losses may be deferred almost indefinitely. Accordingly, it will be necessary to make a particularly careful review to assure that the method chosen is appropriate to the particular plan's circumstances.

Spreading. The spreading method is widely used. It is an integral characteristic of the frozen initial liability method, a modification of the entry age normal and attained age aggregate cost method which has the formal blessing of the Internal Revenue Service. It is also a fundamental characteristic of the individual level premium and aggregate cost methods (see Appendix A of Opinion No. 8, pp. 98-104). It may also be used with other actuarial cost methods. Paragraph 27 of Opinion No. 8 appears to suggest that spreading is not used with the accrued benefit, or unit credit,

[4] Paragraph 31 of Opinion No. 8 contemplates that some types of actuarial gain or loss, such as those arising from special and nonrecurring circumstances not in the ordinary course of business and those related to certain types of merger or acquisition, should be recognized immediately.

cost method. That is the usual practice, but not a necessity. The Internal Revenue Service has accepted a spreading technique for treating gains and losses arising from the accrued benefit cost method.

There are three variations of the spreading method. The first and most common variation— i.e., the frozen initial liability method—spreads all previously unamortized actuarial gains and losses over the future service lifetimes (or payrolls) of active plan participants. In the application of the frozen initial liability method, the adjustment for gains and losses is usually incorporated in the calculation of the current year's normal cost. Where the gain or loss adjustment is separately computed—e.g., when associated with the accrued benefit cost method—the required mathematical procedure is:

1. In the initial year, there are not yet any actuarial gains or losses. Therefore, there is no adjustment to the normal cost.
2. In the second year, the actuarial gain or loss from experience in the initial year is determined, and then divided by an annuity factor based upon the average future service of the current plan participants (or the average future compensation of those participants). The second year's normal cost is adjusted by this amount.
3. In the third year, the gain or loss from the first year, less the adjustment to the second year's normal cost, is increased by interest at the rate used in the actuarial valuation, and then adjusted for the gain or loss realized in the second year. The net amount is divided by an annuity factor of the type described above (but based upon payroll and census data for current participants) and the result is applied against the third year's normal cost.
4. This iterative process continues in all subsequent years.

It is immaterial whether the spreading method is applied independently or in combination with the normal cost; the adjustment to pension cost is the same.

The second variation treats each year's gain or loss as a separate unit and amortizes it over a pre-selected, constant number of years. The annual adjustment to normal costs during future years is determined on the same type of calculation used to develop the annual payment on a mortgage. The total adjustment to the normal cost for a particular year is the net sum of the individual adjustments arising from all previous gains and losses that have not yet been fully amortized.

To calculate the adjustment to current and future normal costs which relate to the gain or loss for a particular year, it is necessary to divide the gain (or loss) by an annuity certain for the required number of years.

The annuity factor incorporates the interest rate from the actuarial valuation. To illustrate, with a 20-year amortization period and a 4% interest rate, the annuity factor is 14.13; its reciprocal is .0708. Therefore, 7.08% of the gain (or loss) for a particular year is subtracted from (or added to) the normal cost in each of the next 20 years. In this example, the total adjustment to each year's normal cost would be the net sum of the annual amounts derived from gains and losses in the preceding 20 years.

The process described above expresses the adjustments to normal costs in level dollar amounts over the selected period of years. There would appear to be no objection—and, in many circumstances, definite practical and theoretical advantages—to expressing the adjustments as a level percentage of expected future payrolls in the period of amortization.

Opinion No. 8 states that an amortization period of 10 to 20 years is considered reasonable. In my opinion, the characteristics of some plans and populations of participants might justify an amortization period longer than 20 years.

The third variation is similar to the second except that the gain or loss in a particular year is divided by the whole number of years in the preselected adjustment period, not by an annuity certain for this number of years. Because the amount of the gain or loss has been discounted for interest at the rate included in the actuarial valuation, a further adjustment is required in subsequent years. Thus, the total gain or loss in each year is the sum of the following:

1. The gain or loss directly related to that year's experience under the plan

2. The interest accruing on the unamortized remainder of gains and losses from all previous years.

Averaging. The averaging method will be a new idea to most companies with pension plans although it is a natural extension of adjustment techniques applied by accountants to other items in financial statements. It is not included in the actuarial literature and is not, to our knowledge, recognized by the Internal Revenue Service. A significant practical reason for using an averaging process to reflect actuarial gains and losses is that the gain or loss adjustment has a more immediate effect on the accrual of pension cost, (c.f. Figure 5, page 62). However, in years where there are extraordinary actuarial gains the required pension cost accrual may exceed the maximum amount acceptable to the IRS as a tax deduction for funded pension costs. The consequence of these circumstances would be either a balance sheet entry for accrued pension cost or a carryover of part of the company's contributions to a subsequent taxable year. Since most companies are likely to prefer that funded pension

FIGURE 5 RECOGNIZING ACTUARIAL GAINS AND LOSSES ILLUSTRATION OF EFFECT OF VARIOUS ALTERNATIVES FOR HYPOTHETICAL PLANS

			SPREAD METHOD						AVERAGING METHOD		ADJUSTING METHOD			
			FUTURE SERVICE LIFETIMES (d)		20 YEAR AMORTIZATION INTEREST DISCOUNTED		20 YEAR AMORTIZATION INTEREST DEFERRED		20 YEAR AVERAGE (e)		INTEREST ONLY		20 YEAR AMORTIZATION	
Year (a)	Basic Normal Cost (b)	Gain or Loss (—) (b) (c)	Current*	Un-amortized+	Current*	Un-amortized+	Current*	Un-amortized+	Current*	Un-amortized÷	Current*	Un-amortized+	Current*	Un-amortized+
1	$100,000	$12,000	$ 0	$ 12,000	$ 0	$ 12,000	$ 0	$ 12,000	$ 10,000	$ 2,000	$ 0	$ 12,000	$ 0	$ 12,000
2	110,000	19,800	1,200	31,000	800	31,400	600	31,700	11,000	10,400	500	31,800	900	31,400
3	120,000	3,600	3,100	32,600	2,300	33,900	1,600	34,800	12,400	1,500	1,300	35,400	2,400	33,700
4	125,000	5,000	3,300	35,600	2,500	37,700	1,900	39,300	12,400	—6,300	1,400	40,400	2,700	37,300
5	**130,000**	**2,600**	**3,600**	**35,900**	**2,900**	**38,800**	**2,200**	**41,200**	**12,400**	**—16,900**	**1,600**	**43,000**	**3,100**	**38,200**
6	135,000	5,400	3,600	39,000	3,000	42,600	2,400	45,800	12,300	—24,900	1,700	48,400	3,300	41,700
7	140,000	22,400	3,900	58,900	3,400	63,100	2,700	67,200	12,200	—16,200	1,900	70,800	3,800	61,800
8	150,000	28,500	5,900	83,600	5,000	88,900	3,900	94,300	13,300	—2,200	2,800	99,300	6,000	86,600
9	160,000	20,800	8,400	99,100	7,000	106,000	5,500	113,200	14,600	3,400	4,000	120,100	8,999	101,600
10	**165,000**	**3,300**	**9,900**	**96,000**	**8,500**	**104,700**	**6,700**	**114,100**	**15,100**	**—8,800**	**4,800**	**123,400**	**11,200**	**97,400**
11	170,000	22,100	9,600	112,000	8,700	121,900	7,100	133,400	14,700	—2,400	4,900	145,500	11,500	111,400
12	175,000	3,500	11,200	108,300	10,300	119,600	8,400	133,800	15,200	—14,700	5,800	149,000	14,400	104,400
13	180,000	32,400	10,800	133,800	10,500	145,800	8,800	162,000	14,700	1,900	6,000	181,400	14,900	125,400
14	90,000	17,100	13,400	142,300	12,800	155,400	10,700	174,500	15,700	2,600	7,300	198,500	20,100	126,700
15	**195,000**	**21,450**	**14,200**	**154,700**	**14,000**	**168,400**	**11,800**	**190,600**	**15,800**	**7,800**	**7,900**	**220,000**	**23,200**	**129,000**
16	200,000	38,000	15,500	182,800	15,600	197,000	13,200	222,500	16,000	29,500	8,800	258,000	27,900	143,200
17	205,000	6,150	18,300	177,200	18,200	192,000	15,500	221,400	17,000	19,100	10,300	264,100	37,900	115,600
18	210,000	4,200	17,700	170,100	18,700	184,500	16,200	217,600	16,400	7,100	10,600	268,300	40,100	83,000
19	215,000	19,350	17,000	178,500	19,000	191,500	16,800	228,100	15,600	10,500	10,700	287,700	42,200	61,600
20	**220,000**	**24,200**	**17,900**	**191,300**	**20,400**	**202,200**	**18,200**	**242,500**	**15,500**	**19,100**	**11,500**	**311,900**	**61,600**	**24,200**
21	225,000	—18,000	19,100	161,100	22,100	169,300	19,800	213,600	15,600	—14,400	12,500	293,900		
22	230,000	6,900	16,100	157,700	19,900	162,200	18,800	209,500	14,100	—22,700	11,800	300,800		
23	235,000	35,250	15,800	182,800	19,000	184,200	18,500	233,900	13,400	—2,400	12,000	336,000		
24	240,000	36,000	18,300	207,100	21,300	205,400	20,400	258,000	15,000	17,900	13,400	372,000		
25	**250,000**	**25,000**	**20,700**	**218,900**	**23,500**	**214,300**	**22,300**	**270,100**	**16,600**	**26,400**	**14,900**	**397,000**		

*Reduction of Current Year Pension Cost + Unamortized Gain or loss (—) Accumulated to Year End.

(a) The pension cost accrual for each year is the sum of (i) the basic normal cost, (ii) the adjustment for gains and losses and (iii) the amount related to prior service costs.

(b) These quantities are independent of the method used to recognize actuarial gains and losses. The valuation interest rate is assumed to be 4%..

(c) Gains and losses for individual years were selected by random sampling techniques, on the assumption that experience would produce gains as large as 30% of the normal cost and losses as large as 10% of the normal cost, with the average being a 10% gain.

(d) The average annuity factor for a particular plan will depend on the actuary's assumptions and the census characteristics of the participants. It will change from year to year as the composition of the group changes, but will usually have a fairly stable pattern. Generally speaking, the more conservative the assumptions the higher the annuity value. For this illustration the annuity factor is assumed to be 10.

(e) Average based on 5% of cumulative gains (or losses) in prior years (not in excess of 20 years) **plus** 10% of current normal cost multiplied by (20 **minus** years since averaging process began).

costs equal accrued pension costs, in order to get immediate tax recognition of their contributions, this possibility represents a disadvantage of the averaging method.

The averaging method will be of primary interest to companies that have, for federal income tax purposes, been using the immediate method of recognizing actuarial gains and losses; its application requires knowledge of actuarial gains and losses in prior years (including, possibly, a judgment about the expected amount of gains or losses in future years) and selection of a uniform period of years for the averaging calculation. The average of gains and losses need not necessarily be expressed in an annual dollar amount for the plan as a whole; it could also be computed as a percentage of the normal cost, a percentage of the compensation of plan participants or as a dollar amount per plan participant. In the early years of a plan the actual gains and losses might produce an erratic or otherwise suspicious pattern; in these situations the actuary might wish to compute a weighted average of actual past gains and losses plus his estimate of expected future gains or losses. The weighted average for each year would be based on the same total number of years; thus, as the plan aged, there would be increasing and, eventually, total reliance on actual gains and losses.

Adjusting Prior Service Costs. The third approved method for reflecting actuarial gains and losses in the pension cost accrual requires an adjustment in the portion of the accrual related to prior service costs. If the company's policy is to reflect in its accruals only interest on prior service costs, the annual adjustment for gains and losses is equal to the accumulated net gain or loss from all prior years multiplied by the interest rate used in the actuarial valuation. If the policy is to amortize prior service costs as a level annual amount, the gain or loss from each year is expressed as a level annual amount to be expensed over the remainder of the amortization period. The total adjustment for a particular year is the net sum of the level annual amounts derived from gains and losses of all prior years.

This method is similar in character to the spreading and averaging method if the company adopts as its accrual policy the minimum described in Paragraph 17 of Opinion No. 8; i.e., normal cost plus interest on unfunded prior service costs, subject to a test related to vested benefits. However, if a company decides to amortize prior service costs and adopts the third method for recognition of actuarial gains and losses, the required adjustments might produce a pension cost provision in substantial conflict with the intent of the Opinion, as understood by an accounting layman.

This anomaly is easily recognized if one considers a plan that is nearing the end of the amortization period. Each year's gain or loss would be

amortized over a shorter number of years. In the final year the adjustment for gains and losses would be 100% of the gain or loss in that year plus the total of gains and losses from prior years that had not previously been reflected in the pension cost accruals. The result could easily be a pattern of widely fluctuating pension cost accruals for several years prior to the end of the amortization period. Such an effect was obviously not intended by the Accounting Principles Board; fortunately there are several simple remedies.

To avoid this hazard, we would be inclined to recommend that clients who adopt a policy of amortization and wish to reflect gains and losses through adjustments of prior service costs should plan to extend the amortization period applicable to gains and losses several years before the end of the amortization period applicable to prior service costs. It would also be feasible to use this method in the early years of the amortization period, then shift to the spreading or averaging method several years before the end of the amortization period.

The Effects of the Alternatives. The various alternative methods of recognizing actuarial gains and losses in the annual pension cost accrual have quite different period cost effects. Figure 5 illustrates this fact for a hypothetical pension plan; it highlights the substantial variations in the period cost effects of the various available techniques, and the extent to which accumulated actuarial gains or losses may be deferred into future accounting periods. Note that at the end of ten years, the amount of unamortized gain or loss ranges from as low as —$8,800 under the 20-year Averaging Method to as high as $123,400 under the Adjusting Method, Interest Only. Under the Adjusting Method—as literally defined—with 20-year amortization, more than 50% of the adjustment for gains in the entire 20-year period would be deferred until the last four years. As indicated above, this result could be avoided if a new amortization period were to be adopted before the adjustment for gains reached unrealistic proportions.

Unrealized Appreciation or Depreciation of Pension Fund Assets

Opinion No. 8 identifies unrealized appreciation or depreciation on the value of pension fund investments as a form of actuarial gain or loss and requires some form of systematic recognition of such gain or loss.

The policy of the vast majority of pension funds has been to ignore appreciation and depreciation on investments until the assets are sold; the realized gain or loss is then reflected in the company's pension contribution and cost accrual. There have been practical reasons for this policy, including:

1. Bonds are likely to be held until maturity, and original or amortized

cost is the most proper valuation basis; market value variations tend to reflect changes in the price of money rather than changes in the ultimate worth of the securities.

2. Common stock prices are subject to substantial fluctuations because of market conditions having little relation to changes in real value; it is conservative financial practice not to consider unrealized appreciation or depreciation on stocks when deciding upon the pension contribution or cost accrual.

3. Unrealized appreciation on common stocks is needed as a reserve against probable future variances due to the uncertainty of some actuarial assumptions, particularly the salary scale assumption. (This factor has special significance for plans with benefits based upon earnings in the five or ten years before retirement; the problem is heightened by the reluctance of the Internal Revenue Service to accept salary scale assumptions that incorporate an allowance for inflation.)

Nonetheless, this policy can lead to the accumulation of substantial amounts of unrecognized appreciation, with the result that pension costs are overstated, and Opinion No. 8 now requires that the pension cost accrual give consideration to unrealized appreciation or depreciation on equity investments. Cost or amortized cost will continue to be acceptable for valuation of bonds (presumably including convertible bonds) and other debt securities intended to be held until maturity. The Opinion is silent on the proper valuation basis for real estate and other similar property.

It should be noted that the Opinion does not require a direct and full recognition of unrealized appreciation or depreciation; it requires only that the determination of the pension cost accrual be sensitive to them. This can be accomplished either (1) by adopting a modified asset valuation basis for stocks, or (2) by including in the actuarial valuation basis an allowance, probably through an increase in the assumed interest rate, for future appreciation of the pension fund's assets.

Paragraph 29 of the Opinion briefly describes some of the asset valuation methods that might be adopted; others will presumably be acceptable if their results in practice satisfy the objectives of the Opinion. The methods with which we are familiar can be classified under two headings: those based on objective facts, and those based upon theoretical considerations.

The objective methods include:

1. Market valuation or one of its variations. Among the variations are: a percentage (such as 75%) of market; cost plus (or minus) a percentage (such as 80%) of unrealized appreciation or depreciation;

a moving average of market values over several years (such as three or five years).

2. The retained earnings method. This method was probably first developed as an investment analysis tool and has been adopted by some companies. The book value of each common stock held by the fund is increased annually by the amount of retained earnings; i.e., the excess of per share earnings over dividends paid.

The principal theoretical methods that have been adopted by pension funds are:

1. The long-range yield method. This method assumes that common stocks will in the aggregate produce a yield, inclusive of dividends and capital appreciation, of 6% to 8%. One bank that sponsors this technique recommends an assumed yield of 7%. The book value of the pension fund is increased annually by the excess of the expected yield over the dividends received, with appropriate adjustment for gains or losses realized on stocks sold during the year.

2. The long-range appreciation method. This method assumes that common stocks will in the aggregate increase in value by a specified percentage. A large bank that sponsors this technique recommends an assumed appreciation rate of 3%. The book value of the pension fund is increased annually in an amount equal to the specified percentage multiplied by the sum of (1) the original cost of the stocks plus (2) the accumulation of book value adjustments. When stocks are sold, the accumulation of book value adjustments is charged (or credited) with any realized gain (or loss). In some applications of the method the aggregate adjusted book value of all stocks is restricted to their aggregate market value, or a percentage of it (such as 80%).

The choice of a procedure for recognizing unrealized appreciation or depreciation of common stock values will be influenced by several factors, including: the proportion of common stock investments in the pension fund, the aggregate amount of unrealized appreciation or depreciation, the degree of management's willingness to include this appreciation or depreciation in the pension cost accrual and the desire for administrative simplicity.

As a firm we are inclined to recommend against an adjusted interest rate as a means of allowing for unrealized appreciation or depreciation, because of the method's indirectness. Of all the direct methods, the retained earnings method impresses us as most satisfactory: It is objective, responsive to the performance of the individual companies whose shares are held by the pension fund, understandable to users and independent of

the fluctuations inherent in a market valuation technique. It does require additional information about per share earnings that trustees do not include in their data files. Fortunately, convenient and accurate resources for the necessary facts are now available.

Having selected a technique for recognizing unrealized appreciation or depreciation, it is necessary to reflect this gain or loss in the pension cost accrual.

In the usual case it will probably be appropriate to use the method applicable to other types of actuarial gain or loss. However, Opinion No. 8 does not expressly require that the same method be used for all types of gain and loss. In some situations the second or third variation of the spread method may be more satisfactory than the other alternative methods (see "Actuarial Gains and Losses," pages 59-64), particularly if the market value of common stocks is adopted for pension cost accrual purposes. The past practices of some companies suggest another alternative. These companies have adjusted their current pension plan contributions and cost accruals by 100% of realized capital gains or losses, but have used the spread method to reflect all other types of actuarial gain or loss. By analogy it would seem acceptable under Opinion No. 8 to give immediate effect to the increase (or decrease) in the book value of equity investments if the asset valuation method is not subject to substantial short-term fluctuations.

Vested Benefits

A Matter of Definition. Particular attention is required for determination of the value of vested benefits, because of two alternative constructions which may be placed upon the language used in Opinion No. 8. Lucid and precise in most respects, the Opinion's Paragraphs 17 and 46 define the "actuarily computed value of vested benefits" in a manner that leads to significantly different results, depending upon assumptions about employment.

There is no trouble in applying the definition to retired employees, to employees who have terminated service with vested rights and to the beneficiaries of such employees; the liability is equal to the death or annuity benefits which each of these persons is or may become eligible to receive, multiplied by an appropriate insurance or annuity reserve factor. These reserve factors would be derived by the actuary from an acceptable assumption about future mortality and interest rates. (For some types of widow's benefit, it would be necessary to introduce a probability of remarriage into the actuarial reserve factors.)

For benefits of employees still in active service, however, results can

differ significantly because either of these two approaches might apply:

1. *The Termination Liability Concept.*[5] What would the pension fund's liability be if all employees were to terminate employment voluntarily on the valuation date, ignoring the effect of plan provisions that limit the liability to amounts actually in the pension fund?
2. *The Going Concern Concept.* Assuming the pension plan continues indefinitely and the actuarial assumptions used to determine the pension cost accrual prove accurate, what proportion of the total value of benefits currently vested is ratably assignable to the period of service prior to the date of this actuarial determination?

Under the "termination liability" concept, the plan would be obligated to provide a deferred annuity commencing at the normal retirement age to all employees who have, as of the current valuation date, satisfied the age and service requirements for vested retirement benefits in an amount based upon the employee's service and earnings to date. (In a contributory plan, there would also be a liability to return the accumulated contributions, usually with interest, to all employees not then eligible for vested retirement benefits.) The plan would have no liability toward active employees with respect to plan provisions for disability retirement benefits, widow's benefits or early retirement benefits having a value in excess of the actuarial equivalent of the employee's accrued pension.

Under the "going concern" concept, the liability for benefits vested in employees at the valuation date would usually be higher and would require greater reliance upon judgments and estimates. In a plan with unit benefits or benefits based on career average earnings, the accrued pension related to service before the valuation date is usually relatively easy to determine, although judgments may be required. For example, in computing the pension amount where the pension benefit formula recognizes only 30 years of service but employees may enter the plan more than 30 years prior to the age 65 retirement date, how much benefit is earned by an employee who entered at age 30: 20 units of pension or 20/35th of 30 units of pension? It would seem more reasonable to make the second assumption.

The "going concern" concept would require that the "actuarially computed value of vested benefits" also include the discounted present value of future disability, early retirement and widow's benefits for which each active employee or his beneficiary might eventually qualify. (Again, the determination of the benefit ratably assignable to prior service may

[5] It might be noted that this concept is somewhat at variance with the commonly assumed purpose of financial statements; i.e., to reflect the events occurring in a part of the lifetime of a continuing enterprise.

require a judgment. For example, if the pension plan provides a monthly supplemental benefit of $100 to employees who have 20 years of service and retire before qualifying for Social Security benefits, how is this liability to be distributed between periods of past and future service? By analogy to the example cited in the preceding paragraph, it would appear more consistent with the "going concern" concept to assume that the benefit accrues proportionately over the entire period between entry into the pension plan and the expected date of early retirement.)

A pension plan with benefits based upon average earnings in the five or ten years near retirement creates an additional technical problem under the "going concern" concept—namely, the benefits for service prior to the valuation date will depend upon the final five or ten years' average earnings and, therefore, should be estimated by reference to a salary scale considered appropriate by the actuary.

My firm has concluded that the "termination liability" definition is preferable. The factors influencing this opinion were: the calculations are relatively simple; a minimum number of actuarial assumptions are required; comparisons between plans will be facilitated; and the concept is more consistent with the fund's liabilities upon plan termination.

Measuring the Liability. Having arrived at an acceptable definition of "vested benefits" for active employees, the actuary will face further questions in selecting suitable actuarial reserve factors to be applied to these benefits.

Under a "termination liability"[6] concept, these factors would typically reflect the present value of annuity payments to commence at the normal retirement date, with appropriate recognition of any death benefits payable after termination of employment.

These factors would incorporate only mortality and interest rates, and might be derived from either of the following:

1. An estimate of the pension fund's future experience; i.e., the investment return expected to be earned in the future and a mortality rate appropriate for this group of employees.
2. Annuity purchase rates then being offered by a competitive insurance company.

Under the "going concern" concept, the actuarial assumptions underlying the reserve factors should agree with those used to determine the

[6] We are referring here to the value of vested rights granted upon an individual employee's termination of employment, not termination of the plan. This distinction will affect the actuary's choice of assumptions since, among other things, the investment strategy—and, therefore, the expected investment return—is likely to be different for a terminated plan than for a continuing plan with residual obligations to certain terminated employees with vested rights.

pension cost accrual. With this concept a question arises on which actuarial cost method should be used to determine the actuarially computed value of vested benefits. Should it be the cost method used to determine the pension cost accrual? Although the footnote to Paragraph 17 appears to suggest that this is so, the definition "Vested Benefits," in Appendix B of Opinion No. 8 indicates rather clearly that the accrued benefit cost method should be used for this purpose, regardless of which cost method is used to determine the pension cost accruals.

Paragraphs 17 and 46 both require that the actuarially computed value of vested benefits be compared with the sum of fund assets and any balance sheet items representing variances between amounts of funded and accrued pension cost. Once again, a decision is necessary. What is the value of the pension fund assets? Is it the asset value used to determine the pension cost accrual or is it the current market value on the valuation date. Consistency and a desire to avoid unnecessarily alarming fluctuations in the unfunded amounts disclosed in footnotes to the company's financial statements recommended that the asset valuation method used in determining the pension cost accrual be adopted for this purpose. There would, however, be no proscription against a current market valuation of assets.

Conclusion

It is becoming apparent that Opinion No. 8 will have an effect that reaches far beyond mere technical compliance in the preparation and presentation of financial reports. In the process of assuring the accountant that pension plan expense is properly reflected in the financial statements, management cannot avoid a review and reconsideration of past decisions about both accounting and funding of pension costs. The inevitable result will be an improvement in management's understanding of pension plans and their costs and, therefore, an improvement in the quality of related management decisions.

Actuarial Considerations Involved in Pension Cost Under APB Opinion No. 8

By Frederick P. Sloat

Opinion No. 8 of the Accounting Principles Board requires wider understanding of the actuarial, as well as of the accounting, procedures applicable in accounting for the cost of pension plans. The accountant's efforts in determining a proper charge for annual pension expense and the actuary's role in this undertaking must, of course, be closely co-ordinated.

From the actuarial view, the Opinion has stimulated many questions whose answers will more clearly delineate the actuarial responsibility in accounting for pensions. A representative selection of questions and answers follows.

Why does Paragraph 7 of Opinion No. 8 state that "generally pension cost should be determined from a study by an actuary"?

The computations for a pension plan to take into account the financial effects of expected future occurrences are performed by actuarial techniques and require actuarial judgment. The determination of pension cost has always been considered a function of the actuary.

Has APB Opinion No. 8 altered any concepts held by pension technicians?

Many of us who have been involved with pensions have become so used to considering the cost of a pension plan to be whatever an employer has funded that we are surprised to find that this may not be the only way to measure its cost. The amounts paid toward funding are governed by tax considerations and also by a company's cash position. The former must bear some overall relationship to pension costs, but not necessarily

on a year-by-year correlation. As to the latter, cash considerations need not relate to a year's pension costs.

What is the basis of the terminology used for pension cost matters?

Pension plan development has evolved without a precise terminology so that the same words have come to mean different things, and many concepts have a variety of names. Regardless of the terms used, it would be very desirable if each term meant only one thing and if each concept had only one name. For any particular undertaking, a glossary may be needed. The Committee on Pension and Profit-Sharing Terminology[1] of the American Risk & Insurance Association is working to develop a more precise terminology; the American Institute of CPAs' research study, the foundation for APB Opinion No. 8, incorporated many of the committee's terms, including those that had already been promulgated and those that were being developed. Older terms were also used in the study, recognizing the needs of the accounting profession and others to relate the study to familiar terms. The Accounting Principles Board Opinion continued this approach, and the Opinion and its glossary are consistent with proposals of the Committee on Pension and Profit-Sharing Terminology.

Opinion No. 8 is obviously intended to apply to any arrangement whereby a company undertakes to provide its employees with retirement benefits. The Opinion specifies that deferred compensation contracts and profit-sharing plans must be treated as pension plans in certain situations. How do you decide whether these arrangements are equivalent to a pension plan?

The Opinion would apply to deferred compensation contracts if such contracts, taken together, are equivalent to a pension plan. This will not apply in many instances where deferred compensation contracts exist, but auditors may need to investigate this type carefully. As to the deferred profit-sharing plan, the Opinion would apply to the extent that such an arrangement is, in substance, a pension plan or part of one. An example might be a profit-sharing plan providing minimum pension benefits. If an arrangement is deemed to be in the nature of a pension plan, the actuarial considerations relating to pensions are applicable.

How about a pension plan where the cost is incurred in a foreign country?

The Opinion says it would apply if the cost is included in financial statements prepared in conformity with generally accepted accounting principles in the United States. The cost of a plan for a wholly owned foreign subsidiary of a United States company, when included in a consoli-

[1] Mr. Sloat is a member of this committee.

dated income statement, would be an example. The Opinion refers, however, to plans that are reasonably similar to those contemplated by it. Thus, there may be bona fide conditions that make an exception necessary; for example, where plans may be affected by foreign laws quite unlike those of this country.

The Opinion refers to various methods of determining pension cost. Why is there more than one method?

Pension benefits are spread over many years and depend on many factors. A man works for a number of years and the amount of his pension, the payment of it and the period over which it will be paid depend upon future events. If the problem were simply to provide for a fixed payment over a fixed number of years at a fixed rate of investment return, the cost would be definitely determinable, and the only problem would be its allocation to each year he worked. But, under a pension plan, none of these factors are fixed, and problems arise because of the plan's long-term nature and because educated guesses have to be made to measure the probable effect of the contingencies. If an employee works for a company from 1930 to 1970 and retires, his pension payments begin in 1970 and will continue for approximately 15 years. The purpose of an actuarial valuation is to provide for pension payments in advance of retirement. More than one logical method exists for doing this over the 1930-70 period.

If the employer doesn't get around to setting up a plan until 1960 and then amends it in 1969, why should the cost relate to the years of employment and not to 1970, for an employee who retires in that year, or over the years after 1970 when the pension is being paid out?

Pension costs are deemed to be associated to a large extent with the plan itself rather than with specific employees. The actuarial computations take into consideration employees who are already at or near retirement as part of the past or prior service costs to be amortized.

How about the actuarial cost methods that are mentioned neither in the body of the Opinion nor in its appendix?

There are some methods that are disguised forms of terminal funding, such as meeting pension costs only when employees have reached the earliest age at which they can retire—say, 55. If the valuation includes all employees, other than those with relatively short service and those who are at the young ages where only short-service employees would be found, the actuarial cost method would undoubtedly be an adaptation of one or more of those methods contemplated in the Opinion.

How would the auditor know which method was being used?

He should ask the actuary whether the method being used is one of

those described in Appendix A of the Opinion or is identifiable as an adaptation or variation of one of such methods.

Since the actuarial cost method is just a beginning, aren't there many variations, depending upon the combination of actuarial assumptions?

Yes. Unreasonable assumptions can destroy the appropriateness of any method. There is usually, however, quite a wide range in which the assumptions can reasonably be located. A familiar and easy illustration is the interest rate. Currently, a rate of 2 per cent or of 10 per cent, taking two extremes, would obviously be illogical. But, given a particular situation, it is difficult to say that any rate within a range of from 3½ per cent to 5 per cent would be unacceptable.

As the Opinion carefully distinguishes between funding and accounting, will the actuarial basis be the same for each? If not, the auditor will want to know why one basis is used for funding and another for accrual of cost.

Many companies have become accustomed to the flexibility available in determining the annual payments for funding and for tax purposes. In light of the year-to-year consistency requirement in accounting under the Opinion, these companies may well have to use a different approach. A company may also want to take a cautious tack and set a method and use assumptions that will produce lower accrual costs because of a feeling that it will have to stick with whatever it starts with when bad years occur. It is important for such companies to be informed by their accountants as to what would be involved in making future changes in the actuarial bases of determining accruals.

Opinion No. 8 refers to averaging gains and losses. How is an averaging method applied?

You would need the experience of prior years as a guide. If there have been successive gains, let's say, by the fund earning an average of one-half per cent over the assumed rate, the average amount would be anticipated next year and the cost accrual reduced accordingly.

If the gain in a particular year isn't the same as the average being used, how do you treat the difference?

Over some period, the differences will have to be taken into account, to the extent that the average and the actual gains or losses do not offset each other.

Doesn't this have the same effect as using different actuarial assumptions?

Yes, but with averaging they are not projected into the future, and the

expected averaging is readily modified from year to year as experience unfolds. Incidentally, averaging can be the most useful where an employer has been following the immediate recognition basis and can no longer do this under Opinion No. 8. If the employer starts to spread his gains over the approved 10- to 20-year period, only a small part of one year's gains can be used the first year. The next year there will be another segment of the first-year gains plus the first segment of the second-year gains —resulting in a pyramiding effect. Averaging will obviate this effect or at least diminish it.

Paragraph 36 of the Opinion provides that if employees are omitted from the calculations because of age or length of service, or for other reasons, they should be included in the pension cost, unless the effect of omitting them is not material. Can the actuary satisfactorily estimate the effect of this situation without making an actual calculation?

Generally, the actuarial assumptions include the expected rates of service termination. If done precisely, the rates would vary with length of service as well as with age, with very high rates in the first year or two of employment. If employees with only one or two years of service are included, use of realistic termination rates would very likely show their cost to be negligible.

What about plans that have an age eligibility clause, such as 25 or 30?

Here, the difference might be more significant, just as it could be with a relatively long service requirement. In some instances, the actuary might feel that he has sufficient knowledge of the trends to estimate the probable maximum effect of omitting the employees. Often, however, he would need the valuation data for omitted employees to gauge the effect, particularly with a high age limit, such as 30 or over.

What basis should be used for valuing the pension fund to determine the amount of excess vested benefits over the fund?

Since this was left unspecified in the Opinion, it is in order to use current market values or some other basis giving a proper current measure of the assets on hand. The effect of following the chosen method in subsequent years should be given consideration.

The disclosure provision (Paragraph 46) requires a company to show the excess of the value of vested benefits over amounts funded or accrued. Why does Paragraph 17 take vesting into account only when calculating accruals under the minimum method?

If past service cost is being amortized, the value of all vested benefits will be recognized at some point along the amortization schedule. But if it is not being amortized, the actuarial value of vested benefits might

never be fully recognized or, if the amortization period is too long, recognition could be prolonged. Since vesting recognition can be accomplished by amortizing past or prior service cost, it was a logical step to limit the vesting increment to that which would be available in the event of amortization over the longest period that would not be considered as unduly prolonging the recognition of vested benefits, set by the Opinion as 40 years. This has the effect of saying that, if past service is being amortized over a period of no longer than 40 years, the minimum test will automatically be met.

A company is not using minimum accrual and believes that available assets exceed the value of vested benefits so that disclosure of any excess is not needed. Can the actuary estimate whether there is any excess of value of vested benefits over assets without making some detailed calculations?

In many cases he can. It is not possible to set up rules or guides, but an actuary will often be able to do so in particular situations. It is much like a doctor making a medical diagnosis. He notes various symptoms and has acquired a certain intuition from years of observation and a well-developed sixth sense. Where the actuary is able to state that, in his professional judgment, the assets equal or exceed the value of vested benefits, it can be accepted. The probable error in such a test should be well within the range of materiality.

Does the actuarial value of vested benefits call for any amounts that are not already incorporated in the actuarial valuation of a plan?

No. Such amounts, however, would not usually be identified separately and therefore will need to be isolated for purposes of the Opinion. It is this difficult separation that causes the problems in reprograming valuation computations.

A plan may include death, disability or other benefits in addition to retirement benefits. Are these included in the value of vested benefits?

If such a benefit no longer applied if the employee were to terminate service, its value need not be included with the value of vested benefits. If the benefit continued to apply after termination of service, it would be included. Note that the value of vested benefits does not just mean the value of the benefits for those employees who will terminate service and take their vested benefits with them. Rather, it is the full value of providing such of the benefits, regardless of when they will become payable (but with actuarial account taken of the probability of payment in various situations), which benefits could become payable even if termination of the employee's service occurred on the valuation date. [ED. NOTE: This is described in more detail by Mr. Sloat on pages 24-25.]

For minimum accrual of vested benefits, it is necessary to know their value at the beginning and at the end of the year. What if the company doesn't have this figure at the beginning of the year, as may be the case in this first year of applying Opinion No. 8?

The figure would normally not be available at the first of the year and it would be costly to obtain during the first year of the Opinion's application. There seem to be several possible alternatives. One is to add 5 per cent of the year-end excess value of the vested benefits; this would always be equal to or *greater* than the precise amount required. Another alternative is to use a 40-year amortization amount; this can never be *less* than the amount required. Whether use of the correctly calculated amount in the next year requires any footnote reference indicating a change in accounting method is the auditor's responsibility. In most cases, the footnote could probably be omitted because the effect of the change is immaterial. But, again, that is the auditor's final determination in each case.

Take the case of a company with a small number of employees and whose pension plan utilizes individual life policies. Will this employer have to hire an actuary to comply with Opinion No. 8?

No. Paragraph 41 of the Opinion is intended to recognize this situation. The amount of the premiums less dividends under the policies is a satisfactory basis of pension cost. Gains arise in the form of dividends on the policies, and these are usually determined by insurance companies to maintain a reasonable level trend year by year. Since the dividends are based on the experience of large blocks of policies, they are not affected by fluctuations that tend to occur in a small group. Thus, Paragraph 41 says: Premiums less dividends comply with the purposes of the Opinion.

What happens when employees terminate their service and the surrender values of their policies are returned to the company?

That is a different matter. Surrender values fluctuate with the experience under the plan and can be substantial in some years, sometimes enough to pay all the premiums for a year or more. This is the kind of situation that requires spreading. A 10- to 20-year range is indicated by the Opinion.

What is the situation with respect to employees who are not yet eligible for the plan, say, where eligibility is something like two years of service and age 30?

Here, again, it's a question of doing without an actuary. The company or the auditor can probably make a pretty fair estimate of what the maximum cost could be for those employees by taking the premium for the

youngest employee at age 30 and using it for the ineligible employees. If this calculation produces a total amount that is not considered material, that is an adequate test because it's bound to be on the high side. If it is material, a closer estimate is needed; here the insurance broker selling the policies might be able to help .

What about a group annuity contract a small client may have?

The dividends might fluctuate more, but the Opinion notes that, even here, the insurance company procedure usually furnishes acceptable results.

Where a company has a separate fund used to build up sums to provide additional retirement income other than that available from the group annuity contract or the individual policies, how is it handled?

The special provisions of Paragraph 41 of the Opinion apply only where individual policies or group annuity contracts are used exclusively. When you have a plan with a separate fund, then you are in the same position as with a trust or deposit administration plan. The individual policy or the group annuity contract is just part of the total operation of the plan. This plan would probably need an actuary—but may already have some actuarial help, perhaps from the insurance company to determine the amounts for the separate fund.

APB Opinion No. 8:
Accounting for the Cost of Pension Plans

AICPA Accounting Principles Board

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Introduction

1. Pension plans have developed in an environment characterized by a complex array of social concepts and pressures, legal considerations, actuarial techniques, income tax laws and regulations, business philosophies, and accounting concepts and practices. Each plan reflects the interaction of the environment with the interests of the persons concerned with its design, interpretation and operation. From these factors have resulted widely divergent practices in accounting for the cost of pension plans.

2. An increased significance of pension cost in relation to the financial position and results of operations of many businesses has been brought about by the substantial growth of private pension plans, both in numbers of employees covered and in amounts of retirement benefits. The assets accumulated and the future benefits to employees under these plans have reached such magnitude that changes in actuarial assumptions concerning pension fund earnings, employee mortality and turnover, retirement age, etc., and the treatment of differences between such assumptions and actual experience, can have important effects on the pension cost recognized for accounting purposes from year to year.

3. In Accounting Research Bulletin No. 47, *Accounting for Costs of Pension Plans*, the committee on accounting procedure stated its preferences that "costs based on current and future services should be systematically accrued during the expected period of active service of the covered employees" and that "costs based on past services should be charged off over some reasonable period, provided the allocation is made on a systematic and rational basis and does not cause distortion of the operating results in any one year." In recognition of the divergent views then existing, however, the committee also said "as a minimum, the accounts and financial statements should reflect accruals which equal the present worth, actuarially calculated, of pension commitments to employees to the extent that pension rights have vested in the employees, reduced, in the case of the balance sheet, by any accumulated trusteed funds or annuity contracts purchased." The committee did not explain what was meant by the term "vested" and did not make any recommendations concerning appropriate actuarial cost methods or recognition of actuarial gains and losses.

4. Despite the issuance of Accounting Research Bulletin No. 47, accounting for the cost of pension plans has varied widely among companies and has sometimes resulted in wide year-to-year fluctuations in the provisions for pension cost of a single company. Generally, companies have provided pension cost equivalent to the amounts paid to a pension fund or used to purchase annuities. In many cases such payments have included amortization of past service cost (and prior service cost arising

on amendment of a plan) over periods ranging from about ten to forty years; in other cases the payments have not included amortization but have included an amount equivalent to interest (see definition of *interest* in the Glossary, Appendix B) on unfunded prior service cost. In some cases payments from year to year have varied with fluctuations in company earnings or with the availability of funds. In other cases payments have been affected by the Federal income tax rates in effect at a particular time. The recognition of actuarial gains and losses in the year of their determination, or intermittently, has also caused year-to-year variations in such payments.

5. Because of the increasing importance of pensions and the variations in accounting for them, the Accounting Principles Board authorized Accounting Research Study No. 8, *Accounting for the Cost of Pension Plans* (referred to hereinafter as the "Research Study"). The Research Study was published in May 1965 by the American Institute of Certified Public Accountants and has been widely distributed. The Board has carefully examined the recommendations of the Research Study and considered many comments and articles about it. The Board's conclusions agree in most respects with, but differ in some from, those in the Research Study.

6. The Board has concluded that this Opinion is needed to clarify the accounting principles and to narrow the practices applicable to accounting for the cost of pension plans. This Opinion supersedes Accounting Research Bulletin No. 43, Chapter 13, Section A, *Compensation: Pension Plans—Annuity Costs Based on Past Service* and Accounting Research Bulletin No. 47, *Accounting for Costs of Pension Plans.*

7. The computation of pension cost for accounting purposes requires the use of actuarial techniques and judgment. Generally pension cost should be determined from a study by an actuary, giving effect to the conclusions set forth in this Opinion. It should be noted that the actuarial cost methods and their application for accounting purposes may differ from those used for funding purposes. A discussion of actuarial valuations, assumptions and cost methods is included in Appendix A. The terminology used in this Opinion to describe pension cost and actuarial cost methods is consistent with that generally used by actuaries and others concerned with pension plans. A Glossary of such terminology is included in Appendix B.

Pension Plans Covered by This Opinion

8. For the purposes of this Opinion, a pension plan is an arrangement whereby a company undertakes to provide its retired employees with benefits that can be determined or estimated in advance from the pro-

visions of a document or documents or from the company's practices. Ordinarily, such benefits are monthly pension payments but, in many instances, they include death and disability payments. However, death and disability payments under a separate arrangement are not considered in this Opinion. The Opinion applies both to written plans and to plans whose existence may be implied from a well-defined, although perhaps unwritten, company policy. A company's practice of paying retirement benefits to selected employees in amounts determined on a case-by-case basis at or after retirement does not constitute a pension plan under this Opinion. The Opinion applies to pension cost incurred outside the United States under plans that are reasonably similar to those contemplated by this Opinion, when included in financial statements intended to conform with generally accepted accounting principles in the United States. The Opinion applies to unfunded plans as well as to insured plans and trust fund plans. It applies to defined-contribution plans as well as to defined-benefit plans. It applies also to deferred compensation contracts with individual employees if such contracts, taken together, are equivalent to a pension plan. It does not apply to deferred profit-sharing plans except to the extent that such a plan is, or is part of, an arrangement that is in substance a pension plan.

Basic Accounting Method

DISCUSSION

9. This Opinion is concerned with the determination of the amount of pension cost for accounting purposes. In considering the discussions and conclusions in this Opinion, it is important to keep in mind that the annual pension cost to be charged to expense ("the provision for pension cost") is not necessarily the same as the amount to be funded for the year. The determination of the amount to be funded is a financial matter not within the purview of this Opinion.

10. The pension obligations assumed by some companies are different from those assumed by other companies. In some plans the company assumes direct responsibility for the payment of benefits described in the plan. In these cases, if the pension fund is inadequate to pay the benefits to which employees are entitled, the company is liable for the deficiency. In contrast, the terms of most funded plans limit the company's legal obligation for the payment of benefits to the amounts in the pension fund. In these cases, if the pension fund is inadequate to pay the benefits to which employees are otherwise entitled, such benefits are reduced in a manner stated in the plan and the company has no further legal obligation.

11. There is broad agreement that pension cost, including related

administrative expense, should be accounted for on the accrual basis. There is not general agreement, however, about the nature of pension cost. Some view pensions solely as a form of supplemental benefit to employees in service at a particular time. Others see a broader purpose in pensions; they consider pensions to be in large part (a) a means of promoting efficiency by providing for the systematic retirement of older employees or (b) the fulfillment of a social obligation expected of business enterprises, the cost of which, as a practical matter, constitutes a business expense that must be incurred. Those who hold this second viewpoint associate pension cost, to a large extent, with the plan itself rather than with specific employees. In addition, the long-range nature of pensions causes significant uncertainties about the total amount of pension benefits ultimately to be paid and the amount of cost to be recognized. These differences in viewpoint concerning the nature of pension cost, the uncertainties regarding the amount of the estimates, and the use of many actuarial approaches, compound the difficulty in reaching agreement on the total amount of pension cost over a long period of years and on the time to recognize any particular portion applicable to an employee or group of employees. It is only natural, therefore, that different views exist concerning the preferable way to recognize pension cost. The major views are described in the following four paragraphs.

12. One view is that periodic pension cost should be provided on an actuarial basis that takes into account all estimated prospective benefit payments under a plan with respect to the existing employee group, whether such payments relate to employee service rendered before or after the plan's adoption or amendment, and that no portion of the provision for such payments should be indefinitely deferred or treated as though, in fact, it did not exist. Those holding this view believe that the recurring omission of a portion of the provision, because of the time lag between making the provision and the subsequent benefit payments under a plan, is a failure to give accrual accounting recognition to the cost applicable to the benefits accrued over the service lives of all employees. Among those holding this view there is general agreement that cost relating to service following the adoption or amendment of a plan should be recognized ratably over the remaining service lives of employees. There is some difference of opinion, however, concerning the period of time to use in allocating that portion of the cost which the computations under some actuarial methods assign to employee service rendered before a plan's adoption or amendment. As to this cost, (a) those viewing pensions as relating solely to the existing employee group believe that it should be accounted for over the remaining service lives of those in the employ of the company at the time of the plan's adoption or amendment, whereas (b) some of those holding the broader view of pensions, referred to in Paragraph 11, believe that this cost is associated to a large extent with

the plan itself and hence that the period of providing for it need not be limited to the remaining service lives of a particular group of employees but may be extended somewhat beyond that period. However, this difference of opinion relates only to the period of time over which such cost should be provided.

13. An opposing view stresses that pension cost is related to the pension benefits to be paid to the continuing employee group as a whole. Those holding this view emphasize that, in the application of accrual accounting, charges against income must be based on actual transactions and events—past, present or reasonably anticipated. They stress the long-range nature of pensions, referred to in Paragraph 11, and emphasize the uncertainties concerning the total cost of future benefits. They point out that, in the great majority of cases, provision for normal cost plus an amount equivalent to interest on unfunded prior service cost will be adequate to meet, on a continuing basis, all benefit payments under a plan. Those holding this view believe that following the view expressed in Paragraph 12 can result, over a period of years, in charging income with, and recording a balance-sheet accrual for, amounts that will not be paid as benefits. They see no reason therefore to urge employers to provide more than normal cost plus an amount equivalent to interest on unfunded prior service cost in these circumstances, because additional amounts never expected to be paid by a going concern are not corporate costs, and thus are not appropriate charges against income. They acknowledge, however, that corporations can and do make payments to pension funds for past and prior service cost, with the result that reductions will be effected in future charges for the equivalent of interest on unfunded amounts, but they consider this to be solely a matter of financial management rather than a practice dictated by accounting considerations.

14. In many pension plans, cost recorded on the basis described in Paragraph 13 will accumulate an amount (whether funded or not) at least equal to the actuarially computed value of vested benefits (see definition of *vested benefits* in the Glossary, Appendix B). However, this result might not be achieved in some cases (for example, if the average age of the employee group is high in relation to that of expected future employee groups, or if benefits vest at a relatively early age). Some hold the view that when periodic provisions are based on normal cost plus an amount equivalent to interest such periodic provisions should be increased if they will not, within a reasonable period of time, accumulate an amount (whether funded or not) at least equal to the actuarially computed value of vested benefits. Others would require the increases in provisions only if the company has a legal obligation for the payment of such benefits.

15. Another view is that, if the company has no responsibility for paying benefits beyond the amounts in the pension fund, pension cost is discretionary and should be provided for a particular accounting period

only when the company has made or has indicated its intent to make a contribution to the pension fund for the period. Others believe that pension cost is discretionary even if the company has a direct responsibility for the payment of benefits described in the plan.

OPINION

16. The Board recognizes that a company may limit its legal obligation by specifying that pensions shall be payable only to the extent of the assets in the pension fund. Experience shows, however, that with rare exceptions pension plans continue indefinitely and that termination and other limitations of the liability of the company are not invoked while the company continues in business. Consequently, the Board believes that, in the absence of convincing evidence that the company will reduce or discontinue the benefits called for in a pension plan, the cost of the plan should be accounted for on the assumption that the company will continue to provide such benefits. This assumption implies a long-term undertaking, the cost of which should be recognized annually whether or not funded. Therefore, accounting for pension cost should not be discretionary.

17. All members of the Board believe that the entire cost of benefit payments ultimately to be made should be charged against income subsequent to the adoption or amendment of a plan and that no portion of such cost should be charged directly against retained earnings. Differences of opinion exist concerning the measure of the cost of such ultimate payments. The Board believes that the approach stated in Paragraph 12 is preferable for measuring the cost of benefit payments ultimately to be made. However, some members of the Board believe that the approach stated in Paragraph 13, in some cases with the modifications described in Paragraph 14, is more appropriate for such measurement. The Board has concluded, in the light of such differences in views and of the fact that accounting for pension cost is in a transitional stage, that the range of practices would be significantly narrowed if pension cost were accounted for at the present time within limits based on Paragraphs 12, 13 and 14. Accordingly, the Board believes that the annual provision for pension cost should be based on an accounting method that uses an acceptable actuarial cost method (as defined in Paragraphs 23 and 24) and results in a provision between the minimum and maximum stated below. The accounting method and the actuarial cost method should be consistently applied from year to year.

a. *Minimum.* The annual provision for pension cost should not be less than the total of (1) normal cost, (2) an amount equivalent to interest on any unfunded prior service cost and (3) if indicated in the following sentence, a provision for vested benefits. A provision for vested benefits should be made if there is an excess of the actuarially computed value of

vested benefits (see definition of *vested benefits* in the Glossary, Appendix B)[1] over the total of (1) the pension fund and (2) any balance-sheet pension accruals, less (3) any balance-sheet pension prepayments or deferred charges, at the end of the year, and such excess is not at least 5 per cent less than the comparable excess at the beginning of the year. The provision for vested benefits should be the lesser of (A) the amount, if any, by which 5 per cent of such excess at the beginning of the year is more than the amount of the reduction, if any, in such excess during the year or (B) the amount necessary to make the aggregate annual provision for pension cost equal to the total of (1) normal cost, (2) an amount equivalent to amortization, on a 40-year basis, of the past service cost (unless fully amortized), (3) amounts equivalent to amortization, on a 40-year basis, of the amounts of any increases or decreases in prior service cost arising on amendments of the plan (unless fully amortized) and (4) interest equivalents under Paragraph 42 or 43 on the difference between provisions and amounts funded.[2]

b. *Maximum.* The annual provision for pension cost should not be greater than the total of (1) normal cost, (2) 10 per cent of the past service cost (until fully amortized), (3) 10 per cent of the amounts of any increases or decreases in prior service cost arising on amendments of the plan (until fully amortized) and (4) interest equivalents under Paragraph 42 or 43 on the difference between provisions and amounts funded. The 10 per cent limitation is considered necessary to prevent unreasonably large charges against income during a short period of years.

18. The difference between the amount which has been charged against income and the amount which has been paid should be shown in the balance sheet as accrued or prepaid pension cost. If the company has a legal obligation for pension cost in excess of amounts paid or accrued, the excess should be shown in the balance sheet as both a liability and a deferred charge. Except to the extent indicated in the preceding sentences of this paragraph, unfunded prior service cost is not a liability which should be shown in the balance sheet.

Actuarial Cost Methods

DISCUSSION

19. A number of actuarial cost methods have been developed to determine pension cost. These methods are designed primarily as funding

[1] The actuarially computed value of vested benefits would ordinarily be based on the actuarial valuation used for the year even though such valuation would usually be as of a date other than the balance sheet date.

[2] For purposes of this sentence, amortization should be computed as a level annual amount, including the equivalent of interest.

techniques, but many of them are also useful in determining pension cost for accounting purposes. Pension cost can vary significantly, depending on the actuarial cost method selected; furthermore, there are many variations in the application of the methods, in the necessary actuarial assumptions concerning employee turnover, mortality, compensation levels, pension fund earnings, etc., and in the treatment of actuarial gains and losses.

20. The principal actuarial cost methods currently in use are described in Appendix A. These methods include an accrued benefit cost method and several projected benefit cost methods.

a. Under the accrued benefit cost method (unit credit method), the amount assigned to the current year usually represents the present value of the increase in present employees' retirement benefits resulting from that year's service. For an individual employee, this method results in an increasing cost from year to year because both the present value of the annual increment in benefits and the probability of reaching retirement increase as the period to retirement shortens; also, in some plans, the retirement benefits are related to salary levels, which usually increase during the years. However, the aggregate cost for a total work force of constant size tends to increase only if the average age or average compensation of the entire work force increases.

b. Under the projected benefit cost methods (entry age normal, individual level premium, aggregate and attained age normal methods), the amount assigned to the current year usually represents the level amount (or an amount based on a computed level percentage of compensation) that will provide for the estimated projected retirement benefits over the service lives of either the individual employees or the employee group, depending on the method selected. Cost computed under the projected benefit cost methods tends to be stable or to decline year by year, depending on the method selected. Cost computed under the entry age normal method is usually more stable than cost computed under any other method.

21. Some actuarial cost methods (individual level premium and aggregate methods) assign to subsequent years the cost arising at the adoption or amendment of a plan. Other methods (unit credit, entry age normal and attained age normal methods) assign a portion of the cost to years prior to the adoption or amendment of a plan, and assign the remainder to subsequent years. The portion of cost assigned to each subsequent year is called *normal cost.* At the adoption of a plan, the portion of cost assigned to prior years is called *past service cost.* At any later valuation date, the portion of cost assigned to prior years (which includes any remaining past service cost) is called *prior service cost.* The amount assigned as past or prior service cost and the amount assigned as normal cost vary depending on the actuarial cost method. The actuarial assign-

ment of cost between past or prior service cost and normal cost is not indicative of the periods in which such cost should be recognized for accounting purposes.

22. In some cases, past service cost (and prior service cost arising on amendment of a plan) is funded in total; in others it is funded in part; in still others it is not funded at all. In practice, the funding of such cost is influenced by the Federal income tax laws and related regulations, which generally limit the annual deduction for such cost to 10 per cent of the initial amount. There is no tax requirement that such cost be funded, but there are requirements that effectively prohibit the unfunded cost from exceeding the total of past service cost and prior service cost arising on amendment of the plan. The practical effect of the tax requirements is that on a cumulative basis normal cost plus an amount equivalent to the interest on any unfunded prior service cost must be funded. Funding of additional amounts is therefore discretionary for income tax purposes. However, neither funding nor the income tax laws and related regulations are controlling for accounting purposes.

OPINION

23. To be acceptable for determining cost for accounting purposes, an actuarial cost method should be rational and systematic and should be consistently applied so that it results in a reasonable measure of pension cost from year to year. Therefore, in applying an actuarial cost method that separately assigns a portion of cost as past or prior service cost, any amortization of such portion should be based on a rational and systematic plan and generally should result in reasonably stable annual amounts. The equivalent of interest on the unfunded portion may be stated separately or it may be included in the amortization; however, the total amount charged against income in any one year should not exceed the maximum amount described in Paragraph 17.

24. Each of the actuarial cost methods described in Appendix A, except terminal funding, is considered acceptable when the actuarial assumptions are reasonable and when the method is applied in conformity with the other conclusions of this Opinion. The terminal funding method is not acceptable because it does not recognize pension cost prior to retirement of employees. For the same reason, the pay-as-you-go method (which is not an actuarial cost method) is not acceptable. The acceptability of methods not discussed herein should be determined from the guidelines in this and the preceding paragraph.

Actuarial Gains and Losses

DISCUSSION

25. Actuarial assumptions necessarily are based on estimates of future events. Actual events seldom coincide with events estimated; also, as conditions change, the assumptions concerning the future may become invalid. Adjustments may be needed annually therefore to reflect actual experience, and from time to time to revise the actuarial assumptions to be used in the future. These adjustments constitute actuarial gains and losses. They may be regularly recurring (for example, minor deviations between experience and actuarial assumptions) or they may be unusual or recurring at irregular intervals (for example, substantial investment gains or losses, changes in the actuarial assumptions, plant closing, etc.).

26. In dealing with actuarial gains and losses, the primary question concerns the timing of their recognition in providing for pension cost. In practice, three methods are in use; immediate-recognition, spreading and averaging. Under the immediate-recognition method (not ordinarily used at present for net losses), net gains are applied to reduce pension cost in the year of occurrence or the following year. Under the spreading method, net gains or losses are applied to current and future cost, either through the normal cost or through the past service cost (or prior service cost on amendment). Under the averaging method, an average of annual net gains and losses, developed from those that occurred in the past with consideration of those expected to occur in the future, is applied to the normal cost.

27. The use of the immediate-recognition method sometimes results in substantial reductions in, or the complete elimination of, pension cost for one or more years. For Federal income tax purposes, when the unit credit actuarial cost method is used, and in certain other instances, actuarial gains reduce the maximum pension-cost deduction for the year of occurrence or the following year.

28. Unrealized appreciation and depreciation in the value of investments in a pension fund are forms of actuarial gains and losses. Despite short-term market fluctuations, the overall rise in the value of equity investments in recent years has resulted in the investments of pension funds generally showing net appreciation. Although appreciation is not generally recognized at present in providing for pension cost, it is sometimes recognized through the interest assumption or by introducing an assumed annual rate of appreciation as a separate actuarial assumption. In other cases, appreciation is combined with other actuarial gains and

losses and applied on the immediate-recognition, spreading or averaging method.

29. The amount of any unrealized appreciation to be recognized should also be considered. Some actuarial valuations recognize the full market value. Others recognize only a portion (such as 75 per cent) of the market value or use a moving average (such as a five-year average) to minimize the effects of short-term market fluctuations. Another method used to minimize such fluctuations is to recognize appreciation annually based on an expected long-range growth rate (such as 3 per cent) applied to the cost (adjusted for appreciation previously so recognized) of common stocks; when this method is used, the total of cost and recognized appreciation usually is not permitted to exceed a specified percentage (such as 75 per cent) of the market value. Unrealized depreciation is recognized in full or on a basis similar to that used for unrealized appreciation.

OPINION

30. The Board believes that actuarial gains and losses, including realized investment gains and losses, should be given effect in the provision for pension cost in a consistent manner that reflects the long-range nature of pension cost. Accordingly, except as otherwise indicated in Paragraphs 31 and 33, actuarial gains and losses should be spread over the current year and future years or recognized on the basis of an average as described in Paragraph 26. If this is not accomplished through the routine application of the method (for example, the unit credit method—see Paragraph 27), the spreading or averaging should be accomplished by separate adjustments of the normal cost resulting from the routine application of the method. Where spreading is accomplished by separate adjustments, the Board considers a period of from 10 to 20 years to be reasonable. Alternatively, an effect similar to spreading or averaging may be obtained by applying net actuarial gains as a reduction of prior service cost in a manner that reduces the annual amount equivalent to interest on, or the annual amount of amortization of, such prior service cost, and does not reduce the period of amortization.

31. Actuarial gains and losses should be recognized immediately if they arise from a single occurrence not directly related to the operation of the pension plan and not in the ordinary course of the employer's business. An example of such occurrences is a plant closing, in which case the actuarial gain or loss should be treated as an adjustment of the net gain or loss from that occurrence and not as an adjustment of pension cost for the year. Another example of such occurrences is a merger or acquisition accounted for as a purchase, in which case the actuarial gain or loss should be treated as an adjustment of the purchase price. However, if the

transaction is accounted for as a pooling of interests, the actuarial gain or loss should generally be treated as described in Paragraph 30.

32. The Board believes unrealized appreciation and depreciation should be recognized in the determination of the provision for pension cost on a rational and systematic basis that avoids giving undue weight to short-term market fluctuations (as by using a method similar to those referred to in Paragraph 29). Such recognition should be given either in the actuarial assumptions or as described in Paragraph 30 for other actuarial gains and losses. Ordinarily appreciation and depreciation need not be recognized for debt securities expected to be held to maturity and redeemed at face value.

33. Under variable annuity and similar plans the retirement benefits vary with changes in the value of a specified portfolio of equity investments. In these cases, investment gains or losses, whether realized or unrealized, should be recognized in computing pension cost only to the extent that they will not be applied in determining retirement benefits.

Employees Included in Cost Calculations

DISCUSSION

34. Under some plans employees become eligible for coverage when they are employed; other plans have requirements of age or length of service or both. Some plans state only the conditions an employee must meet to receive benefits but do not otherwise deal with coverage. Ordinarily actuarial valuations exclude employees likely to leave the company within a short time after employment. This simplifies the actuarial calculations. Accordingly, actuarial calculations ordinarily exclude employees on the basis of eligibility requirements and, in some cases, exclude covered employees during the early years of service.

35. If provisions are not made for employees from the date of employment, pension cost may be understated. On the other hand, the effect of including all employees would be partially offset by an increase in the turnover assumption; therefore, the inclusion of employees during early years of service may expand the volume of the calculations without significantly changing the provisions for pension cost.

OPINION

36. The Board believes that all employees who may reasonably be expected to receive benefits under a pension plan should be included in the cost calculations, giving appropriate recognition to anticipated turn-

over. As a practical matter, however, when the effect of exclusion is not material it is appropriate to omit certain employees from the calculations.

Companies With More Than One Plan

OPINION

37. A company that has more than one pension plan need not use the same actuarial cost method for each one; however, the accounting for each plan should conform to this Opinion. If a company has two or more plans covering substantial portions of the same employee classes and if the assets in any of the plans ultimately can be used in paying present or future benefits of another plan or plans, such plans may be treated as one plan for purposes of determining pension cost.

Defined-Contribution Plans

OPINION

38. Some defined-contribution plans state that contributions will be made in accordance with a specified formula and that benefit payments will be based on the amounts accumulated from such contributions. For such a plan the contribution applicable to a particular year should be the pension cost for that year.

39. Some defined-contribution plans have defined benefits. In these circumstances, the plan requires careful analysis. When the substance of the plan is to provide the defined benefits, the annual pension cost should be determined in accordance with the conclusions of this Opinion applicable to defined-benefit plans.

Insured Plans

OPINION

40. Insured plans are forms of funding arrangements and their use should not affect the accounting principles applicable to the determination of pension cost. Cost under the individual policy plans is ordinarily determined by the individual level premium method, and cost under group deferred annuity contracts is ordinarily determined by the unit credit method. Cost under deposit administration contracts, which operate similarly to trust-fund plans, may be determined on any of several methods. Some elements of pension cost, such as the application of ac-

tuarial gains (dividends, termination credits, etc.), may at times cause differences between the amounts being paid to the insurance company and the cost being recognized for accounting purposes. The Board believes that pension cost under insured plans should be determined in conformity with the conclusions of this Opinion.

41. Individual annuity or life insurance policies and group deferred annuity contracts are often used for plans covering small employee groups. Employers using one of these forms of funding exclusively do not ordinarily have ready access to actuarial advice in determining pension cost. Three factors to be considered in deciding whether the amount of net premiums paid is the appropriate charge to expense are dividends, termination credits and pension cost for employees not yet covered under the plan. Usually, the procedures adopted by insurance companies in arriving at the amount of dividends meet the requirements of Paragraph 30; consequently, in the absence of wide year-to-year fluctuations such dividends should be recognized in the year credited. Termination credits should be spread or averaged in accordance with Paragraph 30. Unless the period from date of employment to date of coverage under the plan is so long as to have a material effect on pension cost, no provision need be made for employees expected to become covered under the plan. If such a provision is made, it need not necessarily be based on the application of an actuarial cost method.

Effect of Funding

OPINION

42. This Opinion is written primarily in terms of pension plans that are funded. The accounting described applies also to plans that are unfunded. In unfunded plans, pension cost should be determined under an acceptable actuarial cost method in the same manner as for funded plans; however, because there is no fund to earn the assumed rate of interest, the pension-cost provision for the current year should be increased by an amount equivalent to the interest that would have been earned in the current year if the prior-year provisions had been funded.

43. For funded plans, the amount of the pension cost determined under this Opinion may vary from the amount funded. When this occurs, the pension-cost provision for the year should be increased by an amount equivalent to interest on the prior-year provisions not funded or be decreased by an amount equivalent to interest on prior-year funding in excess of provisions.

44. A pension plan may become overfunded (that is, have fund assets in excess of all prior service cost assigned under the actuarial method in

use for accounting purposes) as a result of contributions or as a result of actuarial gains. In determining provisions for pension cost, the effects of such overfunding are appropriately recognized in the current and future years through the operation of Paragraph 30 or 43. As to a plan that is overfunded on the effective date of this Opinion see Paragraph 48.

Income Taxes

OPINION

45. When pension cost is recognized for tax purposes in a period other than the one in which recognized for financial reporting, appropriate consideration should be given to allocation of income taxes among accounting periods.

Disclosure

OPINION

46. The Board believes that pension plans are of sufficient importance to an understanding of financial position and results of operations that the following disclosures should be made in financial statements or their notes:

1. A statement that such plans exist, identifying or describing the employee groups covered.
2. A statement of the company's accounting and funding policies.
3. The provision for pension cost for the period.
4. The excess, if any, of the actuarially computed value of vested benefits over the total of the pension fund and any balance-sheet pension accruals, less any pension prepayments or deferred charges.
5. Nature and effect of significant matters affecting comparability for all periods presented, such as changes in accounting methods (actuarial cost method, amortization of past and prior service cost, treatment of actuarial gains and losses, etc.), changes in circumstances (actuarial assumptions, etc.), or adoption or amendment of a plan.

An example of what the Board considers to be appropriate disclosure is as follows:

> The company and its subsidiaries have several pension plans covering substantially all of their employees, including certain employees in foreign

countries. The total pension expense for the year was $....., which includes, as to certain of the plans, amortization of prior service cost over periods ranging from 25 to 40 years. The company's policy is to fund pension cost accrued. The actuarially computed value of vested benefits for all plans as of December 31, 19....., exceeded the total of the pension fund and balance-sheet accruals less pension prepayments and deferred charges by approximately $..... A change during the year in the actuarial cost method used in computing pension cost had the effect of reducing net income for the year by approximately $.....

Changes in Accounting Method

OPINION

47. On occasion a company may change its method of accounting for pension cost from one acceptable method under this Opinion to another. Such a change might be a change in the actuarial cost method, in the amortization of past and prior service cost, in the treatment of actuarial gains and losses, or in other factors. When such a change is made subsequent to the effective date of this Opinion, a question arises about the accounting for the difference between the cost actually provided under the old method and the cost that would have been provided under the new method. The Board believes that pension cost provided under an acceptable method of accounting in prior periods should not be changed subsequently. Therefore, the effect on prior-year cost of a change in accounting method should be applied prospectively to the cost of the current year and future years, in a manner consistent with the conclusions of this Opinion, and not retroactively as an adjustment of retained earnings or otherwise. The change and its effect should be disclosed as indicated in Paragraph 46.

Transition to Recommended Practices

OPINION

48. For purposes of this Opinion, any unamortized prior service cost (computed under the actuarial cost method to be used for accounting purposes in the future) on the effective date of this Opinion may be treated as as though it arose from an amendment of the plan on that date rather than on the actual dates of adoption or amendment of the plan. If the pension plan is overfunded (see Paragraph 44) on the effective date of this Opinion, the amount by which it is overfunded (computed under the actuarial cost method to be used for accounting purposes in the future) should be treated as an actuarial gain realized on that date and should be accounted for as described in Paragraph 30.

49. The effect of any changes in accounting methods made as a result

of the issuance of this Opinion should be applied prospectively to the cost of the current year and future years in a manner consistent with the conclusions of this Opinion, and not retroactively by an adjustment of retained earnings or otherwise. The change and its effect should be disclosed as indicated in Paragraph 46.

Effective Date

50. This Opinion shall be effective for fiscal periods beginning after December 31, 1966. However, where feasible the Board urges earlier compliance with this Opinion.

The Opinion entitled "Accounting for the Cost of Pension Plans" was adopted unanimously by the twenty members of the Board.

Notes

Opinions present the considered opinion of at least two-thirds of the members of the Accounting Principles Board, reached on a formal vote after examination of the subject matter.

Except as indicated in the succeeding paragraph, the authority of the Opinions rests upon their general acceptability. While it is recognized that general rules may be subject to exception, the burden of justifying departures from Board Opinions must be assumed by those who adopt other practices.

Action of Council of the Institute (Special Bulletin, Disclosure of Departures From Opinions of Accounting Principles Board, *October 1964) provides that:*

a. *"Generally accepted accounting principles" are those principles which have substantial authoritative support.*

b. *Opinions of the Accounting Principles Board constitute "substantial authoritative support."*

c. *"Substantial authoritative support" can exist for accounting principles that differ from Opinions of the Accounting Principles Board.*

The Council action also requires that departures from Board Opinions be

disclosed in footnotes to the financial statements or in independent auditors' reports when the effect of the departure on the financial statements is material.

Unless otherwise stated, Opinions of the Board are not intended to be retroactive. They are not intended to be applicable to immaterial items.

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Appendix A

Actuarial Valuations, Assumptions and Cost Methods

ACTUARIAL VALUATIONS

An actuarial valuation of a pension plan is the process used by actuaries for determining the amounts an employer is to contribute (pay, fund) under a pension plan (except where an insured arrangement calls for payment of specified premiums). A valuation is made as of a specific date, which need not coincide with the end of the period for which a payment based on the valuation will be made. Indeed, it is uncommon for such a coincidence of dates to exist. Among other factors, a time lag is necessary in order to compile the data and to permit the actuary to make the necessary calculations. Although annual valuations are, perhaps, the rule, some employers have valuations made at less frequent intervals, in some cases as infrequently as every five years. The calculations are made for a closed group—ordinarily, employees presently covered by the plan, former employees having vested rights and retired employees currently receiving benefits.

An initial step in making a valuation is to determine the present value on the valuation date of benefits to be paid over varying periods of time in the future to employees after retirement (plus any other benefits under the plan). An actuarial cost method (see description in a later section of this Appendix) is then applied to this present value to determine the contributions to be made by the employer.

The resulting determinations are estimates, since in making a valuation a number of significant uncertainties concerning future events must be resolved by making several actuarial assumptions.

ACTUARIAL ASSUMPTIONS

The uncertainties in estimating the cost of a pension plan relate to (1) interest (return on funds invested), (2) expenses of administration

NOTE: For further discussion see Appendix C of Accounting Research Study No. 8, *Accounting for the Cost of Pension Plans* by Ernest L. Hicks, CPA, published by the American Institute of Certified Public Accountants in 1965.

and (3) the amounts and timing of benefits to be paid with respect to presently retired employees, former employees whose benefits have vested and present employees.

INTEREST (RETURN ON FUNDS INVESTED)

The rate of interest used in an actuarial valuation is an expression of the average rate of earnings that can be expected on the funds invested or to be invested to provide for the future benefits. Since in most instances the investments include equity securities as well as debt securities, the earnings include dividends as well as interest; gains and losses on investments are also a factor. For simplicity, however, the rate is ordinarily called the interest rate.

EXPENSES OF ADMINISTRATION

In many instances the expenses of administering a pension plan—for example, fees of attorneys, actuaries and trustees, and the cost of keeping pension records—are borne directly by the employer. In other cases, such expenses, or some of them, are paid by a trust or insurance company from funds contributed by the employer. In the latter cases, expenses to be incurred in the future must be estimated in computing the employer's pension cost.

BENEFITS

Several assumptions must be made as to the amounts and timing of the future benefits whose present value is used in expressing the cost of a pension plan. The principal assumptions are as follows:

a. *Future Compensation Levels.* Benefits under some pension plans depend in part on future compensation levels. Under plans of this type, an estimate is ordinarily made of normal increases expected from the progression of employees through the various earnings-rate categories, based on the employer's experience. General earnings-level increases, such as those which may result from inflation, are usually excluded from this actuarial assumption.

b. *Cost-of-Living.* To protect the purchasing power of retirement benefits, some plans provide that the benefits otherwise determined will be adjusted from time to time to reflect variations in a specific index, such as the Consumer Price Index of the United States Bureau of Labor Statistics. In estimating the cost of such a plan, expected future changes in the cost-of-living index may be included in the actuarial assumptions.

c. *Mortality.* The length of time an employee covered by a pension

plan will live is an important factor in estimating the cost of the benefit payments he will receive. If an employee dies before he becomes eligible for pension benefits, he receives no payments, although in some plans his beneficiaries receive lump-sum or periodic benefits. The total amount of pension benefits for employees who reach retirement is determined in large part by how long they live thereafter. Estimates regarding mortality are based on mortality tables.

d. *Retirement Age.* Most plans provide a normal retirement age, but many plans permit employees to work thereafter under certain conditions. Some plans provide for retirement in advance of the normal age in case of disability, and most plans permit early retirement at the employee's option under certain conditions. When there are such provisions, an estimate is made of their effect on the amount and timing of the benefits which will ultimately be paid.

e. *Turnover.* In many plans, some employees who leave employment with the employer before completing vesting requirements forfeit their rights to receive benefits. In estimating the amount of future benefits, an allowance for the effect of turnover may be made.

f. *Vesting.* Many plans provide that after a stated number of years of service an employee becomes entitled to receive benefits (commencing at his normal retirement age and usually varying in amount with his number of years of service) even though he leaves the company for a reason other than retirement. This is taken into consideration in estimating the effect of turnover.

g. *Social Security Benefits.* For plans providing for a reduction of pensions by all or part of social security benefits, it is necessary in estimating future pension benefits to estimate the effect of future social security benefits. Ordinarily, this estimate is based on the assumption that such benefits will remain at the level in effect at the time the valuation is being made.

ACTUARIAL GAINS AND LOSSES

The likelihood that actual events will coincide with each of the assumptions used is so remote as to constitute an impossibility. As a result, the actuarial assumptions used may be changed from time to time as experience and judgment dictate. In addition, whether or not the assumptions as to events in the future are changed, it is often necessary to recognize in the calculations the effect of differences between actual prior experience and the assumptions used in the past.

Actuarial Cost Methods

Actuarial cost methods have been developed by actuaries as funding techniques to be used in actuarial valuations. As indicated in Paragraph 19 of the accompanying Opinion, many of the actuarial cost methods are also useful for accounting purposes. The following discussion of the principal methods describes them as funding techniques (to simplify the discussion, references to prior service cost arising on amendment of a plan have been omitted; such cost would ordinarily be treated in a manner consistent with that described for past service cost). Their application for accounting purposes is described in the accompanying Opinion.

ACCRUED BENEFIT COST METHOD—UNIT CREDIT METHOD

Under the unit credit method, future service benefits (pension benefits based on service after the inception of a plan) are funded as they accrue—that is, as each employee works out the service period involved. Thus, the normal cost under this method for a particular year is the present value of the units of future benefit credited to employees for service in that year (hence unit credit). For example, if a plan provides benefits of $5 per month for each year of credited service, the normal cost for a particular employee for a particular year is the present value (adjusted for mortality and usually for turnover) of an annuity of $5 per month beginning at the employee's anticipated retirement date and continuing throughout his life.

The past service cost under the unit credit method is the present value at the plan's inception date of the units of future benefit credited to employees for service prior to the inception date.

The annual contribution under the unit credit method ordinarily comprises (1) the normal cost and (2) an amount for past service cost. The latter may comprise only an amount equivalent to interest on the unfunded balance or may also include an amount intended to reduce the unfunded balance.

As to an individual employee, the annual normal cost for an equal unit of benefit each year increases because the period to the employee's retirement continually shortens and the probability of reaching retirement increases; also, in some plans, the retirement benefits are related to salary levels, which usually increase during the years. As to the employees collectively, however, the step-up effect is masked, since older employees generating the highest annual cost are continually replaced by new employees generating the lowest. For a mature employee group, the normal cost would tend to be the same each year.

The unit credit method is almost always used when the funding instrument is a group annuity contract and may also be used in trusteed plans

and deposit administration contracts where the benefit is a stated amount per year of service. This method is not frequently used where the benefit is a fixed amount (for example, $100 per month) or where the current year's benefit is based on earnings of a future period.

PROJECTED BENEFIT COST METHODS

As explained above, the accrued benefit cost method (unit credit method) recognizes the cost of benefits only when they have accrued (in the limited sense that the employee service on which benefits are based has been rendered). By contrast, the projected benefit cost methods look forward. That is, they assign the entire cost of an employee's *projected* benefits to past, present and future periods. This is done in a manner not directly related to the periods during which the service on which the benefits are based has been or will be rendered. The principal projected benefit cost methods are discussed below.

a. *Entry Age Normal Method.* Under the entry age normal method, the normal costs are computed on the assumption (1) that every employee entered the plan (thus, entry age) at the time of employment or at the earliest time he would have been eligible if the plan had been in existence and (2) that contributions have been made on this basis from the entry age to the date of the actuarial valuation. The contributions are the level annual amounts which, if accumulated at the rate of interest used in the actuarial valuation, would result in a fund equal to the present value of the pensions at retirement for the employees who survive to that time.

Normal cost under this method is the level amount to be contributed for each year. When a plan is established after the company has been in existence for some time, past service cost under this method at the plan's inception date is theoretically the amount of the fund that would have accumulated had annual contributions equal to the normal cost been made in prior years.

In theory, the entry age normal method is applied on an individual basis. It may be applied, however, on an aggregate basis, in which case separate amounts are not determined for individual employees. Further variations in practice often encountered are (1) the use of an average entry age, (2) the use, particularly when benefits are based on employees' earnings, of a level percentage of payroll in determining annual payments and (3) the computation of past service cost as the difference between the present value of employees' projected benefits and the present value of the employer's projected normal cost contributions. In some plans, the normal cost contribution rate may be based on a stated amount per employee. In other plans the normal cost contribution itself may be stated as a flat amount.

In valuations for years other than the initial year the past service cost

may be frozen (that is, the unfunded amount of such cost is changed only to recognize payments and the effect of interest). Accordingly, actuarial gains and losses are spread into the future, entering into the normal cost for future years. If past service cost is not frozen, the unfunded amount includes the effects of actuarial gains and losses realized prior to the date of the valuation being made.

The annual contribution under the entry age normal method ordinarily comprises (1) the normal cost and (2) an amount for past service cost. The latter may comprise only an amount equivalent to interest on the unfunded balance or may also include an amount intended to reduce the unfunded balance.

The entry age normal method is often used with trusteed plans and deposit administration contracts.

b. *Individual Level Premium Method.* The individual level premium method assigns the cost of each employee's pension in level annual amounts, or as a level percentage of the employee's compensation, over the period from the inception date of a plan (or the date of his entry into the plan, if later) to his retirement date. Thus, past service cost is not determined separately but is included in normal cost.

The most common use of the individual level premium method is with funding by individual insurance or annuity policies. It may be used, however, with trusteed plans and deposit administration contracts.

In plans using individual annuity policies, the employer is protected against actuarial losses, since premiums paid out are not ordinarily subject to retroactive increases. The insurance company may, however, pass part of any actuarial gains along to the employer by means of dividends. Employee turnover may be another source of actuarial gains under such insured plans, since all or part of the cash surrender values of policies previously purchased for employees leaving the employer for reasons other than retirement may revert to the company (or to the trust). Dividends and cash surrender values are ordinarily used to reduce the premiums payable for the next period.

The individual level premium method generates annual costs which are initially very high and which ultimately drop to the level of the normal cost determined under the entry age normal method. The high initial costs arise because the past service cost (although not separately identified) for employees near retirement when the plan is adopted is in effect amortized over a very short period.

c. *Aggregate Method.* The aggregate method applies on a collective basis the principle followed for individuals in the individual level premium method. That is, the entire unfunded cost of future pension benefits (including benefits to be paid to employees who have retired as of the date of the valuation) is spread over the average future service lives

of employees who are active as of the date of the valuation. In most cases this is done by the use of a percentage of payroll.

The aggregate method does not deal separately with past service cost (but includes such cost in normal cost). Actuarial gains and losses enter into the determination of the contribution rate and, consequently, are spread over future periods.

Annual contributions under the aggregate method decrease, but the rate of decrease is less extreme than under the individual level premium method. The aggregate cost method amortizes past service cost (not separately identified) over the average future service lives of employees, thus avoiding the very short individual amortization periods of the individual level premium method.

The aggregate method may be modified by introducing past service cost. If the past service cost is determined by the entry age normal method, the modified aggregate method is the same as the entry age normal method applied on the aggregate basis. If the past service cost is determined by the unit credit method, the modified aggregate method is called the attained age normal method (discussed below).

The aggregate method is used principally with trusteed plans and deposit administration contracts.

d. *Attained Age Normal Method.* The attained age normal method is a variant of the aggregate method or individual level premium method in which past service cost, determined under the unit credit method, is recognized separately. The cost of each employee's benefits assigned to years after the inception of the plan is spread over the employee's future service life. Normal cost contributions under the attained age normal method, usually determined as a percentage of payroll, tend to decline but less markedly than under the aggregate method or the individual level premium method.

As with the unit credit and entry age normal methods, the annual contribution for past service cost may comprise only an amount equivalent to interest on the unfunded balance or may also include an amount intended to reduce the unfunded balance.

The attained age normal method is used with trusteed plans and deposit administration contracts.

TERMINAL FUNDING

Under terminal funding, funding for future benefit payments is made only at the end of an employee's period of active service. At that time the employer either purchases a single-premium annuity which will provide the retirement benefit or makes an actuarially equivalent contribution to a trust. (Note—This method is not acceptable for determining the provision for pension cost under the accompanying Opinion.)

Appendix B

Glossary

Accrue (Accrual). When *accrue (accrual)* is used in accounting discussions in the accompanying Opinion, it has the customary accounting meaning. When used in relation to actuarial terms or procedures, however, the intended meaning differs somewhat. When actuaries say that pension benefits, actuarial costs or actuarial liabilities have *accrued*, they ordinarily mean that the amounts are associated, either specifically or by a process of allocation, with years of employee service before the date of a particular valuation of a pension plan. Actuaries do not ordinarily intend their use of the word *accrue* to have the more conclusive accounting significance.

Accrued Benefit Cost Method. An *actuarial cost method.* See Appendix A.

Actuarial Assumptions. Factors which actuaries use in tentatively resolving uncertainties concerning future events affecting pension cost; for example, mortality rate, employee turnover, compensation levels, investment earnings, etc. See Appendix A.

Actuarial Cost Method. A particular technique used by actuaries for establishing the amount and incidence of the annual actuarial cost of pension plan benefits, or benefits and expenses, and the related actuarial liability. Sometimes called *funding method.* See Appendix A.

Actuarial Gains (Losses). The effects on actuarially calculated pension cost of (a) deviations between actual prior experience and the actuarial assumptions used or (b) changes in actuarial assumptions as to future events.

Actuarial Liability. The excess of the present value, as of the date of a pension plan valuation, of prospective pension benefits and administrative expenses over the sum of (1) the amount in the pension fund and (2) the present value of future contributions for normal cost determined by any of several actuarial cost methods. (Sometimes referred to as *unfunded actuarial liability.*)

Actuarial Valuation. The process by which an actuary estimates the present value of benefits to be paid under a pension plan and calculates the amounts of employer contributions or accounting charges for pension cost. See Appendix A.

Actuarially Computed Value. See *present value.*

Actuarially Computed Value of Vested Benefits. See *vested benefits.*

Actuary. There are no statutory qualifications required for actuaries. Membership in the American Academy of Actuaries, a comprehensive organization of the profession in the United States, is generally considered to be acceptable evidence of professional qualification.

Aggregate Method. An *actuarial cost method.* See Appendix A.

Assumptions. See *actuarial assumptions.*

Attained Age Normal Method. An *actuarial cost method.* See Appendix A.

Benefits (Pension Benefits) (Retirement Benefits). The pensions and any other payments to which employees or their beneficiaries may be entitled under a pension plan.

Contribute (Contribution). When used in connection with a pension plan, *contribute* ordinarily is synonymous with pay.

Deferred Compensation Plan. An arrangement whereby specified portions of the employee's compensation are payable in the form of retirement benefits.

Deferred Profit-Sharing Plan. An arrangement whereby an employer provides for future retirement benefits for employees from specified portions of the earnings of the business; the benefits for each employee are usually the amounts which can be provided by accumulated amounts specifically allocated to him.

Defined-Benefit Plan. A pension plan stating the benefits to be received by employees after retirement, or the method of determining such benefits. The employer's contributions under such a plan are determined actuarially on the basis of the benefits expected to become payable.

Defined-Contribution Plan. A pension plan which (a) states the benefits to be received by employees after retirement or the method of determining such benefits (as in the case of a defined-benefit plan) and (b) accompanies a separate agreement that provides a formula for calculating the employer's contributions (for example, a fixed amount for each ton produced or for each hour worked, or a fixed percentage of compensation). Initially, the benefits stated in the plan are those which the contributions expected to be made by the employer can provide. If later the contributions are found to be inadequate or excessive for the purpose of funding the stated benefits on the basis originally contemplated, either the contributions or the benefits, or both, may be subsequently adjusted. In one type of defined-contribution plan (money-purchase plan) the employer's contributions are determined for, and allocated

with respect to, specific individuals, usually as a percentage of compensation; the benefits for each employee are the amounts which can be provided by the sums contributed for him.

Deposit Administration Contract. A funding instrument provided by an insurance company under which amounts contributed by an employer are not identified with specific employees until they retire. When an employee retires, the insurance company issues an annuity which will provide the benefits stipulated in the pension plan and transfers the single premium for the annuity from the employer's accumulated contributions.

Entry Age Normal Method. An *actuarial cost method.* See Appendix A.

Fund. Used as a verb, *fund* means to pay over to a funding agency. Used as a noun, *fund* refers to assets accumulated in the hands of a funding agency for the purpose of meeting retirement benefits when they become due.

Funded. The portion of pension cost that has been paid to a funding agency is said to have been *funded.*

Funding Agency. An organization or individual, such as a specific corporate or individual trustee or an insurance company, which provides facilities for the accumulation of assets to be used for the payment of benefits under a pension plan; an organization, such as a specific life insurance company, which provides facilities for the purchase of such benefits.

Funding Method. See *actuarial cost method.*

Individual Level Premium Method. An *actuarial cost method.* See Appendix A.

Interest. The return earned or to be earned on funds invested or to be invested to provide for future pension benefits. In calling the return *interest,* it is recognized that in addition to interest on debt securities the earnings of a pension fund may include dividends on equity securities, rentals on real estate, and realized and unrealized gains or (as offsets) losses on fund investments. See Appendix A.

Mortality Rate. Death rate—the proportion of the number of deaths in a specified group to the number living at the beginning of the period in which the deaths occur. Actuaries use mortality tables, which show death rates for each age, in estimating the amount of future retirement benefits which will become payable. See Appendix A.

Normal Cost. The annual cost assigned, under the actuarial cost method in use, to years subsequent to the inception of a pension plan or to a particular valuation date. See *past service cost, prior service cost.*

Past Service Cost. Pension cost assigned, under the actuarial cost method in use, to years prior to the inception of a pension plan. See *normal cost, prior service cost.*

Pay-As-You-Go. A method of recognizing pension cost only when benefits are paid to retired employees. (Note—This is not an acceptable method for accounting purposes under the accompanying Opinion.)

Pension Fund. See *fund.*

Present Value (Actuarially Computed Value). The current worth of an amount or series of amounts payable or receivable in the future. *Present value* is determined by discounting the future amount or amounts at a predetermined rate of interest. In pension plan valuations, actuaries often combine arithmetic factors representing probability (e.g., mortality, withdrawal, future compensation levels) with arithmetic factors representing discount (interest). Consequently, to actuaries, determining the present value of future pension benefits may mean applying factors of both types.

Prior Service Cost. Pension cost assigned, under the actuarial cost method in use, to years prior to the date of a particular actuarial valuation. *Prior service cost* includes any remaining past service cost. See *normal cost, past service cost.*

Projected Benefit Cost Method. A type of *actuarial cost method.* See Appendix A.

Provision (Provide). An accounting term meaning a charge against income for an estimated expense, such as pension cost.

Service. Employment taken into consideration under a pension plan. Years of employment before the inception of a plan constitute an employee's past service; years thereafter are classified in relation to the particular actuarial valuation being made or discussed. Years of employment (including past service) prior to the date of a particular valuation constitute prior service; years of employment following the date of the valuation constitute future service.

Terminal Funding. An *actuarial cost method.* See Appendix A. (Note—This is not an acceptable *actuarial cost method* for accounting purposes under the accompanying Opinion.)

Trust Fund Plan. A pension plan for which the funding instrument is a trust agreement.

Turnover. Termination of employment for a reason other than death or retirement. See *withdrawal,* Appendix A.

Unit Credit Method. An *actuarial cost method.* See Appendix A.

Valuation. See *actuarial valuation,* Appendix A.

Vested Benefits. Benefits that are not contingent on the employee's continuing in the service of the employer. In some plans the payment of the benefits will begin only when the employee reaches the normal retirement date; in other plans the payment of the benefits will begin when the employee retires (which may be before or after the normal retirement date). The *actuarially computed value of vested benefits*, as used in this Opinion, represents the present value, at the date of determination, of the sum of (a) the benefits expected to become payable to former employees who have retired, or who have terminated service with vested rights, at the date of determination; and (b) the benefits, based on service rendered prior to the date of determination, expected to become payable at future dates to present employees, taking into account the probable time that employees will retire, at the vesting percentages applicable at the date of determination. The determination of vested benefits is not affected by other conditions, such as inadequacy of the pension fund, which may prevent the employee from receiving the vested benefits.

Withdrawal. The removal of an employee from coverage under a pension plan for a reason other than death or retirement. See *turnover.*