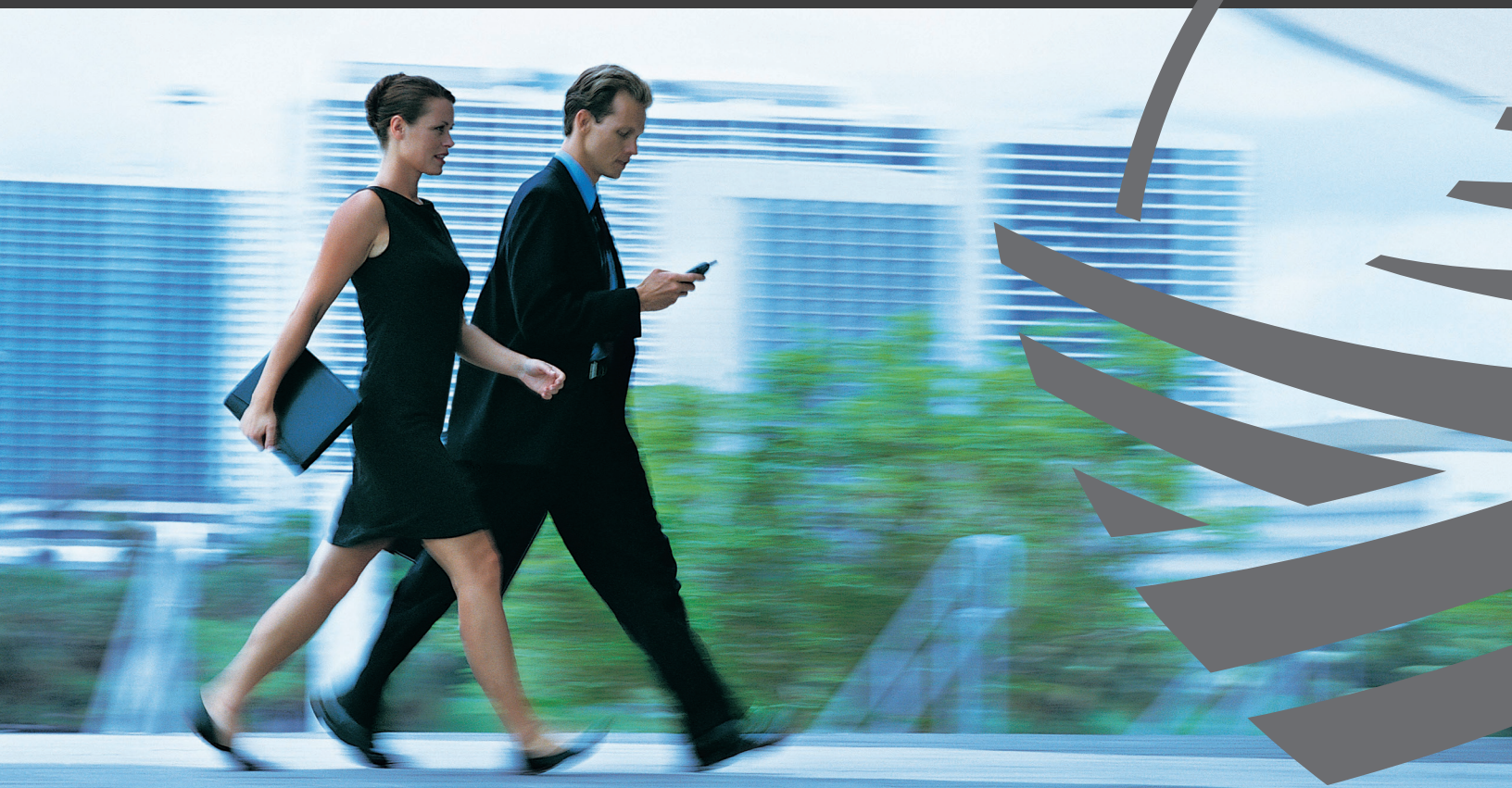
AMERICAN SOCIETY OF PENSION PROFESSIONALS & ACTUARIES

8TH EDITION

DB STUDY GUIDE



DB Study Guide: Administrative Issues of Defined Plan Benefits

ASPPA
Making Retirement Plans Work
Part of the American Retirement Association

www.asppa.org

DB Study Guide:
Administrative Issues of Defined Benefit Plans

8th Edition

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About ASPPA

ASPPA—the American Society of Pension Professionals & Actuaries—is the premier national organization for career retirement plan professionals. The membership is comprised of the many disciplines supporting retirement income management and benefits policy. Members are part of the diversified, technical, and highly regulated benefits industry. ASPPA represents the most committed individuals of the profession—those who have made a career of retirement plan and pension policy work.

The purpose of ASPPA is twofold:

- To educate retirement plan and benefits professionals
- To preserve and enhance the private pension system

Based in the nation's capital, ASPPA is a non-profit professional organization acting on behalf of its 20,000+ members to improve retirement income policy. In pursuit of these goals, ASPPA offers extensive educational opportunities for its members—from professional credentialing to continuing education. ASPPA Government Affairs department keeps a close watch on all legislative and regulatory activities affecting retirement benefits and pension policy.

ASPPA was founded in 1966 originally as an actuarial organization. Since then, ASPPA has carefully tracked the changing needs of the retirement plan industry. As a result, ASPPA has expanded and diversified its membership to include all types of pension professionals—from actuaries, consultants, and administrators to insurance professionals, financial planners, accountants, attorneys, and human resource managers. Embracing diversity, the 10,000+ members of ASPPA are united by their commitment to the private pension system.

Comprehensive education and examination programs are offered by ASPPA for its members and other retirement plan professionals because career and industry advancement are distinguishing characteristics of all ASPPA activities. Dedicated to providing practical and scholastic education programs, the curriculum is carefully expanded and improved each year to address legal and legislative changes affecting the pension system and the work of retirement plan professionals.

Visit **www.asppa-net.org** for more information about ASPPA's Retirement Plan Academy programs, including course syllabi, reading lists, exam procedures, and requirements for ASPPA credentials.

How to Use this Study Guide

ASPPA realizes the importance of current, practical knowledge to its members and other retirement plan professionals. ASPPA conferences, webcasts, and other forums will, as always, continue to offer a wealth of opportunities for retirement plan professionals to learn about the latest industry regulations, standards, and practices.

This study guide has been prepared for candidates studying for the 2017 ASPPA DB examination and/or the DB-A certificate. It is intended to be a guide to the material that will be tested on these examinations. In order to gain the knowledge and understanding of the material needed to pass the examination, candidates ***must*** read the required textbooks to obtain the knowledge necessary to have a thorough understanding of the subject matter. The required reading is detailed in the examination syllabus posted on the ASPPA website at **www.asppa.org**.

Please note that should it be necessary to make any corrections to the study guide or should any clarification of the material in the study guide be required, this information will be posted on the ASPPA website. It is the candidate's responsibility to regularly check the ASPPA website in order to obtain this information. An additional resource that you may find useful is an actual plan document. After completing a chapter, take an existing document and find the provisions that pertain to the chapter. This helps you see how the requirements work in "real life."

The study guide is divided into chapters by topic, and each chapter contains the following sections:

- Key Terms: A list of key terms is also included as a reference. Even if these terms are not defined in the study guide, you will be expected to find the definitions in the required reading material and become familiar with them. Understanding these terms is an important step towards learning the required material.

- Examples: To help you more fully grasp the concepts described in the study guide and related material, there are examples you can work through with a step-by-step explanation of the answer. After reading the required text, complete the example without looking at the step-by-step solution, if possible.

- Self-Test Questions: Several true/false questions with answers are included to test your knowledge of the material. After completing a chapter, answer these questions (first without looking at the answer!).

- Sample Test Questions: Test questions and answers are also included to familiarize you with the examination format as well as test your knowledge of the material covered. Practice examinations for the DB examination can be ordered from ASPPA at www.asppa.org/bookstore so you can test your exam preparedness.

- Cautions: To help you avoid common mistakes, areas of caution are explained. Cautions are used to clarify topics or remind you of special rules.

- Review of Key Concepts: To determine if you have learned the material covered in the chapter, answer the questions in this section.

We hope that you will find this study guide useful in preparing for the exam(s).

Retirement Plan Academy

Acknowledgments

The 8th edition of *The DB Study Guide* is the result of the cooperative effort of past and present members of ASPPA's Retirement Plan Academy, ASPPA staff, and numerous other ASPPA volunteers. Their contributions of time and expertise are gratefully acknowledged.

Explanation of the ASPPA DB and DB-A Examinations

1. **What is the purpose of the Defined Benefit (DB) and Defined Benefit Administration examinations?**

   These examinations are designed to test the candidate's ability to meaningfully apply knowledge of comprehensive topics involving defined benefit plans (including hybrid plans). The exams will not only test the candidate's knowledge of such topics, but will also test the candidate's ability to apply this knowledge to a factual situation that a pension administrator may encounter.

   The DB exam consists of 65 multiple-choice questions and candidates are allowed two-and-a-half hours to complete the examination. The questions require the candidate to analyze and solve specific problems and to demonstrate an understanding of terminology and concepts. It is recommended that a candidate master the DB material in ASPPA's Retirement Plan Fundamentals course before taking the DB course.

   The DB-A certificate course consists of 75 multiple-choice and true-and-false questions administered online in an open book fashion. **It is recommended that a candidate master the DB course prior to taking the DB-A certificate course**.

2. **What topics are on the DB examination?**

   The questions on the examination will be based on material taken directly from the required textbooks and study guide.

   Topics that are covered on the DB examination include all of the following:

   - Plan design
   - Accrued benefits and their values
   - Anti-cutback rules
   - Ancillary benefits
   - Permitted disparity
   - Benefit limitations
   - Incidental benefit rules
   - Plan termination
   - QDROs
   - Actuarial assumptions
   - Calculation of PVAB
   - Actuarially equivalent forms of benefit
   - Distribution options
   - Hybrid defined benefit plans
   - Professional ethics

In addition, the following topics are covered on the DB-A certificate:

- Plan assets
- Valuations
- Funding/accounting Reports

3. **How will the above topics be weighted on the DB examination?**

   Some chapters in the study guide and the required texts contain more material than others depending on the complexity of the topic and how extensively the topic is covered for the exam. The study guide has been organized into chapters on the basis of topic rather than by the weight required for studying or the weight of exam questions. Please refer to the syllabus for details relating to topic weightings of questions.

   The candidate should be aware that there is some crossover between topics. For example, a question on plan terminations might require knowledge of the limitations on benefits from defined benefit plans.

4. **Should other ASPPA examinations be taken prior to the DB or DB-A examination?**

   It is presumed that a candidate sitting for the DB or DB-A examination should have knowledge of material covered in ASPPA's Retirement Plan Fundamentals (RPF) modules. In addition, much of the material covered in the DC-1 examination applies to DB plans as well as DC plans, so it is recommended that the candidate have knowledge of the DC-1 examination or be familiar with the material prior to taking the DB examination.

5. **How are the exam questions structured?**

   The questions on the DB course exam are multiple-choice questions. They are structured to test the candidate's understanding of relevant laws and regulations, and to test the candidate's application of these laws and regulations. The DB-A exam has some true/false questions also.

   There are three different types of questions on the examination:

   - **Straight Answer**: The question is followed by five statements or numeric answers. The candidate chooses the single answer that correctly or best answers the question.

   - **All Except**: The question includes the word **Except**. The candidate chooses the single answer that is the most appropriate exception.

   - **Triple True/False**: The question is followed by a series of statements numbered I, II, and III. The candidate is given five combinations of these statements to choose from. The candidate chooses the combination that is the most appropriate combination of the choices given.

Some questions will require the candidate to solve problems using information provided from actual administrative situations. Limits that change yearly will be given to the student within the examination materials.

Sample Questions:

Straight Answer Question: (more commonly straight answer questions will involve numerical choices or dates)

Which one of the following statements about cash balance plans is **TRUE**?

A. A cash balance plan is a form of defined contribution plan.
B. A cash balance plan maintains a hypothetical account balance for each participant.
C. The assets in a cash balance plan must always equal the sum of the participant accounts.
D. The employer's contribution to a cash balance plan will always equal the total allocated to the participant accounts that year.
E. The earnings credited to each participant account always depend on the earnings of the plan assets.

Answer: B

All Except Question:

All of the following statements regarding the determination of accrual rates for purposes of the general test for nondiscrimination are **TRUE, EXCEPT**:

A. The annual accrual method requires the calculation of the increase in the accrued benefit for the current year divided by compensation.
B. The accrued-to-date method requires the calculation of the accrued benefits divided by years of credited service divided by compensation.
C. The projected method takes the projected benefit with salary scale divided by total credited years of service at retirement divided by compensation.
D. Accrual rates may use imputed permitted disparity.
E. Accrual rates are determined using an interest rate between 7.5 and 8.5 percent.

Answer: C

Triple True/False Question:

Which of the following statements regarding floor-offset arrangements is/are TRUE?

I. The defined contribution plan may be a profit sharing plan.
II. Employees who continue in service to retirement are assured a certain level of retirement income.
III. Employees may receive gains due to favorable investment results.

A. I only
B. II only
C. I and III only
D. II and III only
E. I, II, and III.

Answer: E

6. **How many hours of study are required to prepare for the examination?**

The number of hours of study needed to prepare for the examination varies from person to person depending on the length and breadth of a person's experience in the pension field. Working knowledge of the Internal Revenue Code, ERISA, and the accompanying regulations is essential. In addition, it is assumed and expected that **all the required readings will be read and studied**. Many successful candidates begin studying several months before the exam date in order to allow sufficient time to cover all the material to the proper extent.

As in other professional examination programs such as law examinations, enrolled actuaries examinations, and CPA examinations, it is not unusual for candidates to have to take the test more than once before passing.

7. **How should one study for the examination?**

For each chapter, it is expected that the learning objectives and key terms in the study guide and all required textbooks will be read and studied. Candidates should then work through the Practical Example of Concepts Learned sections, and attempt to answer the Self-Test Questions and Sample Test Questions found in the study guide. The answers to these questions with explanations are also provided for you.

To see how the requirements work in the "real world," take an actual plan document and find the provisions that pertain to the chapters.

You may find it necessary to spend more time on topics you do not work with on a regular basis than those that are familiar to you. Also, some topics by their very nature are more complex than others, so those may also require more study time.

You may find it useful to form a small study group with others who are preparing for the exam and work together in reviewing exam topics and prior exams.

8. **Are there any calculations on the DB and DB-A examinations?**

   The DB and DB-A examinations include calculations. Personal calculators will NOT be allowed in to Prometric Testing Centers. Candidates will be able to use an onscreen calculator provided during the exam. Prometric will furnish onsite, if requested and available, a handheld calculator. An example of the onscreen calculator provided by Prometric and/or examples of available Prometric handheld calculators can be found on Candidate Corner at www.asppa.org/candidate-corner.

9. **Who selects the required textbooks and writes the ASPPA DB and DB-A examinations?**

   The ASPPA Retirement Plan Academy is responsible for selecting the required textbooks and preparing the DB and DB-A examinations.

10. **How many times a year is the examination given?**

    The DB examination is offered during two exam windows each year–one in the spring and one in the fall. You may take the DB exam only once during each exam window.
    The DB-A certificate examination is administered online and is available continuously throughout the year.

11. **Where can I obtain additional information on the DB and DB-A examinations?**

    Visit the ASPPA website at www.asppa-net.org/education for more information. Additionally, you may write to the ASPPA Retirement Plan Academy at:

    ASPPA
    4245 North Fairfax Drive, Suite 750
    Arlington, VA 22203-1648

    You may also call the Retirement Plan Academy at 703.516.9300, fax an information request to 703.516.9308, or send an email to the ASPPA office at education@asppa.org.

    Please note that commonly found abbreviations & acronyms, a 3-Year COLA Summary as well as the IRC listing can be found on the ASPPA website at http://www.asppa.org/Document-Vault/Docs/EE/References-and-Errata.aspx#References.

Test-Taking Tips

The following are some suggestions for test-taking. While they may seem obvious, candidates frequently forget them while taking an examination so it helps to revisit them from time to time. This is particularly true if it has been some time since you have either been in school or taken a professional examination.

- Get plenty of rest the night before the examination. If you have studied the material, cramming at the last minute will not be needed and a good night's sleep will prove much more valuable.

- Get to the examination center early. That way you will not be rushed trying to find the location at the last minute.

- Read the instructions carefully. Even though you may have heard the instructions before, it never hurts to reinforce them. And you never know, there might be some new ones!

- Plan your examination time carefully. Allocate a few minutes at the beginning of the examination session to familiarize yourself with the examination. And give yourself a few minutes at the end to review your work.

- Know how much time you have to spend on each question and/or topic. Allocate a certain number of minutes for each question. Then, if you spend too much time on one subject, know that it will decrease the time you have available for another question.

- Finally, remember that the examiners really are not trying to create trick questions. If you have studied the material, they want you to get the question right. So when in doubt assume a logical approach to solving a problem—it is often the right approach.

Chapter 1
Introduction to Defined Benefit Plans

Key Terms

- Actuary
- Accrued benefit
- Actuarial assumptions
- Actuarial equivalence rates
- Flat-benefit plan formula
- Flat-rate premium
- Incidental benefits
- Death benefit
- Disability benefits
- Hard freeze
- Normal form of benefit
- Normal retirement age (NRA)
- Normal retirement benefit (NRB)
- Pension Benefit Guaranty Corporation (PBGC)
- Plan design
- Single-sum present value
- Soft freeze

- Subsidized early retirement benefit
- Unit-benefit plan formula

Introduction

This guide will focus on qualified defined benefit plans. Qualified retirement plans are established by employers with the intent of benefiting employees. The Employee Retirement Income Security Act (ERISA), enacted in 1974, describes qualified plans. A qualified plan is a definite written program that is communicated to employees and established and maintained by an employer to provide for the payment of benefits to employees or their beneficiaries after the retirement of such employees. Qualified plans are designed to offer individuals added tax-favored benefits on top of their other regular retirement vehicles, such as personal savings or Social Security. Employers make allowable tax-deductible contributions to the plan and employees are not taxed on the retirement benefit accumulation until the benefit is paid to them as a taxable withdrawal. In many cases, employees may continue to defer taxes on benefits when they receive them by rolling their benefits to another qualified plan or IRA. This allows employees to defer taxes until retirement, when they are presumably in a lower tax bracket.

A plan must satisfy strict rules in several areas to be considered qualified, including:

- Disclosure requirements
- Minimum coverage requirements
- Minimum participation rules
- Minimum vesting rules
- Nondiscrimination requirements

Retirement plans are further classified as defined benefit or defined contribution plans according to how benefits are determined. In defined contribution plans, the plan document specifies the contribution (or the allocation of a contribution) to an individual participant's account. In a defined benefit plan, the participant's retirement benefits payable beginning at a specified age are defined in the plan document rather than by the value of a participant's account. Employer contributions for defined benefit plans are determined actuarially to provide for the accumulation of unallocated assets sufficient to pay the expected plan benefits as they become due.

Types of Retirement Plans

There are many types of retirement plans within the two major categories (defined benefit and defined contribution). Some types of retirement plans combine features of both defined benefit and defined contribution plans; these are often called hybrid plans.

Examples and Characteristics of Defined Contribution Plans

A defined contribution plan maintains an account balance for each participant, so that the entire benefit is derived from each participant's individual account. Upon retirement or termination of employment, the participant is entitled to the money in their account

balance. Contributions are made to the plan each year and allocated in some nondiscriminatory manner specified in the plan document. Depending on the type of plan, the contributions may or may not be required. Most often the contribution is discretionary. Examples of defined contribution plans are profit sharing, money purchase, stock bonus, employee stock ownership, target benefit, 401(k), 403(b), and 457 plans.

Most profit sharing plans do not have a required contribution. However, once a contribution has been made, it is allocated to the participant accounts in accordance with the plan document. A money purchase pension plan has a required contribution that is set forth in the plan document. The required contribution for each participant is allocated to the participant's account. Contributions for participants to a target benefit plan are calculated at each person's age so that the contribution, when accumulated to retirement, will provide for a uniform target benefit. These contributions are allocated to the participant's account and the benefit paid at retirement is based upon the participant's account balance, which (depending on actual earnings) may be greater or less than the target benefit.

In a defined contribution plan, depending on the terms of the plan, plan assets may be commingled in an investment pool (so that each participant's account is a bookkeeping entry), or each account may be separately invested. The investment of commingled accounts can be trustee or participant-directed.

The ultimate benefit the participant receives from a defined contribution plan is based entirely on the participant's account balance. For this reason, the participant bears the risk of investment, since low investment returns will result in a smaller benefit at retirement. The employer does not guarantee the benefits under a defined contribution plan. A defined contribution plan generally favors younger employees since money invested over a long period of time tends to accumulate to large amounts.

Defined contribution plans are subject to vesting requirements. A defined contribution plan must have a vesting schedule as least as generous as one of the following:

- 3-year cliff – participants are 100% vested upon being credited with 3 years of service, or
- 6-year graded – participants vest 20% per year beginning with being credited with 2 years of service, becoming 100% vested with 6 years of service.

Examples and Characteristics of Traditional Defined Benefit Plans

A defined benefit plan generally provides a monthly benefit payable upon retirement. The plan document states a benefit formula that describes the amount of benefit to be paid. In addition, the document contains provisions describing the age that the benefit will be paid and the form(s) in which the benefit can be paid. The plan is funded using a method chosen by the plan actuary, using assumptions picked such that they will reasonably fund

the retirement benefit. In other words, the actuary needs to determine an annual contribution to the plan such that there will be enough money at retirement age to pay for the monthly benefit. Based upon the assumptions and method chosen, there is a minimum funding requirement each year. This is referred to as "prefunding," meaning that the plan is funded prior to the participant retiring. Note that under Pension Protection Act of 2006 (PPA), there is only one acceptable method of funding a single employer defined benefit plan for minimum funding purposes and the deductible limit, although other methods of funding may be used to determine a "recommended" contribution that may exceed the minimum required contribution. PPA also prescribes certain required actuarial assumptions to be used (with some choice allowed for the actuary to use).

Examples of traditional defined benefit plans are flat benefit, unit benefit, floor-offset, cash balance, and fully insured IRC §412(e)(3) plans. Defined benefit plans can provide benefits other than retirement benefits (for example death or disability benefits) based on objective criteria. The traditional qualified defined benefit plan provides a stated monthly benefit at retirement for as long as the participant lives. Also, defined benefit plans must, by law, provide benefits to a participant's spouse and may provide benefits to other beneficiaries as well.

In a defined benefit plan, the employer guarantees the benefit that the participant is to receive. The employer bears the investment risk since the employer is required to make sufficient contributions to pay the benefits under the plan and must increase contributions to make up for any unexpected investment losses.

IRC §401(a)(26) requires a minimum number of plan participants. A plan must benefit the lesser of (1) 40% of all employees with a minimum of two, or (2) 50 employees. Plans cannot be aggregated to meet this requirement.

Defined benefit plans are subject to vesting requirements. A traditional defined benefit plan must have a vesting schedule as least as generous as one of the following:

- 5-year cliff – participants are 100% vested upon being credited with 5 years of service, or
- 7-year graded – participants vest 20% per year beginning with being credited with 3 years of service, becoming 100% vested with 7 years of service.

However, an applicable defined benefit plan, such as a cash balance or pension equity plan must vest benefits as least as generous as a 3-year cliff vesting schedule.

If a defined benefit plan is top-heavy, in addition to minimum accrued benefits (unless top-heavy benefits are provided in a defined contribution plan), the vesting schedule must be at least as generous as one of the following:

- 3-year cliff – participants are 100% vested upon being credited with 3 years of

service, or
- 6-year graded – participants vest 20% per year beginning with being credited with 2 years of service, becoming 100% vested with 6 years of service.

As the name suggests, defined benefit plans generally provide participants with a benefit amount that is defined in the plan document. Defined contribution plans, conversely, provide participants with a contribution amount that is defined in the plan document.

There is other terminology that applies to defined benefit plans that should be understood.

Normal retirement benefit (NRB) – The normal retirement benefit is the amount the participant will receive at the plan's normal retirement age. Every defined benefit plan must define a normal retirement age in the plan document. Normal retirement age is not a required retirement age; rather it is the age with reference to which benefit amounts are defined. At each age prior to normal retirement, the participant has earned a portion of the normal retirement benefit. The benefit that has already been earned at any point in time is called the **accrued benefit**. This is an annuity amount (typically paid monthly for life) payable at normal retirement age. The accrued benefit must vest according to a schedule stated in the plan. If a participant terminates prior to normal retirement age, the participant is entitled to receive the vested portion of the accrued benefit either deferred to retirement or immediately if permitted by the plan. The accrued benefit is usually reduced actuarially if the participant elects to receive the benefit immediately. Upon termination, the non-vested portion of the participant's accrued benefit is forfeited, resulting in decreased future employer contributions.

Normal retirement age (NRA) – Normal retirement age is the age at which a participant is eligible to receive retirement benefits. Participants are fully vested upon reaching normal retirement age. Should a participant terminate employment prior to reaching normal retirement age, they may still have earned a portion of their benefit. However, the benefit is generally not payable until they reach normal retirement age unless the plan has special provisions to allow this. Generally, the lower the retirement age when a participant starts to receive benefits, the more it costs the employer to fund the benefit, all other things being equal, since it is expected to be paid for a longer period of time.

Normal retirement age cannot exceed the later of:

- The date the plan participant attains age 65 or
- The fifth anniversary of the date the participant enters the plan.

Normal retirement age cannot generally be earlier than age 62. An exception to this rule applies if such retirement age is no earlier than the typical retirement age for the industry of the employees. This exception depends on a facts and circumstances determination and, in practice, usually cannot apply.

Normal form of benefit – The normal form of benefit defines the standard method of distribution of the normal retirement benefit. Most commonly used is a life annuity. A life annuity is simply a benefit paid (generally monthly) as long as the plan participant is still alive.

Plans often (in fact, usually) allow for optional forms of benefit. A joint and survivor annuity option is required for married participants (unless married for less than a year). This option provides that the benefit will be payable as long as either the participant or the participant's spouse is still alive. The benefit is often reduced (by up to 50%) upon the death of the participant. Since this is a more valuable form of benefit than the life annuity, the amount of monthly benefit is often reduced so that the value of the benefit is equal to the equivalent life annuity. For example, if the life annuity offered by the plan is $1,000 per month, then the joint and survivor annuity may only be $800 per month, to reflect the longer payment period of the joint and survivor annuity. The actual reduction in benefit is determined using specified factors or actuarial equivalent assumptions defined in the plan document.

Another common type of optional benefit is a life annuity with a guarantee of a certain number of payments. This is generally referred to as a certain and life annuity (C&L) or as a certain and continuous annuity (C&C). For example, a 10C&C, or 10C&L (10 years certain and life) annuity would require that payments be paid for the first 10 years, with payments continuing for life (assuming that the plan participant is still alive after 10 years) at the end of the 10-year period. A 5C&C (5 years certain and life) annuity would require that payments be paid for the first 5 years, with payments continuing for life (assuming that the plan participant is still alive after 5 years) at the end of the 5-year period.

A lump-sum payment is also an option commonly found in defined benefit plans. This option provides that the entire current actuarial value of the benefit to be paid can be distributed to the participant immediately. The plan will then have no further financial obligation to the participant. This is a common form of distribution in plans covering a small number of participants, or plans in which the owner is getting most of the benefits. Defined benefit plans can also force the participant to take a lump sum as their distribution option if the value of their benefit is less than or equal to $5,000 (if this is a provision in the plan document).

Actuarial equivalence rates – Defined benefit plans typically allow distributions in other forms (*e.g.,* lump-sum payments or term-certain annuities) in addition to the normal form of benefit. Actuarial equivalence means that the total current actuarial value of the amount paid to the participant is equivalent no matter the form of distribution chosen. As an example, assume the plan provides for a benefit of $1,000 per month starting at age 62 for the life of the participant. If the participant elects a form of distribution that pays over the life of the participant and the life of the participant's spouse, it is likely that the annuity

benefit will be paid for a longer period of time. Thus, the amount of the annuity benefit must be reduced for the forms of distribution to be actuarially equivalent. In this example, the participant may only receive $800 per month starting at age 62, but that $800 will continue in the event of the participant's death for as long as the spouse lives.

A defined benefit plan must provide rates or factors for determining actuarially equivalent benefits. Interest and mortality rates are used to convert the normal form of benefit into other forms of benefit.

Single-sum present value – To determine a current lump-sum amount, the annuity benefit at the plan's normal retirement age is actuarially converted to a single sum at the participant's current age. This single sum present value replaces the monthly payment stream that would have begun at normal retirement age. IRC §417(e) specifies assumptions that may require larger lump sums than those calculated using the actuarial equivalencies specified in the plan.

Generally, the younger the participant when receiving a lump-sum distribution or other benefit option at an early age (in lieu of the annuity at retirement age), the smaller the benefit. This is because the interest discount factor is operating over a longer period of time.

A plan may be designed to pay a benefit larger than the actuarial equivalent of the accrued normal retirement benefit at an earlier age. This is called a subsidized early retirement benefit. The term "subsidized" means that the participant is expected to receive more in value if the benefit is taken early than if payments begin at normal retirement age.

The assets of a defined benefit plan may be more or may be less than the present value of the accrued benefits of the participants. This is not true in a defined contribution plan where the total value of the plan assets is equal to the total of the participants' account balances.

A defined benefit plan tends to favor older employees. Although the Internal Revenue Code (IRC) places limits on the amount of benefits that can be provided in a defined benefit plan, the contribution required to fund the benefit may significantly exceed the maximum annual additions limit on contributions that applies to defined contribution plans. A defined benefit plan can be a way to rapidly accumulate meaningful benefits for an older employee who previously had nothing.

Defined Benefit Plan Formulas

There are two basic types of retirement benefit formulas that can be used in a traditional defined benefit pension plan:

1. Flat benefit
2. Unit benefit

Flat Benefit

Examples of **flat dollar** amount formulas:

- $1,000 a month, payable beginning at age 65 and continuing for the life of the participant.
- $5,000 a month, reduced by 1/15th for each year of service less than 15 years, payable beginning at age 62 and continuing for the life of the participant and the life of the participant's spouse. (If a participant has 12 years of service, the benefit would be: $5,000 x (12/15) = $4,000 per month.)

Examples of **flat percentage of compensation** formulas:

- 50% of Average Compensation, payable beginning at age 65 and continuing for the life of the participant.
- 25% of Average Compensation, reduced by 1/25th for each year of participation less than 25 years, payable beginning at age 62 and continuing for the life of the participant and the life of the participant's spouse.

In the case of either a flat dollar amount or flat percentage of pay, the flat benefit amount can be reduced if a participant's period of service or plan participation is less than a threshold specified in the plan document.

Flat pay formulas are commonly designed to encourage participants to work a minimum number of years to receive full benefits.

Unit Benefit

Under a **unit benefit** formula, the benefit is based on the number of years of service or participation that the participant has.

Examples of unit benefit formulas:

- A monthly benefit payable at age 65 equal to $5 times the number of years of service at normal retirement age. (If a participant was projected to have 30 years of service, the benefit would be: $5 x 30 = $150 per month.)
- A monthly benefit payable at age 65 equal to 1% of average compensation times years of participation at normal retirement age. (If a participant's average monthly compensation was $1,000 and the participant had 25 years of participation at retirement age, the benefit at retirement would be: $1,000 x 1% x 25 = $250 per month.)

A unit benefit formula can specify a maximum number of years of service for which benefits will accrue. For example, a benefit formula can be defined as a monthly benefit payable at age 65 equal to 2% of average monthly compensation times years of

participation to a maximum of ten years. Assuming a participant will have average compensation of $1,000 and years of participation at retirement age of 25, the benefit at retirement would be: $1,000 x 2% x 10 (the 25 years is limited to 10) = $200 per month.

A formula may be integrated with Social Security so that participants with earnings greater than those that count for Social Security earn larger plan benefits. This "permitted disparity" recognizes that employers have already helped fund participants' Social Security benefits and that high wage earners only receive Social Security benefits on part of their compensation. (This will be discussed in more detail in a later chapter.)

In a defined benefit plan, the use of average compensation helps ensure that employees who have significant fluctuation in compensation, for example due to sales commissions, large severance packages, or accumulated vacation pay in the year they terminate employment, don't receive benefits based solely on an artificially high or low year of compensation. Average compensation must be defined in the plan document. It is most often defined as a 3-year, 5-year, or career average.

A defined benefit plan can also provide for post-retirement benefit increases related to increases in the cost of living. For example, a plan can state that the benefits will increase by 1% each year once the participant retires, to reflect a cost of living adjustment. So, a participant who retires at age 65 with a $1,000 benefit will receive $1,010 in the second year and $1,020.10 in the third year, with a 1% increase each year thereafter.

Non-Traditional Defined Benefit Plans

One type of defined benefit plan that has a very different look and feel from a traditional defined benefit plan is a **cash balance** plan. A cash balance plan is similar in appearance to a money purchase plan in that a specific credit is made to an individual account for each participant in accordance with the plan document. However, in a cash balance plan, each participant has a hypothetical account, called a cash balance account, which is credited periodically with pay credits and interest credits. These individual accounts are hypothetical in that they are representative of the value of the participants' benefits and there are no accounts actually set up for participants. Pay credits can be a percentage of compensation or a flat dollar amount. The interest credit on the cash balance account is specified by the plan and can be based on a fixed percentage (*e.g.*, 5%), a variable index, or actual trust earnings.

The sum of the hypothetical account balances do not need to be equal to the plan assets, and the required contribution for a cash balance plan will usually not be the same as the total amount credited to the hypothetical individual accounts.

Cash balance plans have the same funding requirements and rules as traditional defined benefit plans. Minimum funding rules apply and an actuary calculates the minimum and maximum tax deductible contributions.

Another variation of a defined benefit plan is a **floor-offset** plan. Under a floor-offset plan, the retirement benefit determined under a defined benefit plan is offset by the equivalent benefits provided under a defined contribution plan. For example, suppose that the gross benefit under the defined benefit plan prior to applying the offset was equal to $250 per month. The benefit that could be provided in a separate profit sharing plan if the account balance was used to purchase an annuity at retirement age was equal to $50 per month, then the "floor-offset" plan would require that the net benefit in the defined benefit plan be $200 ($250 - $50 = $200).

An **annuity plan** is defined in Treasury regulations as "a pension plan under which retirement benefits are provided under annuity or insurance contracts without a trust." These contracts play the same role as does a trust under a trusteed plan. A plan is an annuity plan as long as the benefit amounts are fully provided by the annuities purchased for each participant. So if the plan provided for $1,500 per month starting at age 62, then it would be required to purchase an annuity for the participant of $1,500 per month starting at age 62.

An IRC §412(e)(3) plan is also known as a **fully insured plan**. A fully insured plan is a defined benefit plan under which all plan assets consist of individual annuity contracts or a combination of life insurance policies and individual annuity contracts. The cash surrender value of these policies at normal retirement age provides the retirement benefit specified in the plan and the employer contribution required each year is simply the insurance or annuity premiums.

Advantages and Disadvantages of Various Defined Benefit Plan Types

Plan sponsors have business reasons for adopting retirement plans. Working with a consultant, the business needs are matched with the proper plan design, which can result in a decision to implement a defined benefit plan. Once it is determined that a defined benefit plan will be included in the overall retirement program of the plan sponsor, it is necessary to compare the various defined benefit plan types in order to select the most appropriate one.

Benefits in a defined benefit plan may be at least partially guaranteed for the plan participants by the Pension Benefit Guaranty Corporation (PBGC). The PBGC is a quasi-government corporation that insures pension benefits in the event that a defined benefit pension plan terminates with assets insufficient to provide all of the accrued benefits. The plan sponsor pays annual premiums to the PBGC for the benefit guarantee. The benefit guarantee can be an advantage for plan participants in a defined benefit plan over those participating in a defined contribution plan, which has no such guarantee. Some plans, however, are not covered by the PBGC. This is discussed in more detail in Chapter 11.

If the plan sponsor is interested in keeping their employees for lengthy careers, a formula with a final average pay component may be desirable. This type of plan provides that

benefits increase retroactively as pay increases. For example, assume the benefit formula is 1% of average compensation times years of service to a maximum of 15 years. The monthly benefit for an employee hired at age 20, still working at age 35 and making $24,000 would be $24,000/12 x 1% x 15 years = $300. If that employee continued to work to age 62 and was making $240,000 when they retired, the monthly benefit would be $240,000/12 x 1% x 15 years = $3,000. In this final average pay type of plan formula, the pay increase is multiplied by all past years of service, not just the year that the salary increase applied. This is different from a cash balance plan or a career average pay plan where a salary increase in a year would only impact the benefit earned in that particular year.

In other instances, the plan sponsor may already be providing a defined contribution plan in which participants accumulate wealth. If the plan sponsor believes it is important for its workforce to have a minimum security level, then perhaps a floor offset plan is a good option. In this case, if the stock market tumbles and defined contribution balances decrease, the defined benefit floor offset plan will make up for it as the defined benefit plan provides at least a minimum ("floor") benefit. Many plan sponsors, however, consider this undesirable since the plan sponsor bears the risk of the potential increase in required defined benefit plan funding.

Perhaps the business owners want to provide for their own retirement over a short time period while providing meaningful benefits to the employees. In that case, the ultimate benefits are intended to reach the maximum legal limits at retirement. These plans often require substantial customization to satisfy nondiscrimination requirements and may be combined with defined contribution plans to provide maximum benefits to owners.

In some instances, the employer just wants to make sure the participants have a decent benefit at retirement so they won't live in poverty after retirement. In that case, a career average plan which bases the benefit on total career pay might be a good idea. A career average plan is one in which the plan provides for a specified percentage of each year's pay. For example, assume the plan provides for a 1% career average pay formula. The participant has compensation in the first year of participation of $30,000, in the second year of participation of $32,000, in the third year of participation of $34,000, in the fourth year of participation of $36,000, and in the fifth (and current) year of participation of $38,000. The participant's benefit would be: (1% x $30,000) + (1% x $32,000) + (1% x $34,000) + (1% x $36,000) + (1% x $38,000) = $1,700 per year. Moderate benefits from the defined benefit plan will supplement Social Security and help participants maintain reasonable income levels in retirement.

There is plenty of flexibility to choose the plan type that most closely fits with the business owner/plan sponsor's objectives. Different plan arrangements have different costs associated with them since the ultimate plan cost depends on how much and when the benefits are paid from the plan to the participants.

Other Benefits Provided in Defined Benefit Plans

Benefits other than normal retirement benefits that may be provided in defined benefit plans are known as **ancillary benefits**. They include:

- Death benefits
- Disability benefits
- Early retirement benefits
- Early retirement window benefits

Plan Provisions, Options, and Features

The various plan provisions, options, and features offered in a defined benefit plan work together to provide a benefit structure. The employer has a wide range of options to design the plan to provide the desired benefits.

Some employers prefer to offer lump-sum benefit distributions for the full benefit amount. This allows the employee to decide how to invest the money and when to spend it. The lump sum form of payment is, by far, the most common choice of payment for terminated participants in small defined benefit plans. As in a defined contribution plan, participants that receive a lump sum distribution from a defined benefit plan may roll their distribution to another qualified plan (if that plan allows) or IRA.

Other employers might have a preference to provide for annuities only. This protects the employee from making poor investment choices and from spending the lump sum frivolously (protecting their benefits over their lifetime). The employer might provide a smaller benefit with a cost-of-living adjustment so that the participant, once retired, gets an increased benefit from year to year to make-up for inflation in the post-retirement years.

For industries that are labor-intensive, such as mining, the employer might be interested in offering disability benefits in the plan, rather than through a group insurance plan.

A plan sponsor might be interested in workforce management and favor the idea of early retirement subsidies. For example, a plan could provide an unreduced benefit at age 60 for those with 15 years of service. An unreduced benefit is one in which the benefit is paid early (without reduction from normal retirement age to reflect the longer distribution period). In this case, the benefit would be paid starting at age 60 (rather than at age 65), which would mean the participant receives five extra years of payments. There would be an increase in costs and/or contribution volatility as a result of the early retirement subsidy if the participants chose to retire early.

Lump sums are the single-sum value of the annuity benefit provided by the plan determined at a specific point in time. In a traditional (non-cash balance) defined benefit plan, specific interest rates, and mortality tables published by the government must be used in valuing the annuity to obtain the minimum lump-sum amount. The interest rates

are based on the current interest rate environment and are published monthly. As a result, lump-sum amounts in traditional defined benefit plans can vary as applicable interest rates change. Lump sum availability could require a more conservative investment approach by the plan sponsor that attempts to mimic the government's calculation of the lump-sum interest rates in order to have sufficient assets available to pay benefits as they arise.

The plan sponsor weighs the different options from the employee and employer perspective including predictions of cost and risk in order to come to a satisfactory plan design. When deciding on benefit levels and features to be offered in the plan, it is important to understand the associated long-term costs. It is desirable to design a plan that is sustainable in the long run with small changes in contribution requirements from year to year. One way to manage this is to consider the various features offered. It is often cumbersome to change things later, should the plan become too costly.

Defined Benefit Plan Design

Plan design is a process by which the plan sponsor ensures that the retirement plan will meet the business' goals and objectives for retirement savings, employee retention, and tax efficiency. Typically, this requires an analysis of the business needs and comparison of how different options can meet the stated needs. Prior to the establishment or amendment of any type of retirement plan, the plan sponsor must consider the business objectives for establishing the plan, which employees should benefit from the plan and what the benefit level should be.

For example, for a company whose critical employees (*i.e.*, owners, officers, key management, etc.) are older than the majority of the employees, a defined benefit plan may make the most sense because it is possible for the critical employees to accumulate a much larger benefit over a shorter period of time than could ever be accomplished in a defined contribution plan. A defined contribution plan is limited in the amount of contribution a plan sponsor can allocate to each employee. Due to this contribution limitation and the age of the employees, there may not be sufficient time to accumulate the desired retirement benefit using a defined contribution plan. Since benefits are limited in a defined benefit plan but contributions are not, and the amount contributed is determined actuarially to accumulate to the desired benefit, a defined benefit plan allows for accumulation of sufficient funds for retirement in a short period of time. This is especially true for older participants.

In plan design, the type of formula considered should be based on how the plan sponsor wishes to benefit certain groups of individuals. If it is important to the plan sponsor to favor employees with long service, then a unit benefit plan may be best. If the plan sponsor wishes to favor employees based on compensation level, then the formula should use a percentage of pay instead of a flat dollar amount.

The plan sponsor should also consider the amount of money it can afford to contribute to

a plan each year. A high dollar amount or percentage of pay formula may require a greater contribution than the plan sponsor can afford. Thus the plan formula should be designed with a budget in mind. The Internal Revenue Service (IRS) requires that a plan be "permanent" and not just a temporary tax haven. Although plans can be terminated for valid business necessity, the sponsor should plan on maintaining a plan for many years since the IRS expects plans to satisfy a "permanency" standard. This standard usually includes a minimum number of years that the plan is in effect. Although not officially defined, the minimum number of years is often cited as three to five.

Comparison of Benefit Formulas

The most important aspect of plan design is the benefit formula. The other features of the plan, such as early retirement provisions, distribution options and definition of pay and service are less important when comparing different plans.

Often a plan sponsor is interested in what benefit levels are offered by competitors. This is an important aspect of benchmarking the company's overall compensation package for their employees.

While it is easy to compare, for example, a 1% of final average pay plan to a 2% of final average pay plan (the 2% plan is twice as generous, all other things being equal), it becomes more complicated to compare other benefit formulas against each other. For example, consider a 1% of final three-year average pay plan times years of service versus a 1.25% of final five-year average pay plan times years of service. Without looking at compensation history, it is difficult to determine the extent of the differences in benefits under these two formulas.

When making a comparison of benefit levels between different plans, it is often helpful to create benefit illustrations. These illustrations compare benefit levels over a career between different plans. This can be very helpful in educating the plan sponsor. Sometimes the employer might be interested in changing plan design. These benefit illustrations provide a nice way of communicating information relating to benefit levels and costs to the plan sponsor.

The technique of projecting benefits from one year to the next is a tool for the administrator and comes in handy in many different situations. For example, a comparison can be made between an integrated formula and a career average pay plan, or perhaps between a cash balance plan and a profit-sharing plan. In any comparison, the concept of projecting benefits is useful.

A good way to learn the concepts of actuarial valuation is to first learn the concepts of projecting benefits. When projecting benefits, you make assumptions as to future salary increases and changes to the taxable wage base (for integrated plans). Usually you assume the employee will continue to work, won't die before retirement age, and won't become disabled (we call these pre-retirement decrements) for purposes of these illustrations. By

comparing benefits from current age to retirement age you can easily see the level of benefits and the relative cost between various plans.

A career average plan is less sensitive to pay changes than a final three-year average plan. The smaller the period over which pay is averaged, the greater the impact on the benefit level and the more wide-ranging the cost can be from year to year.

An integrated plan will reward those with high compensation more than a nonintegrated plan. The integration level is intended to compensate for the skew of Social Security benefits in favor of the lower paid. Let's say you want to compare a 1% of final average pay plan versus an integrated 1% of pay plan, which provides an extra benefit above a certain compensation level. Clearly, the benefits in the integrated plan will be higher for those with larger compensation.

In other instances, it is less obvious which benefit formulas being compared will benefit which groups of employees the most. For example, it is more difficult to compare a benefit formula based upon compensation to one that is based on flat dollar amounts.

In the small plan market, flat dollar plans (for example, $25 per month per year of service) are not prevalent. However, they are often used in plans covering union employees who are paid hourly.

The use of cash balance plans is becoming quite popular especially in combination with a defined contribution plan. Benefit illustrations for cash balance plans can clearly illustrate the pay credits allocated to each participant and these pay credits are usually similar in amount to the plan sponsor's contribution to the plan. For any benefit illustration, it is important to provide the assumptions used and give some idea of how the results would change based on different assumptions.

Advantages and Disadvantages of DB/DC Plan Combinations

A defined contribution plan limits the amount of annual contribution allocations to the IRC §415(c) limit. Some business owners want to contribute more than that, especially if they are close to retirement. Defined benefit plans can allow for substantially higher contributions for older employees so that they appeal to older business owners. Unfortunately, defined benefit plans can be hard to understand and sometimes don't have the same level of appreciation as defined contribution plans. As a result, plan sponsors and their consultants look to a combination of a defined contribution and a defined benefit plan (DB/DC combination), where the defined benefit plan allows the owner to maximize contributions while the rank and file employees receive most of their benefits in the defined contribution plan that they understand and appreciate.

There are several additional reasons for the plan sponsor to offer a DB/DC combination of plans. One reason is that more generous benefits are available to the employees than otherwise could be provided in a single stand-alone plan. However, the maximum tax

deduction may be limited for a DB/DC combination in aggregate in addition to the usual limits for each plan type separately.

Another reason plan sponsors consider combination plans is that the defined benefit plan rarely requires contributions by the employee. This can be an advantage since the benefits available could supplement the balances in the defined contribution plan, where employees save using a 401(k) feature.

Since the benefit is guaranteed in the defined benefit plan, there is no ongoing investment management required by the employee in the defined benefit plan, thus reducing risk that the employee won't have sufficient funds for retirement. This risk reduction provides a nice diversification when considered in the aggregate from a personal financial planning standpoint.

Lastly, by offering both a defined benefit and defined contribution plan the employer has more flexibility in the application of the nondiscrimination and coverage rules.

Disadvantages of offering both a defined benefit and defined contribution plan include increased administration fees and resource commitments to manage. Two different Forms 5500 would need to be filed, two plan documents maintained, and more compliance testing required.

In summary, a plan sponsor who would like to take full advantage of the maximum benefit limits could offer both plan types. Although nondiscrimination testing can be complicated, there is the flexibility to test both plans in various fashions to demonstrate compliance with coverage and nondiscrimination. In particular, small business owners who may not have had a chance in the past to fund for their own retirement may opt for such a plan combination in order to make up for lost time and quickly capitalize on the opportunities over a short period of time, while still providing an understandable and meaningful benefit for employees.

Identify Ways in Which a Plan May Be Frozen

The plan sponsor has the option at any given point in time to voluntarily change plan provisions by amending the plan. In some instances, the sponsor would like to improve benefits. In other instances, the plan sponsor may want to reduce future benefits not yet earned. It generally is not possible to reduce benefits that have been accrued due to the IRC anti-cutback rules. It is, however, well within the plan sponsor's rights to decrease future accruals on a prospective basis.

It is possible to reduce future benefit accruals to zero as long as the employer gives notice to the participants ahead of time. A **hard freeze** is when the employer freezes the accrued benefit as of a certain date. The benefits accrued up until that date are finalized based on salary and service history to date using the benefit formula on the day of the freeze. After that date, no further accruals occur. Even if a participant works for the employer for many

more years and receives regular salary increases, it will not change the benefit payable to the participant beyond the date the plan was frozen. Usually when a plan is frozen in this manner, no new participants are allowed to enter the plan as of the date of the freeze. If no new participants are allowed to enter the plan, then new hires do not need to be provided any information about the plan.

A **soft freeze** occurs when a certain aspect of the plan is frozen. For example, participation might be frozen, but benefits for the currently active participants continue to accrue going forward. In this manner, liabilities are limited to the current group. After a certain date, no new participants can join the plan and eventually, there is no one left in the plan. This is referred to as a closed group.

Another type of soft freeze occurs when pay or service is frozen (but not both). (A hard freeze occurs if both pay and service are frozen, resulting in a frozen benefit.) It is possible for the plan sponsor to freeze pay and allow service to continue. In this manner, benefit determinations are made up of salary history to the date of freeze while using all service to exit date. Alternatively, the plan sponsor could freeze service and let pay continue. In this case, no additional years of benefit service are credited in the benefit calculation but historical pay is used through termination of employment, which gives the participant a form of wage inflation adjustment.

A freeze acts to limit the employer's ultimate liability and reduce the cost of employee benefits. The most extreme case is a hard freeze. Soft freezes can be any one of three basic styles: frozen pay, frozen service, or frozen participation.

Actuary

An actuary is the professional who determines the plan's funded level and the amount of money that a company should contribute to its qualified defined benefit plan. An enrolled actuary is an actuary who has satisfied examination and experience requirements set forth by the Joint Board for the Enrollment of Actuaries, which is a government body. An enrolled actuary must sign certain government forms each year to certify that the required level of funding in a defined benefit plan has been maintained and must certify the funded level of the plan each year. An actuary is not needed to certify the funding of a fully insured IRC §412(e)(3) plan.

Actuarial Assumption

An actuarial assumption is a prediction about the future experience of a defined benefit plan and its participants, taking into account estimated investment earnings, estimates of future mortality, as well as other factors such as rates of termination of employment or disability. The actuarial equivalency factors required in a plan also involve interest and mortality assumptions, but their selection is generally the plan sponsor's responsibility, not the actuary's (although the actuary normally works closely with the plan sponsor to explain the options and recommend assumptions to use).

Differences between Defined Benefit and Defined Contribution Funding

Funding a defined benefit plan means making a contribution to a trust fund set up by the plan sponsor in order to accumulate enough money to pay benefits to plan participants as they become due under the plan. The appropriate contribution each year is determined by the plan's enrolled actuary following law and regulations. Assets within the defined benefit trust are not allocated to individual participants.

Funding a defined contribution plan means making a contribution to the trust fund that satisfies the requirements of the plan. This contribution is then allocated within the trust to the individual participants' accounts according to the plan provisions.

Contribution Levels – Minimum, Maximum and Suggested

The plan sponsor's chosen contribution level to a defined benefit plan for a given plan year will typically lie within a range of the minimum required contribution at the low end and the maximum tax-deductible contribution at the high end. In addition, the plan sponsor may want to target a contribution level which is recommended by the actuary and conforms to the plan sponsor's anticipated funding strategy.

The minimum required contribution is determined using IRC rules. The rules are designed to ensure that once a defined benefit plan is set up, the plan sponsor will fund the plan in a reasonable fashion such that there will be a high likelihood that there are enough assets accumulated in the plan to pay benefits to the participants when due. The minimum contribution amount is determined annually and is documented on the Form 5500 Schedule SB for single employer plans (or Schedule MB for multiemployer plans).

The maximum tax-deductible contribution is also determined using IRC rules. The point is to allow flexibility for the plan sponsor to make large contributions in good business years to accumulate funds when they have cash flow. This maximum contribution level is limited because tax deductions for retirement plan contributions are a direct reduction in tax revenue, and the federal budget requires income and expense to be in line. The maximum contribution limit is determined annually and is typically documented in the actuarial valuation report.

A plan sponsor that contributes the minimum amount year after year could find that the plan's funding level is too low and that the minimum contribution rises substantially each year. If the funding level (*i.e.,* the amount of money available to pay the promised benefits) falls below specified thresholds, the plan could be subject to benefit distribution restrictions (*e.g.,* lump-sum distributions can't be made) and other potentially undesirable situations. For this reason, the plan sponsor may want to target a higher contribution level than the minimum to avoid running afoul of these restrictions. Also, funding levels are shown on the employer's financial statements and plan financial statements. Loan covenants, certain types of insurance, and other business relationships could be undermined in the event of a funding level that is too low. As a result, the plan sponsor may want to make contributions higher than the minimum and higher than what is

necessary to avoid benefit distribution restrictions.

The actuary or benefits consultant discusses the funding objectives with the employer and documents a funding strategy that is intended to apply year after year, setting an expectation for the plan sponsor to meet. An example of a suggested contribution level could be as simple as contributing the minimum required contribution plus 6% of payroll (where the additional contribution above the minimum allowing for some extra funding to help ensure that benefits can be paid, and any restrictions on distributions will be avoided). There are numerous other possibilities to determine a suggested contribution, such as using an actuarial method of calculating contributions other than what is required for minimum funding. These methods are considered to be outside the scope of this course and should be determined only upon consulting with an enrolled actuary.

Ethical Considerations

As a professional, you should always act in an honest and ethical manner. The following principles should guide administration of the plan:

- Protection of participant benefits
- Maintenance of the qualified status of the plan
- Compliance with pension laws
- Honesty and faithfulness to your principles

If in the course of administering a plan you come across a situation that causes you to question whether a participant has received the proper benefit or whether the plan is being administered properly, you should bring this to the attention of the actuary and/or your supervisor. If you are the supervisor, then you must take appropriate action to determine if in fact an error has occurred and, if it has, to properly correct the error.

Some examples of these situations are:

- You discover what appears to be a mistake in the calculation of a benefit payable to a participant.
- You discover that inaction by either the plan sponsor or someone assisting the plan sponsor in administering the plan appears to have caused the plan to violate one of the requirements for plan qualification.
- You find an inconsistency in the contributions reported on the trust accounting and those reported on the Form 5500 Schedule SB, the actuarial report that most defined benefit plans must file annually with the federal government.

The ASPPA Code of Professional Conduct (see Chapter 15) dictates the standards of conduct required of ASPPA members. You should review the Code regularly and be familiar with its provisions. An actuary is also bound by standards of conduct established by the American Academy of Actuaries.

Practical Example of Concepts Learned

Based on the following information, propose a new plan for a company that has never sponsored a retirement plan.

Assumptions

1. There are five nonunion employees, including the owner of the business.

2. The owner is age 55 and makes approximately $100,000 in compensation.

3. The other four employees range from age 25 to 35, and make between $20,000 and $30,000 in compensation.

4. The goal is to maximize the contribution to the plan for the owner and keep the contribution attributable to employees less than the tax savings.

Solution

Step 1. Review data for important details to use in the design of the plan.

Note the following facts:

- The owner of the business wants a large contribution to the plan.
- The owner of the business wants to maximize his or her benefit.
- The other employees are younger and have lower salaries.

It appears that either a defined benefit plan or a DB/DC combination of plans would be the most likely options to achieve the client's objectives.

Step 2. Request additional data necessary for a proposal.

Determine what additional information would be helpful in designing the plan. Request this information from the potential plan sponsor. Additional questions to ask may include:

- Does the sponsor want to benefit employees with long service?

  If so, the design of the defined plan may include a unit benefit formula. If not, a flat benefit or percentage of pay benefit may be appropriate.

- What is the amount of money the sponsor can afford to contribute to the plan each year?

  Although the sponsor initially wants to "maximize contributions," the sponsor may not realize how high the maximum may be, and may have a specific amount in mind.

- Are there any union employees?

  If there are union employees, ask about benefits provided by a union plan. Determine whether the sponsor would like to provide benefits that are similar to the union plan for the nonunion employees.

Step 3. Prepare a proposal.

Based on the goals and objectives of the sponsor and the information obtained, a proposal can be prepared.

Step 4. Explain the nuances of a defined benefit plan to the plan sponsor.

- Benefits at retirement are defined, and may be partially guaranteed by the PBGC.
- Contributions are calculated actuarially, and the services of an enrolled actuary are required.
- The plan is subject to the minimum funding standards, which generally require an annual employer contribution. If the minimum funding standards are not met, penalties will be incurred.
- Forfeitures of benefits reduce future contributions and do not increase benefits for the remaining participants.
- Provide details of other benefits that may be provided by a defined benefit plan (*i.e.,* death, disability and early retirement benefits).
- Compare the defined benefit plan to other types of plans that are available (*i.e.,* defined contribution plans). Explain why the defined benefit plan may best satisfy the sponsor's needs.
- The plan sponsor assumes investment risk in a defined benefit plan and there is a risk of volatility in the minimum required contribution level from year to year.

Step 5. Compare and contrast the defined benefit plan on its own versus the DB/DC combination of plans

- Prepare a benefit projection illustration to show what benefits will be paid from the two plans
- Review the nondiscrimination testing requirements
- Review the contribution requirements
- Review the administrative costs

Self-Test Questions

Circle your responses:

T F 1. A cash balance plan is a type of defined benefit plan.

T F 2. A defined benefit plan has a "unit benefit" type of formula if it provides a monthly benefit equal to 1% of average monthly compensation times total years of participation.

T F 3. A defined benefit plan that provides a $500 monthly benefit to all participants has a "flat benefit" type of formula.

T F 4. The enrolled actuary determines contribution levels for defined benefit plans so that plan assets are expected to be sufficient to pay expected benefits.

T F 5. Since the funding of a defined benefit plan is based on the benefits provided by the plan, the amount of contribution budgeted by an employer is irrelevant when designing a defined benefit plan.

Sample Test Questions

1. Which of the following statement(s) about appropriate approaches to defined benefit plan funding is/are **TRUE**?

   I. Contributions are determined directly by the terms of the plan.
   II. Contributions are determined actuarially, based on assumptions of future events.
   III. The employer can (within limits) choose the contribution level, which is then allocated to the participant accounts as required by the plan.

   A. I only
   B. II only
   C. I and III only
   D. II and III only
   E. I, II, and III

2. All of the following types of plans are considered defined benefit plans, **EXCEPT**:

   A. Floor-offset plan
   B. Target benefit plan
   C. Unit benefit plan
   D. Cash balance plan
   E. Flat benefit plan

3. All of the following statements describe features that may be in a defined benefit plan, **EXCEPT**:

   A. A benefit formula that takes into consideration the number of years of service rendered by an employee
   B. Cost-of-living adjustments of benefits
   C. The right of the plan sponsor to freeze the benefit accruals.
   D. A provision allowing the amount of money contributed to the plan to be totally subject to employer discretion
   E. A provision allowing alternative benefit forms, such as annuities, a lump sum, or installments

4. Which of the following is/are examples of flat-benefit plan formulas?

   I. $25 per month
   II. 75% of compensation averaged over the high three years of service reduced by 1/30th for each year of service less than 30 years
   III. 50% of compensation averaged over the highest five years of service

   A. I only
   B. II only
   C. I and III only
   D. II and III only
   E. I, II, and III

5. All of the following features are allowed in defined benefit plans, **EXCEPT:**

   A. Post-retirement cost of living adjustments to the retirement benefit
   B. The right of all plan participants to direct investments
   C. Disability benefits
   D. Normal retirement benefits offset by benefits provided in a profit sharing plan
   E. The right of participants to choose the form of payment of benefit.

6. All of the following statements regarding defined benefit plans are **TRUE, EXCEPT:**

   A. Termination and death benefits may be provided.
   B. The recommended contribution does not need to be determined by following the rules of the IRC.
   C. Actuaries determine contribution levels making assumptions about future events.
   D. A frozen plan cannot provide future accruals to current active participants.
   E. The plan formula specifies the benefit provided to the participants at retirement.

7. All of the following describe factors that can be part of a traditional defined benefit plan formula, **EXCEPT:**

   A. A benefit based on a percentage of pay per year of service
   B. A benefit reduction if a minimum number of years of service is not attained
   C. A benefit based on a dollar amount of benefit per year of service
   D. An allocation of actual trust earnings per participant for the year
   E. Benefits that reflect permitted disparity

8. You discover that a terminated participant received a lump-sum distribution that was much less than the vested interest. Which of the following actions should you take as a faithful administrator?

   I. Notify the plan sponsor that the participant will never recognize the mistake so it doesn't need to be corrected.
   II. Make sure there are no notes in the file and hope that the IRS doesn't audit the plan.
   III. Notify the plan sponsor that the participant must receive an additional distribution.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

9. You respond to an advertisement for a position that requires the CPC designation. You haven't received your exam results, but you think you may have passed. Which of the following actions do you take?

   I. Sign your name with the CPC designation, intending to reveal the pending status in the interview if asked.
   II. Indicate you are a CPC in your resume since you know the course material.
   III. Ask the company if they are willing to consider a candidate who may have just passed the exam.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

Solutions to Self-Test Questions

1. True
2. True
3. True
4. True
5. False

Explanation of *False* questions:

5. The employer's ability to fund the required contribution level is of primary importance in plan design.

Solutions to Sample Test Questions

1. The correct answer is B.

   Only II is appropriate for defined benefit plan funding. I and III apply to types of defined contribution plans.

2. The correct answer is B.

   A target benefit plan is a defined contribution plan. The others listed are defined benefit plans.

3. The correct answer is D.

   Defined benefit plans require actuarially determined contributions to be made and the benefits provided must be definitely determinable. The employer's discretion as to the contribution level is limited, as the minimum required contribution must be satisfied. The other options are allowed in defined benefit plans.

4. The correct answer is E.

   Each is a flat benefit formula.

5. The correct answer is B.

   Plan participants cannot direct investments in a defined benefit plan.

6. The correct answer is D.

   An example of a frozen plan is one in which currently active participants continue to accrue benefits, while no new entrants are allowed (so that new employees do not accrue benefits).

7. The correct answer is D.

   Earnings are not allocated in a traditional defined benefit plan on a per participant basis. The employer bears the investment risk entirely and plan earnings ultimately affect the amount of contributions the employer is required to make over the life of the plan.

8. The correct answer is B.

   Under the ASPPA Code of Professional Conduct, it is your duty to properly notify the plan sponsor of the error and make sure the error is corrected.

9. The correct answer is B.

   Under the ASPPA Code of Professional Conduct, it is not proper to use designations that have not been officially conferred.

Cautions

- The term "pension" can mean two different things. In certain instances, "pension" refers to retirement plans in general. In other cases, particularly in the IRC and regulations, "pension" refers to a specific type of retirement plan, such as a defined benefit *pension* plan. In the latter case, some defined contribution plans are considered to be pension plans. For example, target benefit plans and money purchase plans are defined contribution plans that are also considered pension plans. Profit sharing plans, including 401(k) plans, are not considered to be pension plans because they do not require certain contribution levels on an annual basis.

- Generally, the retirement plans considered in this study guide are defined benefit pension plans that qualify for special tax treatment under IRC §401(a). In the study guide, these are usually referred to simply as qualified plans.

Review of Key Concepts

- What is a defined benefit plan? Give definitions and list the types.

- How are benefits provided by a defined benefit plan funded? Who does the calculations and what concepts are involved?

- What factors are considered when choosing types of plans and formulas?

Chapter 2
Accrued and Normal Retirement Benefits

Key Terms

- 3 percent method
- 133 1/3 percent method
- Accrued benefit
- Back loading
- Employee contributions
- Mandatory contributions
- Voluntary contributions
- Fractional method
- Front loading
- Normal retirement age
- Normal retirement benefit
- Top-heavy minimum accrual
- Year of participation vs. Year of service

Introduction

In a defined benefit plan, the accrued benefit is the portion of the normal retirement benefit earned by the participant to date. This chapter covers normal retirement benefits, how benefits are accrued, and the requirements associated with the rate of accrual under a defined benefit plan.

A participant's **normal retirement benefit** (NRB) is the benefit the participant would receive if the participant remained employed through **normal retirement age** (NRA), the

age at which the plan assumes the participant will retire. NRB is the stated benefit under the plan's formula and is used when calculating the accrued benefit.

The plan document must state how a participant will accrue the NRB. A participant's **accrued benefit** is the portion of the NRB earned to date. The accrued benefit can be calculated at any point in time. It is based on the plan formula and participant data elements that go into the plan formula such as compensation and years of service or participation. It is payable in the normal form of payment from the plan (*e.g.,* an annuity for the life of the participant).

Benefits may vary with years of service, age, compensation, etc. The benefit is typically expressed in the form of a monthly benefit commencing at NRA (*e.g.,* a single life annuity of $1,500 per month commencing at age 65). Often plans also specify optional forms of benefit payment (*e.g.,* a life annuity with 5 years certain or a single lump sum).

In order to calculate a participant's normal retirement and accrued benefit under the plan, there are several components (normally defined in the plan document) that must be determined. The administrator calculating the benefits will need to know the following:

- Years of Service for Benefit Accrual
- Average Compensation
- NRB Formula (traditional defined benefit plan)
- Accrued Benefit (traditional defined benefit plan)
- Hypothetical Account Balance (cash balance plan)

Crediting Service toward Benefit Accrual

Service is a key building block and key component in most defined benefit formulas and plan designs.

A participant's accrued benefit can be based on years of participation or service earned to date. In some cases, it is based on a percentage of the projected NRB.

Computation period

A computation period is a time period of 12 consecutive months selected by the employer. It is defined in the plan document. A plan must designate a computation period for measuring years of service for eligibility, vesting, and benefit accrual except if the elapsed time method is selected.

For example, the years of service or participation an employee earns will be dependent upon the number of hours worked for the duration of the computation period.

Year of Participation

A year of participation (or credited service) can be any consistent 12 consecutive month period designated by the plan. Under Department of Labor (DOL) regulations, a plan is

not required to take into account any such 12-month period during which the employee has fewer than 1,000 hours of service. Because of this rule, normally, a plan requires the participant to complete at least 1,000 hours of service in a year in order to qualify for a year of credited service. However, a plan can be more liberal by requiring less than 1,000 hours for a year of credited service.

Hours of Service Alternatives

Other alternatives exist and defined benefit plans offer great flexibility to plan sponsors. Seasonal industries, in particular, may require a reduced number of hours of service. A plan may require more than 1,000 hours of service for a year of benefit accrual (*e.g.*, 2,000 hours) provided that prorated accruals are credited for those with fewer than the required hours but more than 1,000 hours. This proration can only be made in plans with certain types of benefit formulas. For example, a fixed benefit of $50 per month per year of participation could use a proration. A plan that establishes benefits on the basis of hours worked or compensation received generally could not use proration since the accrual has already been prorated by adjusting for hours worked or compensation received.

Additional notes

Although any 12 consecutive month period may be used in determining a year of credited service for accrual of benefits purposes, normally the period will coincide with the plan year. The employer may amend the plan to change the accrual computation period, provided that a participant who meets the hours of service requirement on a prorated basis during the short accrual computation period receives credit for a prorated year.

If an employee enters the plan on other than the first day of the 12-month computation period, the plan is required to credit the individual with all hours of service completed during the computation period, including service performed when the employee was not yet a participant.

A plan may provide a manner of crediting the participant with benefit accruals in any reasonable and consistent basis that satisfies IRC §411(a)(5) and complies with the rate of accrual of benefits requirements of IRC §411(b)(1).

Benefit Calculation Examples

At certain times during a participant's career, a benefit calculation may be required. Typical events that give rise to a benefit calculation include:

- Termination from employment
- Retirement from active service
- Issuance of annual benefit statements
- Upon request by the plan participant

At the time of the benefit calculation, the Plan Administrator or third party administrator (TPA) will review the historical census data for the participant. The census data will include name, employee identification number, date of birth, date of hire, service history,

periods of breaks in service, and compensation history. The compensation and service amounts should conform to the plan's definitions. For example, the plan definition of service might be the number of years in which the employee worked at least 1,000 hours. The census data would contain either the running total of years accumulated to the determination date, or instead, it could show the hours worked history and the administrator would calculate the total service for use in determining the benefit amount.

The plan administrator should be careful to make note of the definition of pay under the plan. A wide range of possible elements of pay may be used (provided the definition satisfies the nondiscriminatory definition of compensation under IRC §414(s)). For example, in some plans bonus pay is excluded and in some plans overtime is excluded. The reporting of pay should be consistent from year to year.

Once the plan administrator has all the information needed to calculate a benefit under the plan for a participant, it is a matter of inputting the data into the benefit formula.

Benefits under a unit benefit formula are typically accrued as the formula is written, while benefits under a flat benefit formula require a more complex method of accrual.

Following are a few examples of calculating a benefit under various formula types. The benefit calculation is one of the more basic elements of administering a defined benefit plan. Nevertheless, it is critically important to be able to determine the benefits accurately. In addition, the benefit calculation is a basic ingredient to the actuarial valuation and hence the determination of the minimum required and maximum deductible contribution levels.

DATA USED FOR CALCULATIONS BELOW: Consider a 55-year old, hired at age 45 at the beginning of the plan year with the plan having a NRA of 65.

Age	Total Service to end of prior year	Compensation for prior year
46	1	20,000
47	2	27,000
48	3	29,000
49	4	29,000
50	5	30,000
51	6	30,000
52	7	35,000
53	8	50,000
54	9	60,000
55	10	70,000

The data shown summarizes what is needed to determine accrued benefits for a pension plan participant who is currently age 55 with 10 years of service. The task is to determine

the annual accrued benefit payable at age 65 under each of the benefit formulas below:

Formula 1 – $25 per month per year of service

Formula 2 – 1% of final average compensation times years of service; final average compensation is an average of the highest 3 consecutive years of pay

Formula 3 – 2% of final average compensation times years of service; final average compensation is an average of the highest 5 consecutive years of pay in the last 10

Formula 4 – 1.2% of career average compensation times years of service

Formula 5 – 1% of final average compensation plus 0.25% of final average compensation above covered compensation, times years of service; final average compensation is an average of the highest 5 consecutive years of pay, covered compensation is $40,000

Determination of the Accrued Benefits:

Formula 1 – The accrued benefit payable at age 65 is $25 x 10 years = $250 per month. $250 × 12 = $3,000 per year.

Formula 2 – First determine final average compensation, which is the average of the highest 3 consecutive years ([50,000+60,000+70,000]/3= 60,000). The accrued benefit is 1% x $60,000 x 10 = $6,000 per year.

Formula 3 – First determine final average compensation, which is the average of the highest 5 consecutive years out of the last 10 years the participant worked ([30,000+35,000+50,000+60,000+70,000]/5 = 49,000). The accrued benefit is 2% x $49,000 x 10 years = $9,800 per year.

Formula 4 – Career pay is 20,000 + 27,000 + 29,000 + 29,000 + 30,000 + 30,000 + 35,000 + 50,000 + 60,000 + 70,000 = 380,000. The accrued benefit is 1.2% x $380,000 = $4,560 per year. Note that the same result is achieved by taking a 10-year average of the compensation and multiplying the result by 10 years of service.

Formula 5 – Final average pay is 49,000 (as determined in formula 3). The accrued benefit is ([1% x $49,000] + [0.25% x ($49,000 - $40,000)]) x 10 years = 5,125 per year.

Note that in most defined benefit plan documents the benefit is defined on an annual basis. However, benefits are paid monthly in an amount equal to the annual amount divided by 12. Most valuation system reports show the monthly amounts.

Determination of NRBs

The NRB is calculated by using all credited service expected to be earned through NRA. The same rules of crediting service are used for the NRB as are used for the accrued benefit.

As an example of determining the NRB, consider the following benefit formulas:

Formula 1: 1% of high consecutive 3-year average salary per year of service
Formula 2: $50 per month per year of plan participation
Formula 3: 70% of high consecutive 3-year average salary

Determine the annual NRB for a participant under each of the above benefit formulas, assuming the NRA is 65.

Data for participant:

Date of birth	1/1/1950
Date of hire	1/1/1990
Date of participation	1/1/1995
High 3-year average salary	$60,000

Solution:
The participant will reach age 65 on 1/1/2015. At that time, the participant will have 25 years of service and 20 years of plan participation.

Consider each benefit formula.

Formula 1 Answer:
Under the first formula, 1% of high consecutive 3-year average salary per year of service, the participant's NRB is:

1% × $60,000 × 25 years of service = $15,000 per year

Formula 2 Answer:
Under the second formula, $50 per month per year of plan participation, the participant's NRB is:

$50 × 20 years of plan participation = $1,000 per month, or $12,000 per year

Formula 3 Answer:
Under the third formula, 70% of high consecutive 3-year average salary, the participant's NRB is:

70% × $60,000 = $42,000 per year

Accrued and Projected Benefits

As mentioned previously, the determination of an accrued benefit in a defined benefit plan is the backbone for plan administration and valuation. We have gone through several examples of what it takes to determine an accrued benefit. An accrued benefit is the

benefit which has been earned as of a certain date and includes actual census data for that participant through the date of determination.

In certain instances, it is necessary to determine a projected benefit for a participant. A projected benefit will typically include actual census data through a determination date. In addition, the administrator will use assumptions to predict what the expected census data will be for that participant through the projection date. It is important for an administrator to consult with the plan sponsor and the plan sponsor's actuary to discuss what assumptions should be used. Assumptions can cause projected benefits to vary greatly; therefore, it is important to carefully disclose that projected benefits are based upon assumptions. There are two dates involved with a projection, the date up through which we have actual data and then the future period for which we must make assumptions about what is going to happen. When performing any type of projection it is important to communicate to the plan sponsor what assumptions are made when predicting (for example, the rate – if any -- at which compensation levels are expected to increase) and what the resulting benefit represents.

Typically, service is assumed to increase from the determination date to the projection date. In some instances, it is assumed that future salary is constant at the current level. In some instances, compensation is projected into the future at a given percentage increase (for example at 4% per year). The assumption used to project salary may depend on the purpose of the projection. It is common, for example, to assume compensation will stay the same and only service will increase when disclosing estimated retirement benefits to participants on participant benefit statements. However, when estimating future contribution obligations, it is common to project compensation levels forward at a rate slightly higher than inflation to account for cost of living and merit pay increases likely to be paid in the future. Regardless of the assumptions used, the benefits should be clearly identified as being estimates.

Final benefit calculations include actual historical information through the determination date, while estimated benefits include some element which has not yet been finalized, for example future pay and future service.

Plans That Permit or Require Employee Contributions

A defined benefit plan that requires mandatory contributions or allows for voluntary contributions is considered to be contributory.

Mandatory contributions are required to be made as either (1) a condition of employment or (2) a condition of participation in the plan. Some plans allow for voluntary contributions which are made at the discretion of the employee and subsequently do not affect participation within the plan.

Several reasons exist for an employer to maintain a contributory plan. **Voluntary contributions** provide the employee with the opportunity to accumulate additional funds

for retirement on a tax-sheltered basis, though with after-tax dollars. **Mandatory contributions** reflect an employer's view that employees must share in the responsibility for accumulating pension benefits. There are, however, certain technical issues to consider when a plan provides for employee contributions. There are special rules for determining accrued benefits under a contributory plan. In some cases, employee contributions may be allocated to separate accounts of the employees.

Considerations for Both Mandatory and Voluntary Contributions

Employee contributions to defined benefit plans are made on an after-tax basis. When the contributions are distributed, the portion consisting of the employee contributions without earnings is tax-free, since taxes have already been paid on these employee contribution amounts. The portion of the accrued benefit attributable to employee contributions is fully vested. Unlike other defined benefit accruals, employee contributions count towards the employee's annual addition under the defined contribution 415 limit.

Regarding Voluntary Contributions

Voluntary contributions to a defined benefit plan must be allocated to a separate account for each individual participant and they are subject to the average contribution percentage (ACP) test of IRC §401(m). The accrued benefit attributable to voluntary employee contributions will be determined by the amount of the account balance.

Regarding Mandatory Contributions

Mandatory employee contributions can be required by the plan in order for the participant to accrue a benefit.

The **accrued benefit attributable to mandatory employee contributions** is usually determined by converting the amount of contributions made by the participant to the equivalent normal form of payment (typically a single life annuity) payable beginning at NRA.

Mandatory employee contributions can be viewed as a way of reducing the employer contribution, because the required contribution to fund the plan benefits is reduced by the amount of the employee contributions. An alternative perspective is that employee contributions provide the employer a way of providing larger benefits as a result of requiring employee contributions. Finally, employee contributions may provide employees with the awareness of the generosity of the pension offer because money is tangibly withdrawn from a participant's paycheck.

Contributory plans are no longer widely used because:

- Employee contributions add significantly to the administrative complexity and cost. The administrative costs erode the employer cost saving (from employee contributions).

- Employee contributions may dissuade employees from participating in the plan.
- The employee contributions are on an after-tax basis. Employee contributions to a 401(k) plan are much more popular, since 401(k) contributions are made on either a pre-tax or Roth basis. Plans that have a contributory feature are often plans that have had the feature for many years, predating the availability of 401(k) plans.
- Nondiscrimination standards may apply to after-tax contributions as they do to pre-tax contributions. That is, the standards are not relaxed even though the contributions are on an after-tax basis. The mandatory contributions that are made to a defined benefit plan are subject to the nondiscrimination tests prescribed by the §401(a)(4) regulations, but not to the IRC §401(m) nondiscrimination test.
- PPA introduced so-called "DB-K" plans, which combine in a single document a defined benefit plan along with a 401(k) plan. (DB-K plans are beyond the scope of this course of study.)

Top-Heavy Minimum Benefits

Top-heavy rules are a separate qualification requirement that potentially can impact a participant's accrued benefit. The top-heavy regulations were developed as a way to test if a plan benefit provides disproportionate benefit to certain key employees (defined later). Top-heavy rules focus on total employee benefits, whereas nondiscrimination testing (covered later) focuses on a year-by-year benefit level. The top-heavy rules are defined in IRC 416. If a plan is determined to be top-heavy, then the plan must provide certain minimum benefits and accelerate vesting. The details around these requirements are discussed at greater length below.

A defined benefit plan is top-heavy if, on the determination date, the present value of accrued benefits of all key employees who are participants in the plan exceeds 60 percent of the present value of accrued benefits of all plan participants. A **key employee** is defined as anyone who at any time during the year is:

- An employee who has the authority of an officer with annual compensation in excess of $130,000 as indexed ($170,000 for 2016), or
- An owner of more than 5 percent of the business (commonly called a 5 percent owner), or
- An owner of more than 1 percent of the business (commonly called a 1 percent owner) with annual compensation of more than $150,000 (this dollar amount is not indexed).

Note, if an employee falls into more than one of the categories show above, the employee is still only counted one time. Some family members and some beneficiaries of key employees may also be considered to be key employees. Also, a key employee is deemed key only if the employee meets the definition during the plan year including the determination date.

A former key employee is an employee who met the definition of a key employee in the

past, but no longer does (*i.e.,* an owner who previously sold all of his ownership). The accrued benefit of a former key employee and any distributions to a former key employee are excluded from the top-heavy ratio.

The determination of the value of the accrued benefit is similar to the calculation of a lump-sum distribution amount. The interest rate and mortality table used in these calculations are detailed in the plan document. The present value is calculated on the valuation date during the 12-month period ending on the top-heavy determination date, and typically this is the first day of the prior plan year. For example, valuation results as of 1/1/2015 would generally be used to determine whether a plan is top-heavy for 2016.

Identification of key employees is made as of the determination date. The top-heavy determination date is the last day of the preceding plan year or, in the case of the first plan year, the last day of that first plan year. Distributions paid within the 12-month period preceding the determination date are included in the top-heavy calculation. In addition, in-service distributions paid within the last five years preceding the determination date are included.

Related rollovers (*i.e.,* rollovers or transfers that are either not initiated by the employee or made to a plan maintained by the same employer) must be included in the top-heavy ratio.

All present values and distributions to participants who terminated employment more than one year prior to the determination date are ignored for the top-heavy ratio.

If an employer is a sponsor of more than one plan, all plans, including defined contribution plans, in the required aggregation group must be combined. The required aggregation group includes any plan sponsored by the employer or controlled group of employers in which at least one key employee participates and any other plan of the employer that is taken into account to show that the plans satisfy IRC §410(b) and IRC §401(a)(4). If the required aggregation group is top-heavy as a whole, then all of the plans in the group are top-heavy, even if an individual plan is not top-heavy.

If a defined benefit pension plan is top-heavy, non-key employees who are participants and have at least 1,000 hours of service for the accrual year must receive a minimum top-heavy accrued benefit. This benefit is 2 percent of average annual compensation for each year of plan participation (only counting years for which the plan was top-heavy), not to exceed 20 percent of average annual compensation. Average annual compensation is defined as average annual compensation for the five consecutive years producing the highest average (or fewer years if the participant does not have five years of compensation).

Frozen defined benefit plans are not required to provide additional top-heavy minimum benefits for years in which the plan is frozen. The top-heavy minimum benefits are essentially frozen at the prior year level, and compensation increases while the plan is

frozen are not required to be taken into account.

The top-heavy minimum benefit is a floor on the plan accrued benefit. The participant receives the greater of the top-heavy minimum benefit and the benefit determined under the regular plan formula. The top-heavy minimum benefit is paid in the form of a life annuity beginning at NRA. Benefits paid in a form other than a life annuity are adjusted based upon actuarial equivalence as defined in the plan document.

If the employer sponsors a defined contribution plan covering the same participants, the top-heavy minimum benefit may be provided in the defined contribution plan rather than in the defined benefit plan. To satisfy the top-heavy minimum in a defined contribution plan (when both defined benefit and defined contribution plans exist), an allocation of at least 5% of compensation must be provided.

As a practical matter, small plans (ten participants or less) are almost always top-heavy while large plans (100 participants or more) are almost never top-heavy.

Using the census data for the 55-year old used in the benefit calculations example shown earlier in this chapter, the minimum top-heavy benefit (assuming the plan is and always has been top-heavy and that the employee, a non-key employee, entered the plan immediately upon hire) is determined as follows.

The top-heavy minimum benefit is payable at NRA 65, and is 2% of final average pay times years of top-heavy plan participation. The final average pay is based on the high consecutive 5 years. This is the same benefit as shown in Formula 3 ($9,800 per year). If there had been more than 10 years of top-heavy plan participation, the number of years taken into account would be limited to 10 years. For instance, if the plan had been top-heavy for 25-years, top-heavy service is limited to 10 years. The plan benefit as determined under the plan benefit formula would be compared to this top-heavy minimum benefit, and the larger of the two benefits is the accrued benefit.

EXAMPLE 2-1: Accrued Benefit.
The plan's benefit formula is Formula 2 as shown earlier in the chapter. This is the benefit formula shown in the plan document, which was determined earlier in this chapter to be $6,000 per year.

It was just determined that the minimum top-heavy benefit was $9,800 per year. Therefore, the plan accrued benefit becomes $9,800, rather than $6,000, as a result of the plan being top-heavy. This accrued benefit is used for nondiscrimination testing, benefit calculations and valuation purposes.

Minimum Rates of Accrual

IRC §411(b) is designed to protect participants against excessive **back loading** under which benefits would accrue much faster at later ages, tending to discriminate in favor of

older and possibly higher paid employees. Requiring a minimal rate of accrual for accrued benefits ensures that employees who do not remain plan participants until NRA will still receive a minimum level of plan benefits. Back loading may act to circumvent the minimum vesting rules. Therefore, excessive back loading is prevented by requiring minimum accrual rates. Note that the minimum accrual rules are not part of the nondiscrimination rules. A plan that does not have excessive back loading satisfies IRC §411(b), but is still required to satisfy the nondiscrimination requirements.

Traditional final average pay plans are often considered to be back loaded to some degree by design. This is in contrast to a cash balance plan which generally speaking is not typically designed to be back loaded since the accrual pattern is more like a defined contribution plan. In either case, a defined benefit plan must comply with the accrual requirements, whether it is traditional or cash balance.

The minimum accrual requirements of IRC §411(b) do not prevent **front loading** where benefits accrue faster in earlier years of participation than during later years. An extreme form of front loading would be accruing up to 100 percent of all benefits in the early years of plan participation.

Some plan formulas are based on a percentage of the participant's average compensation (for example the five highest consecutive years, or the last three years as a participant). If the participant does not have as much service as the averaging period requires, then pay is averaged over the shorter period. For example, if a plan requires a 3-year average and the participant has only 2½ years of service, then the salary will be averaged over the 2½ years.

Generally, accruals in defined benefit plans may not cease due to the attainment of a specified age. However, limitations to the total years of service or participation that are counted under the plan or limitations to the total benefit are permissible.

Three Rate-of-Accrual Tests

In order to be considered a qualified plan, the benefit formula in any defined benefit plan must meet, as a minimum, one of the following three **rate-of-accrual tests** for all present and future plan years. Satisfying any one of these three tests will allow a plan to be deemed not back loaded. The three-percent method and the fractional rule provide that compensation over a period of no more than a 10-year period may be reflected in their application. Most cash balance plans base contribution credits on current compensation, and such plans may only use the 133 1/3 percent rule. Note that all plan participants must be fully accrued at NRA, although they may continue to accrue additional benefits if they work beyond that age. Each of the rate-of-accrual tests utilizes a definition of accrual service, which generally is defined to be all years of service with the employer or all years of plan participation.

3 Percent Rule

A plan satisfies the 3 percent rule (or method, if you prefer) if, as of the close of any plan year, the accrued benefit to which each participant is entitled is not less than the number of years of accrual service in the plan, not to exceed 33⅓ years (including years after NRA), multiplied by 3% of the NRB. If the benefit formula allows for the possibility of more than 33⅓ years of accrual service, then the formula does not satisfy the 3 percent rule. Under the 3% rule, each participant's accrued benefit must be at least equal or greater than: 3% x projected benefit (payable if participation begins at earliest possible entry age and service continues to the earlier of NRA or 65). Note, the projected benefit is limited to 100% after 33 1/3 years of service.

The projected benefit must be based on the assumption that the participant's earnings are salary over a period of 10 years.

Generally, the 3 percent method benefit is the NRB, and the minimum accrual at any point is 3% multiplied by years of participation (or service) to date.

EXAMPLE 2-2: 3% Accrual Method.

Consider a 55-year-old new entrant with a NRA of 65. The plan provides a flat benefit at NRA (referred to as NRB). The accruals under the plan must be at least those shown in the last column.

Age	Years of Participation	% of NRB Accrued
56	1	3%
57	2	6%
58	3	9%
59	4	12%
60	5	15%
61	6	18%
62	7	21%
63	8	24%
64	9	27%
65	10	100%

Note that the 3 percent rule could allow for a fairly significant amount of back loading in the last year of benefit accrual before NRA, as is the case in this example.

EXAMPLE 2-3: Accrual Formula Greater than 3% Method.

Consider the same 55-year old new entrant from Example 2-2 with a NRA of 65. The intent is to provide a NRB of $1,000 per month. The plan uses a formula of 100% of Average Compensation, reduced 1/25th for each year of participation less than 25. The NRB is 100% of Average Compensation x 10/25 (since the participant will have 10 years of participation at NRA), for a total benefit of 40% of Average Compensation.

Age	Years of Participation	Accrued Benefit	% of NRB Accrued
56	1	4% of Avg. Comp.	10%
57	2	8% of Avg. Comp.	20%
58	3	12% of Avg. Comp.	30%
59	4	16% of Avg. Comp.	40%
60	5	20% of Avg. Comp.	50%
61	6	24% of Avg. Comp.	60%
62	7	28% of Avg. Comp.	70%
63	8	32% of Avg. Comp.	80%
64	9	36% of Avg. Comp.	90%
65	10	40% of Avg. Comp.	100%

Since the percent of NRB accrued each year is greater than 3%, the benefit formula satisfies the 3% accrual rule for this participant.

133⅓ Percent Rule

The 133⅓ percent rule (method) requires each of the following to be satisfied:

- The accrued benefit payable at the NRA must be equal to the NRB; and
- The annual rate at which any participant can accrue the NRB in any plan year is not more than 133⅓ percent of the annual rate at which the participant can accrue benefits for any prior plan year.

For purposes of this test, increases in benefits for both consecutive and nonconsecutive prior years are compared (*i.e.,* the accrual rate in any given year must be compared to the accrual rate in every earlier year, not just the year before).

EXAMPLE 2-4: 133% Accrual Method.
Consider the unit benefit formula of 1% of average compensation for each of the first 20 years of plan participation, plus 1.33% per year in excess of 20 years. The accrued benefit at any point would be based on this formula, applied to the accrual years through date of determination. This formula satisfies the 133⅓% accrual rule because the later accrual percentage of 1.33% does not exceed the early accrual percentage of 1% by more than 133⅓%. After 25 years of participation (as an example), the accrued benefit would be 26.65% of average compensation ([(20 x 1%) + (5 x 1.33%)] = 26.65%).

EXAMPLE 2-5: **133% Accrual Method Not Satisfied.**
An example of a unit benefit formula that does not satisfy the 133⅓% rule is 1% of average compensation for each of the first 10 years of plan participation, plus 1.25% per year for each of the next 10 years of participation, plus 1.50% per year for each year of participation in excess of 20 years. This formula does not satisfy the 133⅓% rule because the accrual

rate of 1.50% in the 21st year exceeds the 1% rate in years 10 and earlier by more than 133⅓ percent.

The 133⅓% rule provides that any year's accrual cannot exceed any prior year's accrual by more than 33⅓%, recognizing all prospective years of service. Prior benefit formulas (*i.e.,* benefit formulas that have been amended) or accruals that are increased beginning at a specific date are ignored for purposes of satisfying this rule. For example, a NRB of 1% of average compensation for each year of service prior to 1/1/2016, plus 2% of average compensation for each year of service after 12/31/2015 would satisfy the 133⅓% rule. That is true even though 2% is more than 133⅓% of 1%. The reason that the 133⅓% rule is satisfied is that each piece of the formula on its own (before or after the critical 1/1/2016 date) satisfies the 133⅓% rule (1% of average compensation per year of service satisfies the rule, as does 2% of average compensation per year of service. The 133⅓% rule is violated if at some future time a participant (or any prospective participant) might earn a year's accrual that is more than 133⅓% of any prior year's accrual. In making such a determination it is assumed that all relevant factors (compensation, the interest crediting rate if a variable index is used, etc.) will remain the same.

Fractional rule (method)

Under the fractional rule, the accrued benefit to which a participant is entitled at any age must be at least equal to the benefit the participant would have received at NRA, multiplied by a fraction, the numerator of which is the number of actual years of participation (or service) and the denominator of which is the total years of participation (or service) the participant will have if he or she remained employed until NRA under the plan. Note: the IRC specifies as a minimum the use of plan participation for accrual using the fractional rule. However, a longer period of accrual service (such as all years of service) can be used. A shorter period of service (such as years of plan participation starting with the third year) cannot be used.

If average compensation is used in computing the accrued benefits, the number of years averaged cannot exceed the 10 years of service immediately preceding the benefit determination date. This would generally rule out cash balance plans from using this rule since they generally involve pay over a career rather than 10 or fewer years.

Flat benefit formulas (such as 50% of final average pay) generally satisfy the minimum accrual rules by using this method. The formula accrues benefits uniformly over years of accrual service.

Here is a more complete example of the use of the fractional rule. Suppose that the NRB is equal to 2% of the final average 5 years of pay per year of service, with the accrued benefit fractionally accrued based on the NRB determined by projecting service to NRA 65. Given a 45-year old participant with final average pay of $30,000 and 5 years of past service, the accrued benefit can be calculated. The projected retirement benefit is 2% × $30,000 × 25 years of service = $15,000 per year. The accrued benefit is $15,000 × 5/25 =

$3,000. This formula uses a service over service pro-rate, so the accrual each year is equal (1/25 of the total retirement benefit per year, in this example).

Additional examples of the three rate-of-accrual tests

Determine the annual accrued benefit as of 12/31/2015 for the following participant under each of the indicated NRB formulas. Unless you are told otherwise, the benefits accrue as the formula is written.

Participant data:
Date of birth: 1/1/1966
Date of hire: 1/1/2006
Date of plan participation: 1/1/2011
Normal retirement date (NRD): 1/1/2031
Annual salary: $30,000 each year

1. 1% of compensation per year of service.

Solution: The participant currently (as of 12/31/2015) has 10 years of service. The accrued benefit is equal to 1% of $30,000 multiplied by 10 years of service, which is $3,000. One word of caution when determining the number of years of service – beware of questions (like this one) where the date of hire (or participation) is the first day of the year and the date that service ends is the last day of the year. It is easy to be off by one year in your computation.

2. 1% of compensation per year of plan participation.

Solution: The participant currently (as of 12/31/2015) has 5 years of plan participation. The accrued benefit is equal to 1% of $30,000 multiplied by 5 years of participation, which is $1,500.

3. 1% of compensation per year of service for each of the first 6 years of service, plus 1.25% of compensation per year of service for each additional year of service.

Solution: The participant currently (as of 12/31/2015) has 10 years of service. The accrued benefit is equal to 1% of $30,000 multiplied by the first 6 years of service, plus 1.25% of $30,000 multiplied by the next 4 years of service, which is $3,300.

4. 30% of compensation, using the fractional rule over all service.

Solution: The total retirement benefit is equal to 30% of $30,000, which is $9,000. The total service to date (as of 12/31/2015) is 10 years and the total service at retirement will be 25 years. The accrued benefit is equal to $9,000 multiplied by 10/25, which is $3,600.

5. 30% of compensation, using the fractional rule over all participation.

Solution: The total retirement benefit is still equal to $9,000. The total participation to date (as of 12/31/2015) is 5 years and the total participation at retirement will be 20 years. Therefore, the accrued benefit is equal to $9,000 multiplied by 5/20, which is $2,250. Note that the statutory fractional rule uses participation; as you can see by comparing the results here with those of the previous formula, using service instead of participation gives a larger accrued benefit. Therefore, the use of service satisfies the statutory fractional rule.

6. 30% of compensation, using the fractional rule over all service, but in no event more than 15 years of service.

Solution: The total retirement benefit is still $9,000. The total service to date (as of 12/31/2015) is 10 years and the total service at retirement will be 25 years. However, service may not exceed 15 years. The accrued benefit is equal to $9,000 multiplied by 10/15, which is $6,000. In this situation, the accrual occurs more rapidly than under the statutory fractional rule. This is allowed under IRC §410(b); however, it may cause a problem as far as satisfying the nondiscrimination rules of IRC §401(a)(4).

7. 1% of compensation per year of service, using the fractional rule over all service.

Solution: The participant will have 25 years of total service at retirement. So, the total retirement benefit is equal to 1% of $30,000 multiplied by 25 years of service, which is $7,500. The total service to date (as of 12/31/2015) is 10 years and the total service at retirement will be 25 years. The accrued benefit is equal to $7,500 multiplied by 10/25, which is $3,000. Note that this could have been calculated more directly by simply calculating 1% of $30,000 multiplied by 10 years of service to date, which is $3,000.

8. 1% of compensation per year of service for each of the first 6 years of service, plus 1.25% of compensation per year of service for each additional year of service, using the fractional rule over all service.

Solution: The participant will have 25 years of total service at retirement. So, the total retirement benefit is equal to 1% of $30,000 multiplied by 6 years of service plus 1.25% of $30,000 multiplied by 19 years of service, which is $8,925. The total service to date (as of 12/31/2015) is 10 years and the total service at retirement will be 25 years. The accrued benefit is equal to $8,925 multiplied by 10/25, which is $3,570.

For benefit formulas 9 - 12, explain whether the 133⅓% rule is satisfied.

9. 1% of compensation for each of the first 10 years of service, plus 1.4% of compensation for each year of additional service.

Solution: The 133⅓% rule is not satisfied since the accrual rate of 1.4% in the later years is more than 133⅓% of the 1% accrual rate in each of the first 10 years. The formula would satisfy the 133⅓% rule if no more than 1⅓% of compensation were used for each year of service in excess of 10 years.

10. 1.4% of compensation for each of the first 10 years of service, plus 1% of compensation for each year of additional service.

Solution: The 133⅓% rule is satisfied since the accrual rate of 1% in the later years is not more than 133⅓% of the 1.4% accrual rate in each of the first 10 years. Note that this formula frontloads. That is, it provides a larger benefit in the early years of accrual than in the later years. That is acceptable. The purpose of the minimum accrual rules is to prevent back loading, which provides a smaller benefit in the early years of accrual than in the later years.

11. 1% of compensation for each of the first 5 years of service, plus 1.2% of compensation for each of the next 15 years of service, plus 1.4% of compensation for each year of additional service.

Solution: The 133⅓% rule is not satisfied since the accrual rate of 1.4% in the later years is more than 133⅓% of the 1% accrual rate in each of the first 5 years. The formula would satisfy the 133⅓% rule if no more than 1⅓% of compensation were used for each year of service in excess of 20 years. Note that the benefit formula never allows the increase in accrual from one year to the next to exceed 133⅓%. However, all prior rates of accrual must be looked at when testing for satisfaction of the 133⅓% rule.

12. $20/month for each of the first 15 years of service, plus $26/month for each year of additional service.

Solution: The 133⅓% rule is satisfied since the accrual rate of $26 in the later years is not more than 133⅓% of the $20 accrual rate in each of the first 15 years. Note that the comparison is the same for flat dollar accrual as it is for a percentage of compensation accrual.

For benefit formulas 13 and 14, explain whether the 3% rule is satisfied.

13. 1% of compensation for each of the first 10 years of service, plus 1.4% of compensation for each of the next 20 years of service.

Solution: The total benefit at retirement for a participant with 30 years of service is 1% of compensation for the first 10 years, plus 1.4% of compensation for the next 20 years, for a total of 38% of compensation. 3% of the total benefit of 38% of compensation is 1.14% of compensation. However, the 3% rule is not satisfied since the accrual rate during each of the first 10 years is only 1%, which is less than 1.14%. Note that in testing benefit formulas to see if they pass the 3% rule, the worst case should always be tested. This is the case where a participant has the maximum amount of service allowed under the benefit formula.

14. 1% of compensation for each of the first 5 years of service, plus 1.2% of compensation for each of the next 15 years of service, plus 1.4% of compensation for each of the next 5 years of service.

Solution: The total benefit at retirement for a participant with 30 years of service is 1% of compensation for the first 5 years, plus 1.2% of compensation for the next 15 years, plus 1.4% of compensation for each of the next 5 years, for a total of 30% of compensation. 3% of the total benefit of 30% of compensation is .9% of compensation. The 3% rule is satisfied since the accrual rate during each year of accrual is greater than .9%.

Exception to Accrual Rules for IRC §412(e)(3) Plans

Fully Insured Plans which are funded exclusively by the purchase of life or annuity insurance contracts and which satisfy the requirements of IRC §412(e)(3) are not required to meet any of the three rate-of-accrual tests. However, the following requirements must be satisfied:

- Each employee's accrued benefit at all times is not less than the cash surrender value of the participant's insurance contracts.
- Premiums payable for the plan year, and all prior plan years, under such contracts have been paid before lapse or there is reinstatement of the policy.
- No rights under such contracts have been subject to a security interest at any time during the plan year.
- No policy loans are outstanding at any time during the plan year.
- The policies must provide for level premiums.
- The benefits provided by the policies at normal retirement must equal the NRB called for by the plan.
- Benefit formulas in the plan must be based on participation not service.
- There are some additional limitations placed on the use of permitted disparity.

Protected Benefits and their Prospective Elimination

The anti-cutback rules of IRC §411(d)(6) generally protect plan participants' accrued benefits from being reduced or eliminated by plan amendment or plan termination. With limited exceptions the protection extends to:

- Accrued benefits, including actuarial equivalence options;
- Early retirement benefits and retirement-type subsidies; and
- Optional forms of benefit, including the timing of payment.

The best rule of thumb to use in determining whether a benefit is protected under IRC §411(d)(6) is to remember that a benefit that has been already accrued cannot be taken away (at least, not without IRS approval). This rule does not apply to an incidental benefit (which makes sense since incidental benefits are not the primary purpose of the plan).

Keep in mind that the "benefit" is not just the amount of benefit. The benefit also consists of the form in which it is paid, any optional form that can be elected and the age at which it is to be paid. Clearly, the most obvious anti-cutback violation would be a reduction in the dollar amount of benefit that has already been accrued. Other cutbacks are not as obvious.

The removal of an optional form is generally considered a cutback in the benefit. (There are exceptions to this rule when the option being removed falls within a similar "family" of optional forms provided that another form in that "family" is still available.) It is allowed, however, to remove an optional form of benefit only for future benefit accruals. For example, suppose a plan has a normal form of a life annuity, with optional forms of a 100% joint and survivor annuity (100% J&S) and a 10 year certain and life (10C&C). If the 10C&C option is removed, the benefit accrued to date must be allowed to be received on a 10C&C basis, but future accruals would only have the option of being paid as a life annuity or a 100% J&S.

Remember that optional forms of benefits are generally calculated as the actuarial equivalent of the benefit under the normal form. A change in the actuarial assumptions would be considered a cutback in benefit if the new assumptions would yield a smaller optional benefit. Therefore, the minimum optional benefit would be that calculated under the old assumptions.

Finally, a change in retirement age would be a cutback in benefit if the new retirement age exceeds the old retirement age. It should be clear that this is a cutback since the value of the benefit would be reduced at the later age (fewer payments would be made).

Note that it is allowable to reduce future benefit accruals, as long as the benefits already accrued are preserved. A reduction of future benefit accruals is typically done by amending the benefit formula such that the percentage of salary or flat dollar amount earned in future years is less than that earned in past years. Protected benefits can be eliminated prospectively provided the accrued portion is preserved as a grandfathered benefit.

Benefits that are not protected under IRC §411(d)(6) include:

- Ancillary life insurance protection
- Accident or health insurance benefits
- Social Security supplements described in IRC §411(a)(9)
- The availability of loans (other than the distribution of an employee's accrued benefit upon default under a loan)
- The right to make after-tax employee contributions
- Administrative procedures for distributing notices, information or election forms
- Early retirement window benefits

Protected benefits that may be reduced:

- A plan may be amended to provide for the involuntary distribution (*i.e.,* cash-out provisions) of an employee's benefit to the extent such involuntary distribution is permitted under the law. The maximum involuntary lump-sum cash out that is allowed in a defined benefit plan is $5,000.
- Redundant optional forms of benefit may be eliminated. Redundant optional forms are forms within the same "family" of benefits. The regulations under IRC §411(d)(6) describe four "families" of benefits: J&S options with the survivor percentage of at least 50% and no more than 100%, J&S options with the survivor percentage less than 50%, term certain and life annuities with the certain period of no more than 10 years, and term certain and life annuities with the certain period greater than 10 years. As an example, if a plan has both an optional life with 5 years certain and a life with 10 years certain form available, the plan can be amended to remove the 5 years certain and life annuity option without violating the anti-cutback rules because both options are in the same family, and there is still an option in that family remaining in the plan.

The regulations under IRC §411(d)(6) describe certain core options, including a life with 10-year certain option and a joint and 75% survivor annuity option. Generally, if options within a family are being eliminated, then at least a core option must be left in the plan (in order to satisfy the anti-cutback rules without the need to consider grandfathered benefits), if such an option exists in the family. For example, consider a plan with 50%, 60%, 70%, 80%, 90%, and 100% J&S optional forms of benefit. The plan sponsor would like to eliminate as many of these options as possible, because having so many options complicates the administration of the plan. All of these options are in the same family, so generally they can all be eliminated provided that at least one of them is remaining. Generally, that one would be a 75% J&S option (the core option). However, as an alternative to this core option, the regulations allow for all options in this family to be eliminated provided both the 50% and 100% options remain.

A plan may be amended to eliminate or reduce an IRC §411(d)(6) protected benefit if the following three requirements are met:

1. The amendment constitutes timely compliance with a change in law affecting plan

qualification;
2. There is an exercise of IRC §7805(b) relief by the Commissioner; and
3. The elimination or reduction is made only to the extent necessary to enable the plan to continue to satisfy the requirements for qualified plans.

Generally, plan amendments that retroactively reduce accrued benefits are not permitted; however, limited exceptions do exist.

Practical Examples of Concepts Learned

Problem #1

Use the following information to determine the minimum monthly accrued benefit of the participant as of December 31, 2015 under both the 3 percent method and the fractional rule (using years of participation).

Assumptions

1. The XYZ Corp. Pension Plan is a calendar-year plan, originally effective January 1, 1985.

2. The eligibility requirements under the plan are attainment of age 20½ and six months of service. Eligible employees enter the plan as of the first day of the plan year following the date these requirements are met.

3. Benefits under the plan are 50% of compensation, payable at the participant's NRD (the date a participant attains age 65). Compensation is the highest consecutive three years' average compensation.

4. A participant is credited with a year of participation for each plan year in which the participant completes 1,000 hours of service. Each of the following participants works 40 hours per week and is credited with 2,080 hours of service per year.

Participant Data

Participant	Date of Birth	Date of Hire	Date of Participation	Average Compensation
Brown	11/21/1971	12/01/1992	01/01/1994	$60,000
Black	07/21/1988	01/03/2013	01/01/2014	$30,000
White	09/20/1977	08/01/2007	01/01/2009	$18,000

Problem #2

ABC Corp. is setting up a new defined benefit plan. Determine whether the following proposed formula satisfies the 133⅓ percent rule. Explain why or why not.

- 3 percent of compensation for the first ten years of participation; plus
- 4 percent of compensation for the next ten years of participation; plus
- 5 percent of compensation for the next ten years of participation.

Problem #3

XYZ Corp. is considering the following proposals for amendments to its defined benefit plan. For each proposed change, determine whether it will be a violation of the anti-cutback rules and give the client your reasons.

A. The plan formula will be reduced from 75% of average compensation to 50% of average compensation. Current accrued benefits will not be reduced.
B. The plan will be amended into a profit sharing plan that has an immediate lump sum as its only form of distribution.
C. The availability of life insurance is to be eliminated from the plan.
D. The plan currently does not provide for the cash-out of vested benefits of $5,000 or less. It is proposed that this cash-out rule be added.
E. The corporation would like to have discretion over the availability of lump-sum distributions so that it can be denied to their less fiscally responsible employees.

Solutions

Problem #1

Step 1. Calculate monthly accrued benefits under the 3 percent method.

Under the 3 percent method, the accrued benefit to which each participant is entitled cannot be less than 3 percent of the "3 percent method benefit" multiplied by the number of years of participation in the plan, not to exceed 33⅓ years. The "3 percent method benefit" is the benefit a participant would be entitled to under the plan if the participant entered the plan at the earliest permissible entry age and remained continuously in the plan until the earlier of NRA or 65. Generally, the "3 percent method benefit" is simply the NRB, and the minimum accrual at any point in time is this benefit multiplied by 3 percent multiplied by years of participation (or service depending on the plan) to date.

A. Calculate the monthly retirement benefit.

Brown	= ($60,000 / 12) x 50% = $2,500
Black	= ($30,000 / 12) x 50% = $1,250
White	= ($18,000 / 12) x 50% = $ 750

B. Determine monthly accrued benefits under the 3 percent rule.

Multiply 3 percent of the monthly retirement benefit by years of participation. As of December 31, 2015, Brown has 22 years of participation (1994 through 2015). Black has 2 years of participation (2014 and 2015) and White has seven years of participation (2009 through 2015). As of December 31, 2015, each participant must have an accrued benefit of at least:

Brown	= $2,500 x 3% x 22 = $1,650.00
Black	= $1,250 x 3% x 2 = $ 75.00
White	= $ 750 x 3% x 7 = $ 157.50

Step 2. Calculate monthly accrued benefits under the fractional rule.

The accrued benefit to which a participant is entitled on separation from service must be at least equal to the benefit the participant would have received at NRA, multiplied by a ratio. Under the XYZ Corp. Pension Plan, the ratio is computed by dividing the number of actual years of participation by the total years of participation at age 65.

A. Determine projected retirement benefits.

Brown	= ($60,000 / 12) x 50% = $2,500
Black	= ($30,000 / 12) x 50% = $1,250
White	= ($18,000 / 12) x 50% = $ 750

B. Determine actual years of participation.

As of December 31, 2015, Brown has 22 years of participation (1994 through 2015). Black has two years of participation (2014 and 2015) and White has seven years of participation (2009 through 2015).

C. Determine projected years of participation (YOP) at NRA.

Participant	DOB	NRA	DOP	YOP
Brown	11/21/1971	11/21/2036	01/01/1994	43
Black	07/21/1988	07/21/2053	01/01/2014	40
White	09/20/1977	09/20/2042	01/01/2009	34

D. Determine monthly accrued benefits under the fractional rule.

Brown	= $2,500 x (22 / 43) =	$1,279.07
Black	= $1,250 x (2 / 40) =	$ 62.50
White	= $ 750 x (7 / 34) =	$ 154.41

Problem #2

Under the 133⅓ percent rule, the annual rate at which a participant can accrue benefits in any plan year cannot be more than 133⅓ percent of the annual rate at which the individual can accrue benefits for any prior plan year.

A formula of 3 percent of compensation for the first ten years of participation, plus 4 percent for the next ten years of participation, plus 5 percent for the next ten years of participation, does not satisfy the 133⅓ percent rule. This is because the 5 percent accrual rate is more than 133⅓% of the 3 percent accrual rate, as follows:

5 /3 = 1.667, which is greater than 1.333

To satisfy the 133⅓ percent rule, the maximum accrual rate is 4:

3 x 1.333 = 4

This rule must be satisfied for every year, and the years are compared both consecutively and nonconsecutively.

Problem #3

Amendment A: OK

An amendment reducing the benefit formula from 75% to 50% of average compensation is not a violation of the anti-cutback rules. Accrued benefits will not be reduced, and benefits that have not yet accrued may be reduced prospectively.

Amendment B: Violation

An amendment converting the defined benefit plan to a profit sharing plan is a violation of the anti-cutback rules. The defined benefit feature of a defined benefit plan and the individual account feature of a defined contribution plan are IRC §411(d)(6) protected benefits. Therefore, the elimination of the defined benefit feature by a plan amendment converting the plan to a profit sharing plan would violate IRC §411(d)(6).

Amendment C: OK

An amendment that eliminates life insurance is not a violation of the anti-cutback rules since life insurance is not a protected benefit.

Amendment D: OK

An amendment adding the $5,000 involuntary cash-out rule is not a violation of the anti-cutback rules. The involuntary cash-out rule may be added to the extent permitted under the law.

Amendment E: Violation

An amendment that gives the plan sponsor discretion over the availability of lump-sum distributions is a violation of the anti-cutback rules because of the addition of employer discretion. However, if the employer can define objective, nondiscriminatory criteria to determine the availability of lump-sum distributions, it may be possible to satisfy the employer's objective for benefits that accrue in the future.

Self-Test Questions

Circle your responses:

T F 1. It is permissible to front load benefits.

T F 2. Benefits may be back loaded as long as they meet one of the allowable accrual patterns.

T F 3. Fully insured plans must meet one of the three accrual patterns.

T F 4. Mandatory employee contributions must be credited with actual earnings and kept in a separate account.

T F 5. A plan must maintain separate account balances for voluntary employee contributions.

T F 6. A unit benefit accrual pattern of 5% for the first five years and 2% thereafter meets one of the acceptable accrual patterns.

T F 7. A unit benefit accrual pattern of 3% for the first five years, 3.75% for the next five years, and 4.25% thereafter meets one of the acceptable accrual patterns.

T F 8. A unit benefit accrual pattern of 3% for the first five years, 2% for the next five years, and 3% thereafter meets one of the acceptable accrual patterns.

T F 9. It is permissible to require employee contributions as a condition to accrue a benefit.

T F 10. It is permissible to require employee contributions as a condition of employment.

T F 11. In a mandatory contribution plan, employee contributions allocated to a separate account are subject to the average contribution percentage test of IRC §401(m).

T F 12. A defined benefit plan participant may contribute pre-tax contributions.

T F 13. A defined benefit plan may be amended into a defined contribution plan with each participant's account balance set equal to the present value of their accrued benefit, thereby eliminating the defined benefit feature.

T F 14. A plan may be amended to provide for a lump-sum involuntary distribution of up to $5,000.

T F 15. A plan that provides joint and survivor annuity options of 50%, 75%, and 100% can be amended to eliminate the 75% survivor annuity option.

T F 16. A loan provision can be eliminated.

T F 17. An insured death benefit can be eliminated.

T F 18. The option to receive a 10-year certain annuity can be eliminated on benefits that have already accrued.

T F 19. The option to receive a 10-year certain annuity can be eliminated on benefits that have not yet accrued.

T F 20. The lump-sum distribution amount can be decreased by amending the plan's definition of actuarial equivalence.

Sample Test Questions

1. Which of the following statements regarding accrued benefits under qualified defined benefit plans is/are **TRUE**?

   I. The accrued benefit is usually expressed as a monthly benefit beginning at the NRA.
   II. Generally, a benefit formula is designed so that almost no benefit accrues during the early years of the plan, with a rapid accrual near NRA under the plan.
   III. A common method of determination of the accrued benefit is the NRB multiplied by a fraction where the numerator is the total years of participation to date of computation and the denominator is the total years of possible participation to NRD under the plan.

   A. I only
   B. II only
   C. I and III only
   D. II and III only
   E. I, II, and III

2. Using the following data, calculate a participant's minimum accrued benefit as of January 1, 2016 under the fractional accrual method based on participation.

NRB	$2,500/month
Plan year	Calendar year
Date of participation	January 1, 2007
NRD	January 1, 2041
Date of hire	January 1, 2004

   A. $588.24
   B. $642.86
   C. $661.76
   D. $714.29
   E. $735.29

3. All of the following statements regarding benefit accruals under a defined benefit plan are **TRUE**, **EXCEPT**:

   A. An employee who works 1,500 hours in a plan year need not receive a full benefit accrual for that year.
   B. A benefit accrual need not be provided to a participant who works less than 1,000 hours in a year.
   C. The computation period for benefit accruals must be the plan year.
   D. An accrued benefit is generally expressed as a monthly annuity beginning at the participant's NRA.
   E. The plan document must state the basis for determining the actuarial equivalent of the accrued benefit.

4. Which of the following statements regarding mandatory contributions in a defined benefit plan is/are **TRUE**?

   I. The mandatory contributions can be a condition of plan participation.
   II. Mandatory contributions are permitted in new defined benefit plans.
   III. Mandatory contributions are accumulated using actuarial assumptions prescribed by law.

   A. I only
   B. II only
   C. I and III only
   D. II and III only
   E. I, II, and III

5. All of the following statements regarding contributory defined benefit plans are **TRUE**, **EXCEPT**:

   A. The employee contributions can be made only on an after-tax basis.
   B. All employee contributions to a defined benefit plan are subject to IRC §401(m) testing.
   C. These plans are not widely used.
   D. Employee contributions count towards IRC §415 limits.
   E. The employee contributions are fully vested.

6. Which of the following accrual patterns represents acceptable accrual rates expressed as a percentage of the NRB for an employee who was hired at 59, entered the plan at 60, and has a retirement age of 65?

	Percentage of NRB Accrued				
Years of Participation	1	2	3	4	5
Accrual Pattern					
I.	3	6	9	12	100
II.	15	30	45	60	75
III.	40	60	80	100	100

A. I only
B. II only
C. I and III only
D. II and III only
E. I, II, and III

7. All of the following statements regarding the accrual of benefits are **TRUE, EXCEPT**:

A. If certain requirements are met in an IRC §412(e)(3) fully insured plan, the accrued benefits do not have to meet any of the three statutory accrual rules.
B. The 133⅓ percent method only compares the benefit accrual rates in consecutive years.
C. The accrual rules do not prevent a plan from using a more rapid accrual formula.
D. The accrual rules allow limited back-loading of benefits.
E. Accruals may not cease upon attaining a particular age.

8. All of the following benefit formulas satisfy the 133⅓ percent rule **EXCEPT:**

A. 2% of compensation per year for the first 20 years and 1% thereafter.
B. 1% of compensation per year for the first 10 years and 1.25% for the next 10 years, 0% thereafter.
C. 2% of compensation per year for the first 10 years, 2.5% for the next 10 years and 3% for all years thereafter.
D. 2% of compensation per year for the first 10 years, 2.5% for the next 10 years and 1.5% for all years thereafter.
E. 2% of compensation per year for the first 25 years and 0% thereafter.

9. Based on the following information, what is the participant's annual accrued benefit as of his termination date based on the fractional accrual rule using years of participation? At least 1,000 hours of service is required to be credited with a year of participation.

Plan Information	**Participant Data**
The plan year is the calendar year	Participant enters plan at the middle of the year on 7/1/16
Retirement age 65	Participant terminates on 12/31/16 with credit for 500 hours of participation but he worked 1,000 hours during the plan year
The plan is not top-heavy	Participant's NRD is 12/31/25
NRB is 50% of average compensation	Participant's average compensation is $20,000

A. $0
B. $400
C. $500
D. 1,000
E. $1,111

10. Calculate a non-key participant's annual accrued benefit at age 50 based on the following data:

Age at hire	40
Age at participation	45
High 3-year average pay	$60,000
High 5-year average pay	$50,000
NRA	65
Top-heavy status	Plan has always been top-heavy
Benefit formula	25% of high 3-year average pay
Normal form of benefit	Life only
Accrual method	Fractional based on years of participation

A. $3,125
B. $3,750
C. $5,000
D. $6,000
E. $10,000

11. Based on the following information, what is the top-heavy percentage that will determine the top-heavy status for the plan year beginning 1/1/2016 for an ongoing defined benefit plan? (There are no former employees.)

All Employees	**PVAB as of 1/1/2015**	**PVAB as of 1/1/2016**
Key 1	$90,000	$85,000
Key 2	$90,000	$98,000
Non-key 1	$20,000	$23,000
Non-key 2	$0	$ 3,000

A. 11%
B. 79%
C. 88%
D. 90%
E. 99%

12. Which of the following statements regarding the anti-cutback rules is/are **TRUE**?

I. The availability of life insurance is a protected benefit in a defined benefit plan.
II. Actuarial equivalence rates for future benefit accruals may be reduced prospectively provided that accrued benefits are preserved.
III. With a few exceptions, the form in which an accrued benefit may be distributed is protected.

A. I only
B. II only
C. I and III only
D. II and III only
E. I, II, and III

13. Which of the following changes to benefit forms or options may be made without violating the anti-cutback rules?

I. Adding an involuntary cash-out provision to the extent permitted under the law.
II. Reducing the NRB to the extent not already accrued.
III. Eliminating the plan loan provisions.

A. I only
B. II only
C. I and III only
D. II and III only
E. I, II, and III

14. All of the following can be cut back or eliminated, **EXCEPT:**

    A. Social Security supplements
    B. Loan provisions
    C. Ancillary life insurance
    D. The right to make after-tax employee contributions
    E. The right to receive distributions 3 months after termination of employment

15. All of the following plan changes are allowed, **EXCEPT:**

    A. Reduction in actuarial equivalence rates with respect to future accruals
    B. Elimination of all annuity forms on plan termination
    C. Reduction in lump sums due to an automatic provision that implements IRC §417(e) rates that change annually
    D. Elimination of the loan provision
    E. Reduction of life insurance benefits

16. Which one of the following amendments are permitted under IRC §411(d)(6)?

    A. An amendment eliminating the 10-year certain and life optional form of payment for HCEs.
    B. An amendment delaying distributions until NRA in a plan that previously provided immediate distributions to terminees.
    C. An amendment requiring the automatic cash-out of benefits if the lump sum is less than $10,000.
    D. An amendment eliminating the joint and 100% survivor form of payment as long as the plan still allows for payment of benefits in the joint and 50% survivor form.
    E. An amendment eliminating lump-sum payments with respect to future benefit accruals.

Solutions to Self-Test Questions

1. True
2. True
3. False
4. False
5. True
6. True
7. False
8. False
9. True
10. True
11. False
12. False
13. False
14. True
15. True
16. True
17. True
18. False
19. True
20. False

Explanations of *False* questions:

3. Fully insured plans must base accrued benefits on the cash value of the insurance policy.

4. Mandatory employee contributions are generally credited with a stated interest rate, not actual interest.

7. This fails the requirement since 4.25% is more then 133 1/3% of 3%.

8. This fails the requirement since the second 3% is more than 133 1/3% of 2 %.

11. The mandatory contributions that are made to a defined benefit plan are subject to the discrimination tests prescribed by the IRC §401(a)(4) regulations, not to the IRC §401(m) nondiscrimination test.

12. Contributions are made on an after-tax basis.

13. The defined benefit features cannot be amended out of the plan. The defined benefit plan would need to be terminated and a separate defined contribution plan established.

18. The anti-cutback rules generally apply to both accrued benefits and optional forms.

20. A defined benefit plan cannot be amended to lower the amount of any form of accrued benefit.

Solutions to Sample Test Questions

1. The correct answer is C.

   Statements I and III are correct regarding the definition of accrued benefits and the fractional method. Statement II is incorrect since it describes back loading, which is prohibited by IRS regulations.

2. The correct answer is C.

   The number of years of participation at NRA is 34 (2041-2007). The number of years of actual participation is 9 (2016-2007). The accrued benefit is therefore $661.76, as follows:

   $2,500 x (9 / 34) = $661.76

3. The correct answer is C.

   Statement C is incorrect since any 12-month consecutive period may be used for purposes of benefit accrual computation. All of the other statements are true.

4. The correct answer is E.

   All three statements are true.

5. The correct answer is B.

   Statement B is the only false statement. The IRC §401(m) testing applies in the case of contributions allocated to separate accounts. If the contribution is used to reduce the employer's contributions, then the testing is not required. A is correct: pre-tax employee contributions cannot be made to a defined benefit plan. C, D, and E are also correct.

6. The correct answer is C.

   Accrual pattern II does not satisfy the minimum accrual requirements because the participant is not fully accrued at NRA.

7. The correct answer is B.

   The 133⅓ percent method compares the accrual in a year to all prior year accruals, not just consecutive years.

8. The correct answer is C.

   3% is more than 133⅓% of 2%.

9. The correct answer is D.

   $20,000 x .5 x 1/10 = $1,000

   Note: A year of accrual is given for 2016 since the participant worked at least 1,000 hours in the plan year.

10. The correct answer is C. Since the plan is top-heavy, the accrued benefit is the larger of the top-heavy benefit or the formula benefit. The top-heavy benefit is:

    $50,000 x 2% x 5 years = $5,000. The formula benefit is 25% x $60,000 x 5/20 = $3,750. The larger of the two is $5,000.

11. The correct answer is D.

    1/1/2015 PVABs are used to determine top-heaviness for the 2016 plan year. The determination date is the last day of the previous plan year. You then use the valuation date within 12 months of that (which is 1/1/2015). So to determine top-heavy status for the 2016 plan year the valuation date is 1/1/2015.

    90% = ($90,000 + $90,000)/($90,000 + $90,000 + $20,000)

12. The correct answer is D.

    The availability of life insurance is not a protected benefit in a defined benefit plan.

13. The correct answer is E.

    All of these changes to the benefit options or forms are permissible.

14. The correct answer is E.

    The timing of a distribution is protected under the anti-cutback rules.

15. The correct answer is B.

    Annuity forms may not all be eliminated.

16. The correct answer is E.

    A. The availability of a benefit form is protected for all participants.
    B. The timing of a distribution is protected.
    C. The automatic cash-out limit is $5,000.
    D. If a joint and survivor annuity option in the family of options between 50% and 100% is eliminated, then at least either a 75% option or both a 50% and 100% option must remain.
    E. Lump sums are optional forms of benefit that cannot be eliminated with regard to benefits already accrued. However, it is allowed to eliminate an optional form of benefit with regard to future benefit accruals.

Cautions

- For top-heavy plans, top-heavy minimum accrued benefits must be provided. This can be difficult for IRC §412(e)(3) fully insured plans.

- The top-heavy minimum benefit rules are separate from the accrual rate rules.

- Only one of the accrual rule tests need to be satisfied, not all of them.

Review of Key Concepts

- Define the following terms:
  - Accrued benefit
  - Back loading
  - Front loading
- What are the three minimum accrual rate rules and how are accrued benefits calculated under each method?
- Define the term accumulated employee contributions. What is the significance of this term as it pertains to accrued benefits?
- What rules must be followed in a defined benefit plan's definition of NRA?
- What are the two basic types of employee contributions in a defined benefit plan?
- Describe the possible treatments by a defined benefit plan of employee contributions.
- Discuss any special requirements that arise as a result of having either mandatory or voluntary contributions in a defined benefit plan.
- Discuss which features of a defined benefit plan are and are not protected benefits under IRC §411(d)(6).

Chapter 3
Present Value Calculations and Alternate Forms of Benefits

Key Terms

- Actuarially equivalent
- Annuity purchase rate (APR)
- Assumed interest rate
- Assumed mortality table
- Attained age
- Commutation function/factor
- Decrement
- Discount for interest
- Discount for mortality
- Maturity value
- Normal form of benefit
- Post-retirement interest
- Post-retirement mortality
- Preretirement interest
- Preretirement mortality
- Present value
- Relative value
- Segmented interest rates
- Setback

Introduction

Defined benefit pension plans use a benefit formula to define an accrued benefit which is the participant's benefit payable at the plan's normal retirement age (often age 65). Most pension plans allow participants to retire early or postpone retirement. In addition, a defined benefit plan usually expresses the accrued benefit in the normal form (typically an annuity) payable to the retired participant over their lifetime. Defined benefit plans must provide other forms of payment; for example, if a participant is married, the plan sponsor must offer a qualified joint and survivor annuity (QJSA) providing financial security to both the participant and the spouse. To calculate the benefits provided at different ages (*i.e.,* early retirement, postponed retirement) or under the various optional forms of payment provided under the plan, the plan document must specify actuarial equivalence and actuarial equivalent forms of payment. For example, actuarial equivalence provides equality under the plan between various optional forms of payment such as a single life annuity, joint-life annuity, and lump sum distribution.

Defined benefit plans may assign a single present value to the accrued benefit using actuarial equivalence assumptions. These assumptions may be subject to certain rules and restrictions that are discussed in this chapter.

Defined benefit plans must provide definitely determinable benefits and the plan document must specify the plan's actuarial assumptions to perform plan actuarial equivalent calculations.

The simplest present value calculations take into account interest discount only. For the DB-A course only these types of present value calculations will be tested.

Calculations of present value, which take into account interest, mortality, and other preretirement assumptions such as termination of employment, will be tested in the DB course. These preretirement assumptions are often referred to as decrements.

In both the DB-A and the DB courses you should be aware of the various preretirement decrements and generally how they affect present value calculations.

Present Value of Accrued Benefit (PVAB)

The accrued benefit (Chapter 2) is the benefit to be provided at the participant's normal retirement date. The present value of accrued benefit (PVAB) is the single value equivalent of the monthly accrued benefit as of the **valuation date**. It represents an estimate of the value of future payments as of a given date.

Actuarial Equivalent Calculations – Interest Only

For example, let's say you have a payment of $100 to be paid in 1 year. In this case the present value today is $100/1.05 = $95.24 if the discount rate is 5%. In other words, if $95.24 was deposited into a savings account earning 5% per year, then there would be exactly

$100 in the account after one year. In this example a mortality assumption is not included, since the payments are certain in amount and timing. There is one payment one year from now.

In a more complex situation, assume a monthly payment of $100 starting now and continuing for 1 year. In this case the present value is estimated to be ($100 × 12)/1.025 = $1,170.73. There are 12 payments of $100 over the next 12 months. On average the payments are made about 6 months from now. The interest discount is for ½ year at 5%, which is a 2.5% discount for 6 months. Note that a mortality assumption is not included here since the payments are guaranteed. This illustration is an approximation, and the exact calculation of the present value is beyond the scope of this course.

Actuarial Equivalent Calculations – Interest and Mortality

Defined benefit pension plans provide annuity forms of payment and the single life annuity is one of the most common. A life annuity is a series of payments and regular (usually monthly) intervals, payable while the retiree is alive. Payments cease upon the death of the retiree. Consider another situation. A person at retirement age 65, will receive a monthly payment of $100 starting now and continuing until the person dies. What is the present value of this future stream of payments? In this case you need a mortality table to determine an estimate of how long the person will live since it is unknown when the retiree will die. Generally speaking, mortality tables will vary by age, but for participant pension benefit calculations, gender-specific mortality tables cannot be used. Interest and mortality rates are the key ingredients in a series of complex mathematical calculations to develop present value annuity factors. An annuity factor must be used in this case to derive the value of the expected series of payments. The annuity factor is based on the age, interest rate and mortality table. These are usually generated by a computer or software system; however, the calculations can be done in spreadsheets. If the annuity factor is 120, then the present value is $100 × 120 = $12,000.

Consider a slight variation of the preceding example, except that instead of the payments starting immediately, they start in 10 years. This situation occurs when the life annuity is deferred (in this case 10 years) before receipt. Specifically, a deferred annuity factor is required to account for the deferral period between the determination date and the date the payments commence. The $12,000 present value from above must be discounted for 10 years at 5% giving a present value of $12,000/ (1.05^{10}) = $7,366.96. In this situation we have ignored the mortality assumption or the possibility that the participant dies within the deferral period, which is assuming no pre-retirement mortality. The example shows an interest discount for a future life annuity. If mortality was applied, a discount for the probability of survival would have to be applied but this is beyond the scope of this course.

Actuarial Equivalence: The Discounting Process

The interest discount provides for the time value of money and takes into account that assets invested today will increase in value over time. The mortality discount provides for

the probability that a future benefit payment will or won't be made depending on whether the participant has lived to the future date or has died.

In addition, other factors can affect the probability of receipt of a payment, such as disability, termination of employment, or qualification for selecting an alternate form of benefit. Mortality will be the only factor considered in this course unless it is clearly stated otherwise. This is meant to provide the reader an awareness for the various contingent benefits and the complex calculations involved when performing actuarially equivalent calculations.

Generally speaking, the PVAB is generally determined using the interest and mortality assumptions. Small plans generally do not have enough plan participants to warrant the use of other assumptions. Larger plans often use some or all of the following assumptions in addition to mortality and interest rate: termination, disability, and retirement.

Interest rate

The pre-retirement interest rate is an assumed rate of growth during the period between the valuation date and assumed retirement age. Post-retirement interest is the growth rate assumed after retirement age. PPA required that, for many purposes, the PVAB be calculated with interest discounts that vary based on the number of years in the future the payment is expected to be made. Each month the IRS publishes segmented interest rates, the first segment covering distributions of benefits expected to be made in the next five years, the second segment covering distributions of benefits expected to be made in the succeeding fifteen years, and the third segment covering distributions of benefits expected to be made in all years after twenty. For simplicity, a single constant interest rate will be given instead of the three-segment structure. In reality, actuarial valuation software is needed to calculate benefits using the three-tiered interest segment rates. A higher interest rate will produce a lower PVAB because less money would need to be invested today at that higher rate to ensure enough money is saved to pay the accrued benefit in retirement.

Note that the terms discount rate and interest rate are used interchangeably in this course.

Mortality tables

A mortality table or actuarial table is a table for each age a corresponding expected probability of death or mortality rate. Conversely, the probability of a survival can be calculated. Mortality tables are used to calculate the probability of a retiree surviving from a given age to another age. This model is used to perform annuity calculations since payment is contingent upon the retiree being alive to receive the future payments.

The mortality tables are statistical estimates based on large amounts of data and analysis by actuaries, demographers, and others. Since no one can predict with certainty how long someone will live, mortality tables are used to allow us to predict how long the monthly benefit payments are expected to last before a participant dies.

Preretirement mortality accounts for the probability of death between the valuation date and normal retirement age. It may be, but is not always, used to calculate the PVAB. It is usually dependent on whether or not there is a death benefit payable if the employee dies after valuation date and before benefits commence at retirement age. If there is a full value death benefit payable prior to retirement, then the assumption of no preretirement mortality is appropriate since the benefit will be paid whether or not death occurs. However, if a plan pays only a fraction of the accrued benefit in the event of death, then assuming a probability of death allows for the possibility that the smaller death benefit would be paid rather than the full retirement benefit. In most cases, a preretirement mortality assumption will have the effect of decreasing the PVAB.

Post-retirement mortality accounts for the probability of death after retirement. This assumption applies to the period of time the plan is expected to pay the monthly accrued benefit once the participant retires and commences payments. There is always a post-retirement mortality assumption because eventual death is a certainty.

The mortality assumption is presented as a table that shows for each attained age the probability that a person alive at the beginning of the year will die during the year. Mortality varies over time and is different for different groups of people. For example, women have lower mortality rates than men at most ages, as do participants covered by pension plans compared to the general population. In general, individuals who choose to purchase annuities tend to have lower mortality (tend to live longer) than participants that take other forms of benefit due to self-selection.

Sometimes a **setback** is used as an approximation so that a mortality table for one group can be applied to another group. For example, a male-only table might be setback by five or six years for use with female participants. Many current mortality tables usually include unisex rates that can be used for both men and women (these rates typically include a blending of the male and female rates). When using a setback, a participant's present value is calculated as if the participant were younger at both the current age and at payment age. This increases the PVAB because a younger participant has a higher probability of surviving to each future payment year.

Although mortality rates on average are higher for men than for women, under ERISA it is illegal to use different mortality rates for males than for females in the calculation of individual retirement plan benefit payment options. When determining lump sums payable to terminating plan participants, a unisex or blended table must be used. This is because retirement plan benefits are viewed as a form of deferred compensation, and discrimination by sex in any form of compensation is prohibited. Mortality tables published in recent years often include a version that averages male and female rates. That procedure converts the gender specific mortality tables into a blended or unisex mortality table.

Note that individual male and female mortality tables can be used for purposes of

determining the contribution needed to fund the plan.

Retirement Rates

Some plans allow for a participant who incurs a separation of service to retire prior to the normal retirement date. For example, the normal retirement benefit may be age 65; however, if the participant satisfies certain age/service conditions, then the participant may retire earlier and commence benefit payments.

When the plan has this provision, the early retirement benefit is determined based on a reduction from the normal retirement age. The reduction is designed to account for the fact that the benefit will be paid for a longer period of time from the earlier age, otherwise it is significantly more valuable to the participant unless reduced. Early retirement benefits can be subsidized, meaning that while the early retirement benefit is a reduced benefit, it still has a greater value to the participant than the unreduced benefit payable at normal retirement. If this is the case, the early retirement benefit can be more desirable and the actuary will often make assumptions relating to the likelihood of a participant retiring at certain ages. A simple structure might be that all the participants are assumed to retire at age 62 though the normal retirement age is 65. Often, probabilities of retirement are assumed at each age.

If the value of the benefit is not much different at the early retirement date, then there is little benefit in assuming retirement rates. A plan that determines the amount of early retirement benefit with a 2% per year reduction in benefit from age 65 to the earlier age is subsidized. This means the value of the benefit is higher at earlier ages than it is at normal retirement age because the 2% reduction is far less than the reduction would be using true actuarial equivalence. In this case selecting a retirement age assumption below the normal retirement age would be reasonable. If plan experience over the years shows that few people take early retirement, then it doesn't make a lot of sense to use an assumption of early retirement.

A typical early retirement assumption, where a plan has an early retirement age of 55 or later, might look like this:

25% of employees are assumed to retire at 55 - the earliest possible retirement age under the plan
40% of the employees are assumed to retire at 62 - when they can start collecting social security benefits
35% of employees are assumed to retire at 65 - the plan's normal retirement age and when participants are eligible for Medicare

As with all actuarial assumptions, the idea is to make simple assumptions but not understate the liabilities. The actuary is well-trained to make these types of decisions; however, an analyst should always be on the lookout to make recommendations to the actuary based on plan experience.

Termination Rates

A participant may terminate employment prior to retirement after becoming vested. This participant is due a benefit to be paid at some point in the future. Others terminate nonvested and are due no benefit from the plan. Still others retire partially vested and are entitled to only a portion of the benefit they have earned from the plan.

Actuaries have developed a number of tables to reflect termination rates of employees. Based on historical company experience the actuary selects a termination table from among the available options to model the likelihood of an active participant terminating in a given year. Some industries have higher turnover (such as fast-food outlets), while others may have lower turnover (such as professional service firms). The higher the turnover, the less cost will be incurred for the plan to provide benefits because fewer people will become partially or fully vested. The use of termination rates is most common in large plans.

These probabilities do not differentiate the reason for the employee's termination as a result of the employee quitting or of the employee being fired. The reason for termination does not matter as benefits don't increase or decrease based on whether the employee's termination was voluntary or involuntary.

Disability Rates

In some industries such as mining, logging and factory jobs, dangers exist that might cause an employee to suffer a disability. Some plans provide for benefits to be paid in the event someone becomes disabled. With disability benefits offered in a plan, the actuary must decide whether it makes sense to consider the disability benefit in the annual actuarial valuation.

Some disability benefits can be substantially more generous than the retirement benefits offered by the plan. Though the likelihood of getting disabled is small, it may be appropriate to consider assumptions to account for increased cost in the event of the disability payments under the plan. Most small plans do not have disability benefits available under the plan. If disability benefits do exist, it is important to define what circumstances qualify a participant for a disability benefit. The definition of disability is wide ranging. Examples include:

- Inability to perform the job assigned to the employee
- Inability to perform any job
- Receiving benefits under the company's long term disability insurance
- Receiving disability benefits from the Social Security Administration

Annuity Purchase Rate (APR)

The post-retirement assumptions of interest and mortality are used to compute the **annuity purchase rate (APR), or annuity factor,** at normal retirement age or other assumed retirement age. This is the present value at retirement of one dollar per month

of benefit. Tables in the Appendix contain some sample APRs using different mortality and interest assumptions. These APRs will be used in some of the examples and sample problems in this study guide. In real life, an actuarial valuation system determines the APRs for valuation, nondiscrimination, and distribution purposes. These can also be developed by spreadsheet calculations to confirm the computer results.

When an APR is multiplied by a monthly accrued benefit, the result is the lump sum needed at normal retirement age to fund the monthly benefit according to that set of assumptions.

To determine the PVAB as of a date earlier than normal retirement, the present value at normal retirement is multiplied by interest discount factors (assuming no possibility of death before retirement.)

EXAMPLE 3-1: Present Value.
The Present Value as of age 65 is $10,000. What is the present value as of age 55, assuming a 5% interest rate and no preretirement mortality? Answer – $10,000/$(1.05^{10})$ = $6,139.13. The present value at age 65 is discounted 10 years at 5% to determine the present value at age 55.

To determine the PVAB as of a date earlier than normal retirement, the present value at normal retirement is multiplied by interest (and possibly mortality) discount factors or by a ratio of two factors called D_x, which may incorporate both preretirement interest and preretirement mortality. In this context it may be helpful to think of the D in D_x as standing for Discount and the x as the age. D_x is an example of a commutation function. D_x is used to discount or accumulate a single payment

D_x tables for a range of assumptions are also included in the Appendix. These include a D_x table constructed using only interest and no mortality, which allows D_x factors to be used to discount only for interest. D_x factors must always be used in a ratio since they are constructed by applying the mortality rates to a group of arbitrary size. It is the ratio of the number of people alive at a later age to the number alive at an earlier age that provides the probability of surviving to that later age. The D_x ratio always uses the D_x factor at the age the benefit commences divided by the D_x factor at the age for which the present value is being calculated. The age for which the present value is being calculated is often called the attained age, and often abbreviated AA.

An example showing the use of D_x factors follows.

What is the present value at age 50 of a benefit of $800 per month payable at retirement age 65, given the following commutation functions and APR?

$APR_{65} = 104$ $D_{50} = 540{,}908$ $D_{65} = 192{,}239$

First, the annuity must be converted into a lump sum at age 65.

$800 × 104 = $83,200

In this case, the $800 monthly annuity has the same value as $83,200 at age 65. However, the $83,200 is at age 65, not at age 50, therefore, it must be discounted to age 50. We will discount using the commutation functions. The present value factor is D_{65}/D_{50}, which is 192,239/540,908 = .3554. This factor is then applied to the lump sum.

$83,200 x .3554 = $29,569

This could also be accomplished in once step but was illustrated in multiple steps to convey the concept.

$800 × 104 × .3554 = $29,569

There is another commutation function called N_x which is the sum of those current and future D_x values. The N_x values can be used to determine annuity purchase rates (APR).

$$APR = N_{RA} / D_{RA}$$

RA is the retirement commencement age. Since we usually deal with annuities paid monthly rather than yearly, an adjustment must be made to the N_x values. This adjustment is not included in this study guide and is beyond the scope of the DB Examination.

Present Value Formula

Depending on whether or not mortality is included prior to the assumed retirement age, there are two different formulas to calculate present values.

Case 1 – No preretirement death

The present value formula is as follows:

(Vested) Accrued Benefit	times	APR based on post-retirement mortality and interest	divided by	$(1+i)^{(RA-AA)}$

where: RA = Retirement age
AA = Attained age
APR = Annuity purchase rate
i = interest rate

Case 2 – With preretirement death

The present value formula is as follows:

(Vested) Accrued Benefit	times	APR based on post-retirement mortality and interest	times	D_{RA} / D_{AA} based on pre-retirement interest (and mortality, if applicable) discount factors

where: RA = Retirement age
AA = Attained age
APR = Annuity purchase rate
D_{RA} = D_x factor at RA
D_{AA} = D_x factor at AA

Sample Calculations:

EXAMPLE 3-2: Present Value.
Assume that three participants, J, L, and M, have each accrued a benefit of $1,400 per month. All participants will retire at the same age but each participant is currently a different age. Calculate the present value of accrued benefit for each participant based on the following plan provisions (mortality and D_x factors can be obtained from the appendices in the back of this study guide):

NRA: 65
Actuarial Equivalence: Preretirement mortality – none
Preretirement interest – 5%
Post-retirement mortality – IAM '83
Post-retirement interest – 5%

Participant	Accrued Benefit	AA	NRA	APR	D_{NRA}	D_{AA}	PVAB
J	1,400	40	65	137.52	419,466	1,420,460	56,854
L	1,400	48	65	137.52	419,466	961,424	83,999
M	1,400	58	65	137.52	419,466	590,231	136,826

The PVABs for J, L, and M are determined as shown below:

PVAB for Participant J = 1,400 x 137.52 x 419,466/1,420,460 = 56,854
PVAB for Participant L = 1,400 x 137.52 x 419,466/961,424 = 83,999
PVAB for Participant M = 1,400 x 137.52 x 419,466/590,231 = 136,826

Observe that the oldest participant has the greatest PVAB and that the benefit value is lower at younger ages due to a longer discount period. Note also that this example is not intended to determine the minimum required lump-sum payment.

EXAMPLE 3-3: Present Value.
Now assume that normal retirement age is 60 and the plan provisions are as follows:

NRA: 60
Actuarial Equivalence: Preretirement mortality – none
Preretirement interest – 5%
Post-retirement mortality – IAM '83
Post-retirement interest – 5%

Participant	Accrued Benefit	AA	NRA	APR	D_{NRA}	D_{AA}	PVAB
J	1,400	40	60	154.76	535,357	1,420,460	81,658
L	1,400	48	60	154.76	535,357	961,424	120,647
M	1,400	58	60	154.76	535,357	590,231	196,521

Observe that decreasing normal retirement age results in an increase of the PVAB for all participants, since benefits will be paid for a longer period of time.

EXAMPLE 3-4: Present Value.
Now assume that the preretirement interest is 7%. The plan provisions are as follows:

NRA: 60
Actuarial Equivalence: Pre-retirement mortality – none
Pre-retirement interest – 7%
Post-retirement mortality – IAM '83
Post-retirement interest – 5%

Participant	Accrued Benefit	AA	NRA	APR	D_{NRA}	D_{AA}	PVAB
J	1,400	40	60	154.76	172,572	667,802	55,990
L	1,400	48	60	154.76	172,572	388,667	96,201
M	1,400	58	60	154.76	172,572	197,578	189,242

Observe that increasing the preretirement interest rate results in a decrease of the PVAB for all participants since less money at present would need to be invested at the higher interest rate to accumulate to the required maturity value.

All these calculations are assuming a one-tiered interest rate. Regulations now required a three-tiered interest rate and the formula for calculating the PVAB for funding and lump sums is substantially more complicated (described below). These calculations are beyond the scope of this text.

Prescribed Assumptions for Funding and Lump Sums

IRS rules require the use of standard interest rates and mortality tables for purposes of determining the contribution requirements for a pension plan. This is true also for purposes of determining the minimum lump sum value under IRC §417(e).

Although there are requirements for the interest rates that must be used for funding and

minimum lump-sum distributions, there are still some options that must be selected by the plan sponsor and actuary. Generally, the standard interest rate used is based on a 3 tiered rate structure using segment rates. The first segment rate is used for the 5-year period beginning on the valuation date, the second segment rate is used for the next 15-year period (after the 5th year and within 20 years from the valuation date), and the third segment rate is used for the period after the first 20 years from the valuation date. All future payments are discounted using the segment rate associated with the time frame during which the payment is to be made. For example, suppose the segment rates are 4% for the first 5 years (segment 1), 5% for the next 15 years (segment 2), and 6% for each year in excess of 20 (segment 3). If a plan participant is not expected to retire for 30 years, then all future payments are discounted using the segment 3 (6%) interest rate. If a plan participant is expected to retire in 10 years, then the first 10 years of payments are discounted using the segment 2 (5%) interest rate (since those payments will be made in years 11 through 20 from now) and the remaining payments will be discounted using the segment 3 (6%) interest rate. Segment rates are published monthly by the Department of the Treasury. The plan has the option to use the published segment rate for the month of the valuation date, or any of the 4 months preceding that valuation date. Once selected, this "look-back month" cannot be changed without IRS approval.

Another option is to use what is referred to as the full yield curve, rather than the segment rates. The full yield curve includes a different interest rate for each possible year of payment. While it may be a more accurate interest rate model, it is more difficult and complex to understand. The full yield curve is used most often by very large plans. There is no look-back month option if the full yield curve is used, and the plan sponsor can change from using the full yield curve to the segment rates (or vice-versa) only with IRS approval.

PPA requires that the plan sponsor select which interest rates to use. Plan sponsors rarely understand the options and the differences between them. A consultant or actuary will have to work with the client on the selection of rates to use.

Required mortality tables for funding purposes are published by the IRS each year. There are separate mortality tables published for preretirement and post-retirement. If the number of plan participants is less than 500, then it is allowable to use a combined table for preretirement and post-retirement. A larger plan must use different tables pre and post-retirement. It is rare, but the plan may also create its own table based on actual historical experience. IRS approval is required for the use of the alternate table, and the alternate table cannot be used for more than 10 years without additional IRS approval. The plan sponsor must make the election as to which mortality table to use but will need the help of a consultant or actuary to understand the options.

Plan Assumptions for Actuarial Equivalence

Defined benefit plans typically provide for a number of alternative forms of benefit payment in addition to the normal form. In order for each alternate form to be definitely

determinable, the plan must specify both interest and mortality assumptions to be used to calculate the amount of the alternate form. Using these defined rates, the alternative benefit options are actuarially equivalent to the normal form. The plan may also specify other procedures such as a table or a simple formula for determining the amount of some of the alternate forms. There are no required interest rates or mortality tables as must be used for funding the plan.

Two forms of benefit are said to be actuarially equivalent under a specified set of assumptions if they both have the same present value. Actuarial equivalence can be used to compare benefits at normal retirement age versus early retirement age, or to compare benefits at a specific age but in different payment forms such as life annuity versus a 50% qualified joint and survivor annuity (QJSA). The key to actuarial equivalence is that all optional forms of payment that aren't subsidized have the same value using the actuarial equivalence assumptions.

The actuarial equivalence assumptions stated in a plan need not be based on best estimates of future experience but rather are selected as part of the plan design. For example, to provide for larger lump sums, a female individual mortality table might be specified. The table would be used for all participants, regardless of whether they are male or female but since females tend to live longer, the value of the benefit would be higher than if a male table was used. To encourage early retirement, a plan might provide for an unreduced benefit at an early retirement age resulting in a subsidized early retirement benefit. In this case, the value of the benefit at early retirement would exceed the actuarial equivalent value of the normal retirement benefit causing the participant to wish to retire early.

There are generally no limitations on what actuarial equivalence assumptions can be specified in a plan. The assumptions cannot discriminate based upon gender, and the anti-cutback rules must be considered if the assumptions are changed. However, there are limitations on interest rates used to determine the minimum present value for lump-sum purposes under IRC §417(e)(3). These limitations must be stated in the plan document.

Alternate Forms of Benefit

Typically, the normal form of benefit under the plan will be a life annuity. However, other annuity options are available as the normal form or optional forms of benefit. Retirement benefit annuities are available in a number of payment forms either as options or sometimes as the normal form in place of a life annuity (which is most typically the normal form of benefit). Here are some of the forms of annuities commonly available in defined benefit plans:

Life Annuity: Payable for the life of the participant with no further payments after the participant's death.

Life Annuity with Period Certain: Payable for the life of the participant but if the participant dies during the certain period, payments will continue for the stated

period certain. The period certain is often 5 years (60 months) or 10 years (120 months), and the annuity is often referred to simply as a 5C&L (*i.e.*, five years certain and life) or a 5C&C (*i.e.*, 5 years certain and continuous).

Joint and Percent Survivor Annuity: The most common form of a survivor annuity is payable for the life of the participant, and after the participant's death the stated percent continues as an annuity for the remaining life of the beneficiary. For example, an annuity with a 50% survivor benefit could be abbreviated as a J & 50% S annuity or 50% J&S annuity.

Joint and Percent to Either Survivor: This far less common form of survivor annuity would reduce the benefit upon the death of either the participant or the beneficiary. Sometimes this is also referred to as a Joint and Percent Survivor, so it is important to know whether the annuity reduces on the death of either the participant or beneficiary or only on the death of the participant.

Qualified Joint and Survivor Annuity (QJSA): This is a Joint and Percent Survivor annuity where the benefit becomes the stated percent only upon the participant's death, where the percent is at least 50% and no more than 100%, and where the beneficiary is the participant's spouse. All defined benefit plans offer annuities and must define a QJSA option and must state that it is **the automatic form of payment** upon the retirement of a married participant unless both the spouse and participant waive its receipt in favor of another option. There is no requirement to offer a QJSA if the participant has been married for less than one year.

Annuity options can also combine features of these (for example a joint and survivor annuity with a period certain). Any of these forms could also provide for increasing rather than level annuity payments, where the increases could be either compounding (each year increases by a stated percent over the prior year) or simple (a constant amount is added to each successive year). Some annuities also provide for larger initial payments in exchange for lower ultimate payments. The Social Security leveling annuity discussed later in this chapter is of this type.

The APRs given in the appendix are all for life annuities based on a single nonsegmented interest rate. The alternate forms of annuity discussed above would all have greater APRs than for a life annuity since they can be expected to be paid for a longer period of time or over multiple lives. Consequently, if any of these forms are to be the actuarial equivalent of a life annuity, the alternate form will pay a smaller monthly benefit. Unless otherwise stated, all APRs used in this study guide or in examination questions will to apply to monthly life annuities.

Calculating Alternate Forms of Payment

The normal form of benefit is defined in the plan document and offered to a plan participant who has become eligible for benefits. The normal form defines the amount of the accrued benefit and specifies a normal form annuity type – often a life annuity, but sometimes another annuity form. If a participant chooses a different form of benefit, the amount is determined so that the alternate form is the actuarial equivalent of the plan's

normal form. Note that the **normal form** may differ from the **automatic form** which must be the plan's QJSA for a married participant whenever any annuity option is available under the plan. Some reference sources use the term *normal form of benefit* where this text uses automatic form – some sources use *normal form of benefit* to cover either.

An actuarially equivalent benefit is a benefit that has a present value equal to that of the plan's normal form of payment at the time of the first payment. An alternate form of payment payable at the same age is determined by applying the ratio of the annuity purchase rate (APR) for the normal form of benefit to the APR for the alternate form of benefit. This will assure that the alternate benefit amount times the alternate APR will equal the normal form benefit times the normal form APR.

EXAMPLE 3-5: Actuarially Equivalent Benefit – Form.
Convert the normal form of benefit, a single life annuity, to a 50%J&S Annuity.

Normal Retirement Benefit (NRB) = $1,000/month
APR Normal Form = $128
APR 50%J&S = $138

The key to determining the 50%J&S Benefit is to remember that that value of the benefits must be equal. So:

NRB x APR Normal Form = 50%J&S Benefit x APR J & S 50%

Rearranging the equation to solve for the 50% J&S Benefit you get:

50% J&S Benefit = NRB x (APR Normal Form / APR J & S 50%)

To determine the J & S 50% Benefit, we plug in the number to the formula and get:

50%J&S Benefit = $1,000 x 128/138 = $928/month

Benefits paid at an age other than the plan's normal retirement age (NRA) are determined by applying the APR at NRA to the benefit, and discounting by interest and mortality (if preretirement mortality is assumed) to the age when payments begin. The result is divided by the APR at the age benefits begin.

EXAMPLE 3-6: Actuarially Equivalent Benefit – Age.
Convert the benefit payable at NRA (65), to an annuity payable at age 60.

Normal Retirement Benefit = $1,000/month
APR @ 65 = $127
APR @ 60 = $140
Discount factor @ 6% for 5 years (from age 65 to 60) = .747258

No preretirement mortality assumed

The key to determining the Age 60 Benefit is to remember that that value of the benefits must be equal. So:

NRB x APR @ 65 = Age 60 Benefit x APR @ 60 x $(1.06)^5$

To determine the Age 60 Benefit, we therefore need the following formula:

Age 60 Benefit = NRB x APR @ 65 x $(1/(1.06)^5)$ / APR @ 60

Age 60 Benefit= ($1,000 x 127 x .747258) / 140 = $678/month

Note in the above example that $1/(1.06)^5$ is the discount factor for 5 years at 6% interest. That was given to be .747258.

When benefits are paid at an alternate age and in an alternate form, the benefit at NRA is first converted to an alternate retirement age and then to the alternate form of benefit.

Anti-cutback rules apply to actuarial equivalence. If actuarial assumptions are amended for determining plan benefits, any optional form of benefit determined under the new actuarial assumptions cannot be less than the optional form of benefit under the old assumptions, as applied to benefits already accrued at the time of the amendment.

A plan can provide for a subsidized optional form of benefit. This payment is greater in value than the actuarial equivalent benefit. This form of payment is usually used to entice employees to leave employment before normal retirement age. This is often done so that the retiring employee can be replaced in the job force by younger, lower paid employee.

Relative Value Disclosure

The relative value disclosure is provided to participants illustrating the relative value of various optional forms of benefit payment. As an example, consider a plan with a subsidized early retirement. Assume the present value of the normal retirement benefit is calculated to be $100,000 using reasonable assumptions. The value of the unreduced benefit at the proposed early retirement date for the participant is calculated to be $150,000. Since the benefit at early retirement is worth $150,000 while the normal retirement benefit is worth only $100,000, the early retirement benefit has a higher relative value. The participant should be told of the difference in relative value in order to make an informed decision on which benefit option to elect.

A retiring participant will receive an election form in order to decide which form of benefit payment to take. The normal form of benefit payment along with other available forms will be presented. To aid the participant's selection process, a comparison of the value of these benefits is given. These 'relative values' are often given as factors; however, those within $\pm$5% of the normal form are not required to be disclosed. These 'relative value'

factors are determined based on a 'reasonable' set of assumptions, which could be the same as the plan's actuarial equivalent basis. The process of creating relative values is similar to determining actuarially equivalent forms of payment.

As an example of creating relative value, suppose the normal form is a benefit payable at age 65 of $100 per month as a life annuity. The actuarial equivalent QJSA is $90 per month based on the actuarial equivalent basis used in the plan to convert a life annuity to a QJSA. Based on reasonable assumptions, the QJSA is $96 per month. Therefore the relative value is 90/96=93.8% for this benefit form.

Lump-Sum Calculations

A simple way to differentiate one defined benefit plan from another is to classify plans that pay large lump-sum distributions from those that do not. A plan that pays mostly periodic monthly benefits is in a different financial cash-flow situation than a plan that pays mostly lump sums. Small plans typically have a lump sum as an optional form of benefit, while large plans typically require participants to receive their benefit as an annuity. Some large plans will allow small lump-sum distribution – no more than $5,000 – as part of an involuntary distribution or cash-out provision. The following section will explain the impact of lump sums and how they are determined.

Most defined benefit plans have some form of lump-sum payment. As previously described, this can simply occur in a situation where a plan cashes out participants, without their consent, if the value of the benefit is below a set amount, usually either $1,000 or $5,000. In other plans, the accrued benefit can be elected to be paid as a lump sum regardless of the amount. These distributions could be quite large.

The actuarial equivalence definition (specified interest and mortality table) in the plan document is used to calculate the lump sum. IRC §417(e)(3) requires that the lump sum distributed cannot be less than a minimum amount based on the applicable mortality table and applicable interest rate specified in IRC §417(e)(3). The mortality table is a unisex table published by the Department of the Treasury, and the applicable interest rate is composed of a set of 3 segment interest rates as previously described for funding purposes. The method of determining these segment rates may be different from that used for funding. The full yield curve cannot be used in place of the segment rates.

Under IRC §417(e)(3), plans must define a lookback month that determines which segment interest rates will be used. Plans must also define a stability period, the period of time that the segment rates apply, after which they are recalculated. The lookback month can be defined as the month preceding the start of the plan year, or any of the prior 4 months. The stability period can be defined as a year, a quarter, or a month. For example, suppose that the stability period for a calendar year plan is the plan year, and the lookback month is the month prior to the beginning of the stability period. This would mean all distributions that occur in calendar year 2016 would use the December, 2015 segment rates. Alternatively, suppose that the stability period is defined to be one month, and the

lookback month is defined to be two months preceding the stability period. This would mean that all lump-sum distributions that occur in March, 2016 would use the January, 2016 segment rates, while distributions occurring in May, 2016 would use the March, 2016 segment rates.

Additionally, the lump sum may be limited to the maximum allowable lump sum under IRC §415(b). The final distribution amount for an elected lump sum is equal to the greater of the plan actuarial equivalence lump sum and the IRC §417(e)(3) lump sum, but in no event greater than the IRC §415(b) lump sum.

Some plans allow a terminated participant to receive a lump sum shortly after they terminate. Other plans allow the lump sum to be paid only if the participant is eligible for retirement. If the accrued benefit is small enough, some plans will allow the lump sum to be paid at termination of employment, so that the plan no longer needs to track the participant.

There are other factors that add to the complexity of determining a lump sum. Early retirement reduction factors further reduce the lump sum value. Some plans pay lump sums based on the subsidized early retirement benefit, while others base the lump sum on the accrued normal retirement benefit. If the plan uses the subsidized early retirement benefit for lump sums, then the lump sum will be larger than if the accrued normal retirement benefit is used. The minimum lump sum required under IRC §417(e)(3) may also be based on the early retirement benefit or on the accrued normal retirement benefit. The plan document must be reviewed carefully to determine the proper calculations to perform.

EXAMPLE 3-7: Lump Sum Value.
The accrued benefit is $20/month for a participant age 25. Based on the plan definition of actuarial equivalence (AEQ) you look up the present value factor which happens to be 0.3. Looking up the IRC §417(e)(3) present value factor it is 0.4. Using these factors you calculate the lump sum under the AEQ and IRC §417(e)(3).

$$\$20 \times 12 \times 0.3 = \$72$$
$$\$20 \times 12 \times 0.4 = \$96$$

Without regard to IRC §415(b), the participant would receive the $96 because it is the greater of AEQ and IRC §417(e)(3).

Common Distribution Options (Including Social Security Leveling)

If a defined benefit plan offers a lump-sum benefit as well as annuity options, the choice between an annuity and a lump sum will be an important decision for the participant and the participant's spouse.

Advantages of a lump-sum form of distribution:

The participant has immediate access to the sum of money and can invest or spend the money in ways most appropriate to individual circumstances.

The remainder of the money will always be available in case it needs to be applied to medical or other emergencies.

The participant can determine whether any of the money would be given to heirs.

Forms of annuities not commonly available through defined benefit plans can be purchased in an IRA to provide guaranteed income in retirement. This can provide the ability to increase the monthly benefit based on favorable market conditions and provide a refund option in the event of the participant's early death while retaining the tax advantages of a qualified plan.

Disadvantages of a lump-sum form of distribution:

Unless the money is promptly moved into another qualified retirement plan or IRA, taxes on the lump-sum distribution will be high due to our progressive tax system.

It is difficult to decide how much money to draw out of the lump-sum distribution for living expenses since future rates of return are uncertain.

There is no guarantee that the invested distribution will last for the participant's and spouse's lifetime even if conservative investment returns are assumed.

Advantages of an annuity form of distribution:

There is a known amount of income that is guaranteed for the life of the participant and spouse.

Taxes payable during the period the income is received will likely to be lower than the taxes on a lump-sum distribution.

If the plan allows for flexible annuity options, these options may be able to address some of the perceived disadvantages of an annuity option,

Unfavorable market returns do not impact the annuity payments as they would a lump sum distribution that was otherwise invested in the market. In most cases, the plan will purchase an annuity through a company or provide it directly from the plan assets, assuming the risk for the market return.

Disadvantages of an annuity form of distribution:

Living on a fixed income that may not be able to keep pace with inflation.

An early death may lead to the loss of much of the value of the retirement benefit.

Loss of the flexibility to deal with medical or other emergencies.

Social Security Leveling Annuity

In order to make early retirement prior to eligibility for Social Security more appealing to participants, some plans offer an option that pays higher benefits until Social Security retirement eligibility, then pays lower benefits after Social Security payments begin. The decrease is intended to be an approximation of the amount of Social Security that will be

received. This is also sometimes called a **level income option** since total retirement income will be approximately the same before and after Social Security commencement age.

Social Security Supplement

Some plans provide for a fully subsidized Social Security Leveling Annuity – meaning the payments prior to the start of Social Security are paid with no reduction to the benefit payable when Social Security begins. Such Social Security Supplements are not considered part of the accrued benefit and are not protected benefits under the anti-cutback rules.

Benefit COLAs to Retirees

Some plans provide benefits to retirees that increase after commencement to reflect changes in the cost of living. This is a generous benefit and is often quite costly for plan sponsors. For example, a retiree might start receiving $100 per month at age 65. Assume the cost of living adjustment (COLA) during the year is a 3%, then next year the benefit would increase to $103 per month. Although this might not appear to be a major difference, it is usually significant over the long run.

EXAMPLE 3-8: COLA.
A 3% COLA is applied to retiree benefits if the prior year's CPI-U index (a consumer price index published by the government) is greater than 6%. If the CPI-U index is 7%, a 3% benefit increase is given.

COLA's are not common in the private marketplace as the compounding effect of the COLA can cause benefits to become very expensive during times of high inflation. They are more common in public plans, such as for government employees. The benefit administrator must exercise caution when dealing with plans that provide a COLA so that distribution amounts and optional forms of benefit payment are accurate.

Some plan sponsors provide so called ad hoc COLA increases to retirees. For example, assume an hourly plan has a benefit rate of $28 per month, multiplied by years of service. The plan sponsor decides to increase all the retiree benefit amounts by 3% as a one-time adjustment. If the plan sponsor does this regularly, the law might consider the COLA to be part of the accrued benefit since it might become relied on by the participant if they have reason to believe that the employer increases benefits regularly. If the participants can argue the COLA is part of the accrued benefit, the plan sponsor would need to provide the COLA whether it wanted to or not. If the increase happens infrequently, the increase would be considered ad hoc and not a right of the participants. Ad hoc COLAs are discretionary and hence aren't required to be made.

Practical Examples of Concepts Learned

Problem #1

Determine the present value of a monthly accrued benefit using the following information with the assumptions in Table A and Table B.

The monthly accrued benefit payable as a life annuity at 65 is $2,500.
The participant's current age is 60.

Assumptions

Table A.
Preretirement interest: 5%
Preretirement mortality: None
Post-retirement mortality: IAM'83 M -3 (Setback 3 years for males)
Monthly Annuity Purchase Rate @ 65: 148.11
D_{60} = 535,357
D_{65} = 419,466

Table B.
Preretirement Interest: 8%
Preretirement Mortality: None
Post-retirement Mortality: UP'84 M (male +1)
(the +1 indicates a set forward rather than a setback.)
APR @ 65 = 95.98
D_{60} = 98,758
D_{65} = 67,213

Problem #2

Assuming the same benefit of $2,500 payable at age 65, determine the minimum present value of accrued benefit using the following factors for the IRC §417(e)(3) and the assumptions from Table A in Problem #1 for the actuarial equivalence. For this calculation assume the participant's current age is 40. Use D_{40} = 1,420,460 for the assumptions in Problem #1.

Assumptions for IRC §417(e)(3)

Annuity purchase rate at 65 @ 5% interest: 141.53
Applicable Interest Rate: 5%
D_{40} = 1,420,460
D_{65} = 419,466

Solutions

The present value formula is as follows:

Accrued Benefit	x	APR at RA based on post-retirement mortality and interest	x	D_{RA} / D_{AA} based on preretirement interest (and mortality, if applicable) discount factors

where: RA = Retirement age
AA = Attained age
APR = Annuity purchase rate
D_{RA} = D_x factor at RA
D_{AA} = D_x factor at AA

Problem #1

A. The PVAB calculation using assumptions in Table A is as follows:

Benefit x APR x (D_{65} / D_{60}) =

$2,500 x 148.11 x (419,466 /535,357) = $290,120
(APR) (Ratio of D_x Factors)

B. The PVAB calculation using assumptions in Table B is as follows:

Benefit x APR x (D_{65} / D_{60}) =

$2,500 x 95.98 x (67,213 / 98,758) = $163,306
(APR) (D_x ratio)

C. Alternate solution method:

In cases where there is no preretirement mortality assumption the PVAB determined by the plan's actuarial equivalence could also be calculated using the following formula:

Accrued Benefit x APR ÷ $(1 + \text{Interest Rate})^{(RA-AA)}$

This calculation produces the same result as does using the ratio of the D_x commutation functions that are based solely on interest with no mortality. This approach would not work if there was preretirement mortality.

Problem #2

A. The PVAB using the same assumptions in Problem #1, Table A for a 40-year-old participant, is calculated as follows:

Using commutation functions:

AEQ: $2,500 x 148.11 x (419,466 / 1,420,460) = $109,343

Using alternate method since there is no preretirement mortality:

AEQ: $2,500 x 148.11 / $(1.05)^{(65-40)}$ = $109,343

Note that 1 / (1.05^{25}) = 0.2953 is the preretirement interest discount.

B. PVAB calculation using IRC §417(e)(3) applicable rates

The PVAB based upon applicable factors is determined under a similar formula. However, the annuity purchase rate is calculated using a unisex mortality table and the applicable interest rate as follows:

417(e)(3): $2,500 x 141.53 / (1.05^{25}) = $104,485

The PVAB using the applicable rates is $104,485, which is less than the PVAB using actuarial equivalence. The minimum PVAB is therefore the value of $109,343 using the plan actuarial equivalence assumptions, since it is greater than the PVAB determined using 417(e)(3). Also note that the D_x's for both AEQ and 417(e)(3) are the same because they both use 5% interest and there is no mortality.

Answers

Problem #1, Table A	$290,120
Problem #1, Table B	$163,306
Problem #2	$109,343

Self-Test Questions

Circle your responses:

T F 1. A higher stated interest rate for actuarial equivalence will normally result in a smaller lump-sum distribution to a terminated employee.

T F 2. Using a setback in a mortality table will reduce the lump-sum present value at retirement.

T F 3. A defined benefit plan document must specify the interest rates and mortality assumptions used to calculate lump sums.

T F 4. The actuarial equivalence assumptions stated in a defined benefit plan should reflect the expected experience under the plan.

T F 5. A form of distribution can be designed to provide protection against cost of living increases.

T F 6. The D_x commutation function can combines both the interest assumption and any mortality assumption.

T F 7. The D_x commutation functions at attained age and retirement age should always be used together in ratio to determine the present value factor.

T F 8. A 50% J&S annuity pays no benefit to the beneficiary until after the death of the participant.

Sample Test Questions

1. Based on the following information, determine at age 50 the present value of $1,500 per month payable as a life annuity beginning at age 62.

APR @ age 62	157.94
D_x @ age 62	485,585
APR @ age 50	189.57
D_x @ age 50	872,040
Interest Rate	5%

A. $131,920
B. $158,340
C. $236,910
D. $284,355
E. $425,456

2. All of the following factors are used in computing a PVAB, **EXCEPT:**

A. Annuity factor based on post-retirement mortality and interest
B. Attained age
C. D_x factors or present value of $1 factor based on preretirement interest
D. Social Security retirement age
E. Normal retirement age

3. Based on the following information, determine the monthly benefit for a participant who is single, retires at age 65, and chooses to take a life and 10-year certain annuity.

   Participant Information:

   Normal retirement benefit = $4,000 per month
   Normal retirement age = 65

   Plan Information:

   The normal form of benefit is a life annuity and the automatic QJSA for a married participant is a 100% J&S annuity. All optional forms of benefit are based on actuarial equivalence using the plan's stated interest and mortality.

   QJSA annuity purchase rate = 138.88
   Life only annuity purchase rate = 127.76
   Life with 10-year certain annuity purchase rate = 133.89

   A. $3,817
   B. $3,856
   C. $4,000
   D. $4,149
   E. $4,192

4. Which of the following statements regarding present value calculations in a plan that is subject to PPA is/are **TRUE**?

   I. A preretirement mortality assumption cannot be used to calculate an immediate lump-sum value.
   II. The applicable interest rate may be based on a 30-year treasury rate.
   III. The appropriate PPA segmented rates must be used in determining the minimum lump-sum value.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

5. Based on the following information, determine the present value at age 50 of a life annuity of $1,000 per month due at age 65:

Monthly annuity factor @ age 65:	121.50
Monthly annuity factor @ age 50:	182.90
D_x @ age 65:	45,485.00
D_x @ age 50:	89,560.00

A. $61,706
B. $92,890
C. $121,500
D. $182,900
E. $239,234

6. Based on the following information, determine the present value of $2,000 per month payable as a life annuity at age 65.

Current Age	45
Monthly annuity rate @ age 65	102.14
N_x @ age 65	1,344,753
D_x @ age 65	13,165.52
Monthly annuity rate @ age 45	146.38
N_x @ age 45	7,457,451
D_x @ age 45	50,946.43

A. $ 36,836
B. $ 52,790
C. $ 75,655
D. $ 204,280
E. $ 292,760

Solutions to Self-Test Questions

1. True
2. False
3. True
4. False
5. True
6. True
7. True
8. True

Explanation of *False* questions:

2. A setback in a mortality table has the effect of determining the annuity purchase rate at retirement age as if the participant were younger, which will increase the lump-sum value because the participant is assumed to live longer.

4. The actuarial equivalence assumptions stated in the plan are part of the plan design and need not reflect expected experience.

Solutions to Sample Test Questions

1. The correct answer is A.

   The present value figure should be computed as follows:

   $1,500 x 157.94 x (485,585 /872,040) = $131,920

   Note that since the D_x factors are based on the 5% table with no mortality discount, the calculation could be performed as follows:

   $1,500 x 157.94 / (1.05^{12}) = $131,920

   where 1 / (1.05^{12}) = 0.5568374

2. The correct answer is D.

   Social Security retirement age is the only factor given that is not used in PVAB calculations

3. The correct answer is A.

   The adjusted accrued benefit equals the plan formula accrued benefit x (APR for normal form) / (APR for optional form), or
   ($4,000 x 127.76 / 133.89) = $3,817.

4. The correct answer is B.

   Statement I is false since the calculation of an immediate lump-sum value can use a preretirement mortality assumption, and Statement II is false since the 30-year Treasury rates no longer used under PPA. Statement III is true since the minimum lump sum must be calculated using both the plan's equivalency assumptions as well as the PPA segmented rate assumptions with the minimum being the larger of the two calculations.

5. The correct answer is A.

   $1,000 x 121.50 x 45,485/89,560 = $61,706

6. The correct answer is B.

   $2,000 x 102.14 x 13,165.52/50,946.43 = $52,790

Cautions

- The calculation of a PVAB must use the APR at normal retirement date, not the APR at the valuation date.

- The D_x factors continually decrease as age increases. Thus, the discount factor as of the valuation age will always be the ratio of the (smaller) D_x at retirement age divided by the (larger) D_x value at the valuation date.

- Lump-sum minimum present values must use applicable mortality and interest rate assumptions. Present values under the plan provisions must also be determined and you pick the higher of the two present values.

Review of Key Concepts

- Define present value.
- Compare present value with and without preretirement death.
- Compare normal form of benefit with automatic form of benefit.
- How does a Joint and 50% Survivor annuity differ from a Joint and 50% Either Survivor annuity?
- Why does a Social Security leveling option pay different amounts of benefit at different ages?
- Why does a PVAB calculation use the APR at retirement age rather than the APR at the valuation age?
- How is actuarial equivalence used to determine alternative forms of benefit payment?

Chapter 4
Hybrid and Floor-Offset Defined Benefit Pension Plans

Key Terms

- Applicable defined benefit plan
- Cash balance account
- Credited interest
- Floor-offset
- Hypothetical account
- Pension equity account
- DB-K

Introduction

Hybrid plans have features of both defined benefit and defined contribution plans. Examples of hybrid plans are cash balance and pension equity plans. A floor-offset plan is a hybrid arrangement of a defined benefit and defined contribution plan where the benefit in the defined benefit plan is offset by the value of the defined contribution plan account.

A cash balance plan is a defined benefit plan, because the benefit is not determined solely by the account balance for each participant. However, to a participant, it appears to work much like a defined contribution plan because a hypothetical account balance is

maintained for each participant. This hypothetical account balance is not an allocated share of the plan's assets; rather it is an accounting device. The plan provides for a specified accrual to this account (as a percentage of pay) and a specified rate of interest earnings to be credited to the account each year.

A pension equity plan also defines for each participant a hypothetical account. However, additions to the account are annual percentages of average compensation, and increases to the account come in the form of service credits and increases in final average compensation. A pension equity plan is also a defined benefit plan.

A floor-offset plan is a hybrid arrangement in which the employer maintains both a defined benefit plan and a defined contribution plan. The benefit provided for a participant under the defined benefit plan is reduced (offset) by the benefit derived from the participant's account in the defined contribution plan. Thus, the stated accrued benefit under the defined benefit plan provides a guaranteed "floor" benefit below which the total benefit from the arrangement cannot fall, regardless of investment gains or losses.

Cash Balance Plan

A cash balance plan is a defined benefit plan that has the appearance to the participant of a money purchase plan. A hypothetical **cash balance account** is established for each employee when he or she becomes a participant in the plan. Generally, the account balance starts at zero. Each year pay credits and interest credits are added to the beginning of year hypothetical account balance.

Pay credits, which are typically expressed as a flat percentage of pay or a flat dollar amount, are credited to the accounts each year. The sum of these credits will usually not be the same as the amount contributed by the employer to fund the plan.

Interest is also credited to the cash balance accounts each year. The rate of interest credited can vary from year to year, but the method for determining it must be specified in the plan document so that it is not subject to plan sponsor discretion. The rate of interest credited can be either a fixed rate or a rate related to some index or other independent source, such as the consumer price index or the one-year Treasury bill rate. The interest rate may be tied to the actual investment performance of the plan's assets in certain situations, although this can create volatile results in nondiscrimination testing from year to year and volatile contribution requirements from year to year.

EXAMPLE 4-1: **Account Balance Roll-Forward.**
Beginning of year balance is $10,000
Interest crediting rate is 5%
Pay is $50,000
Pay credit is 4% of pay
End of year account balance is ($10,000 × 1.05) + ($50,000 × 4%) = $12,500

The hypothetical cash balance accounts are a bookkeeping device to keep track of participants' accrued benefits and are not directly related to plan assets. A cash balance plan is a defined benefit plan because accrued benefits are not determined solely by the value of trust assets in an allocated account. Because it is a defined benefit plan, employer contributions are calculated using actuarial assumptions and funding methods. The trust asset value will usually differ from the sum of the participants' accounts.

If a cash balance plan is a conversion by amendment of an existing defined benefit plan, the participant's account balance is the sum of the former accrued benefit plus any benefit earned from post conversion service under the cash balance formula. Conversions must preserve the accrued benefit with all future service creating cash balance account additions.

A new cash balance plan (one that is not a conversion of an existing defined benefit plan) can grant past service credit in the form of an opening cash balance account.

Pension Equity Plan

A pension equity plan is similar to a cash balance plan, except that the accrual each year is expressed as a percentage of final average compensation. Increases in the value of the pension equity account come through additional service and increases in average compensation rather than through pay and interest credits.

Since a pension equity plan bases accruals on average compensation (which usually would be based on compensation earned in the last few years the employee works), while a cash balance plan bases accruals on each single year's compensation during participation, pension equity plans resemble traditional final pay pension plans while cash balance plans resemble traditional career average pay plans.

Pension equity plans can be designed so that either the percent of salary is a deferred benefit payable at normal retirement age (NRA) or as a percent of salary payable at the date of termination with interest projected to NRA if a deferral is taken.

Applicable Defined Benefit Plan

The term Applicable Defined Benefit Plan is used to identify cash balance or pension equity plans that comply with certain rules introduced in the Pension Protection Act of 2006 (PPA). For the explanations and calculation examples in this chapter, we will assume the plans discussed comply with the PPA rules are considered Applicable Defined Benefit Plans.

Rules Applicable to Both Cash Balance and Pension Equity Plans

As with a traditional defined benefit plan, the risk of investment loss with a cash balance or a pension equity plan is borne by the employer.

The defined benefit minimum funding standards of IRC §412 (as modified by IRC §430)

apply to both cash balance and pension equity plans.

100% vesting is required after 3 years of service for both cash balance and pension equity plans.

Both cash balance and pension equity plans allow for accruals at a higher rate for earnings above the Social Security wage base. This "permitted disparity," as defined under IRC §401(l), is sometimes called integration with Social Security.

Although there is a safe harbor formula for hybrid plans, it is more common to test for nondiscrimination under IRC §401(a)(4) by imputing permitted disparity rather than using a formula that explicitly recognizes permitted disparity.

It is common practice to pair a cash balance or pension equity plan with a defined contribution plan to satisfy IRC §401(a)(4) nondiscrimination, IRC §410(b) coverage, and IRC §416 top-heavy testing.

Retirement Benefits

A participant's retirement benefit under a cash balance plan is the benefit provided by the hypothetical account balance. The hypothetical balance is first projected to NRA then converted to a monthly benefit at NRA based on the plan's interest and mortality provided for in the definition of actuarial equivalence.

A participant's benefit under a pension equity plan is the benefit provided by the accrued percentage of average compensation. These account credits (expressed as a dollar amount) are first projected to NRA, and then converted to a monthly benefit at NRA based on the plan's interest and mortality provided for in the definition of actuarial equivalence.

Cash balance and pension equity plans are subject to the top-heavy rules, so the benefit determined from the account balance must be compared with any minimum top-heavy benefit accrued by a participant, with the larger benefit provided to the participant.

EXAMPLE 4-2: **Cash Balance Plan Accrued Benefit.**

Determine the benefit payable at age 65 in the normal form.

Account balance is $10,000.
Interest crediting rate is assumed to be 5%.
Attained age is 55.

Annual annuity factor at age 65 based on actuarial equivalence definition specified in the plan document: 11

Steps

1. Project the account balance to age 65 using the assumed interest rate.

$10,000 × (1.05)^10 = $16,288.95

2. Convert the projected balance at age 65 to a benefit amount payable monthly starting at age 65.

   $16,288.95/(12 × 11) = $123.40 per month.

The benefit in this example has not been compared to the maximum benefit limits under IRC §415(b). However, this calculation would be required before the accrued benefit could be finalized. Additionally, the benefit would need to be at least as large as the top-heavy minimum benefit, if the participant was a non-key employee and the plan was top-heavy. Note that there are no IRS constraints on the interest and mortality assumptions used in the definition of actuarial equivalence to convert the account balance to an accrued benefit.

Here is another example illustrating the calculation of the benefit in a cash balance plan.

EXAMPLE 4-3: Data used for cash balance plan.
Consider a 55-year-old, hired at age 52 at the beginning of the plan year with the plan having a NRA of 65.

Age	Total Service to end of prior year	Pay for prior year
53	1	$50,000
54	2	$60,000
55	3	$70,000

The plan document defines the interest credit to be a fixed 4% and the pay credit to be 5% of compensation. The first year pay credit is 5% × $50,000 = $2,500. No interest credit is provided for the first year since pay credits are assumed to occur on the last day of the year. So the hypothetical balance for the participant at the end of the first year is $2,500. At the end of the second year, the $2,500 hypothetical account balance from the end of the prior year is given an interest credit of 4%, or $100. The pay credit for the 2nd year is $3,000 (5% of $60,000), giving a hypothetical account balance at the end of the 2nd year of $5,600 ($2,500 from the beginning of the year plus $100 interest credit plus $3,000 pay credit). At the end of the third year, the balance of the hypothetical account from the prior year, $5,600, is given interest of $224 (4% of $5,600) and the pay credit for the 3rd year is $3,500 ($70,000 x 5%), giving a total hypothetical account balance at age 55 of $9,324. Under most cash balance plans, provided they satisfy certain rules, the participant will receive the value of the hypothetical account balance as a lump sum distribution if that is the elected form of payment.

Accrued Benefits

In a cash balance plan with constant contribution credits, the 133⅓% accrual rule will always be satisfied because the accrual declines in future years. For example, a cash

balance plan that has a 4% pay credit for everyone regardless of service will satisfy the 133⅓% rule. In a plan where the contribution credit fluctuates, there can be some concern with regard to the satisfaction of the minimum accrual rules. See the next example of a situation that fails to satisfy the accrual rule requirements.

EXAMPLE 4-4: **Accrued Benefit.**
A participant receives a contribution credit of 5% of compensation for the first 10 years of plan participation and a 7.5% credit thereafter. The interest credit is 5% each year. The contribution credit is given on the last day of each year. The annuity purchase rate at age 65 is 144.352.

Consider an employee who enters the plan at age 21, earning $50,000 per year. After 9 years in the plan this employee would have a hypothetical account balance of $27,566 (this amount can be derived by taking contribution credits of $2,500 for 9 years, with 5% interest, remembering that there is no interest credit until the end of year 2 because the first year contribution is made on the last day of the first year). The employee would be age 30. The account balance is projected forward 35 years to determine the projected amount at NRA, in order to determine the accrued benefit. The projected balance at age 65 would be $152,054 ($27,566 × 1.05^{35}), and the accrued benefit would be $1,053.36 (152,054 / 144.352).

One year later (year 10), the account balance would be $31,444 (($27,566 × 1.05) + 2,500), resulting in an accrued benefit at such time of $1,144.33. The increase in the accrued benefit for year 10 would therefore be $90.97 ($1,144.33 - $1053.36).

In year 11 the contribution credit goes from $2,500 to $3,750, resulting in an account balance at the end of such year of $36,766, with a related accrued benefit of $1,274.30. The increase in the accrued benefit for such year is therefore $129.97.

The year 11 benefit increase is 142.9% of the year 10 benefit increase (129.97 / 90.97 = 142.9%). This is greater than 133⅓%. The plan therefore fails the requirement that a future accrual may not be more than 133⅓% of any prior year accrual. The plan as written would not satisfy the 133⅓% accrual rule.

Top-Heavy Minimum Benefits for Cash Balance Plans

Cash balance plans that are top-heavy must satisfy the top-heavy minimum benefit requirement for non-key employees. The account balance must be converted to an equivalent benefit at retirement, in order to compare it with the top-heavy minimum benefit. Recall that the top-heavy minimum accrual is equal to 2% of the high consecutive 5-year average salary, multiplied by years (maximum of 10 years) of top-heavy plan participation. An additional accrual in the form of a pay credit is added to the account balance as the means of enforcing the non-key employee minimum top-heavy benefit.

EXAMPLE 4-5: **Top-Heavy Minimum Accrued Benefit.**
Account balance at NRA: $10,000
Annuity purchase rate at NRA: 100
Average salary: $25,000
Years of plan participation: 3 years
The plan has always been top-heavy.

Accrued benefit under the terms of the plan is $10,000/100 = $100 per month

Top-heavy minimum accrued benefit is 2% × 3 years × $25,000 = $1,500 per year or $125 per month.

The top-heavy minimum governs since it is larger than the accrued plan benefit of $100. Therefore, the accrued benefit is $125/month. This converts to an account balance at NRA of $12,500 ($125 × 100). The shortfall in the account balance is $12,500 - $10,000 = $2,500. The present value of that amount is an additional contribution to the non-key employee in order to satisfy the top-heavy minimum accrued benefit.

Forms of Benefit Payment

Cash balance and pension equity plans usually provide participants the option of receiving their full vested account balances in the form of a lump-sum distribution immediately at termination of employment. The plan must also permit participants to receive their benefits with a value over $5,000 in the form of an annuity; QJSA language is required. The plan can provide early retirement benefits or other optional forms, which need not be the actuarial equivalent of the normal retirement benefit.

In a cash balance or pension equity plan, in order to determine the accrued normal retirement benefit due a participant, a participant's cash balance or pension equity account must be projected to NRA. For a cash balance plan, the projection rate is the interest crediting rate in the plan. For actuarial funding valuation purposes, the rate is an assumption selected by the plan actuary based on their expectations of the future. For a pension equity plan, the projection must use a rate specified in the plan.

Projecting the hypothetical account balance from attained age to NRA is usually done using interest only. The projected balance at NRA is then converted into a monthly annuity by dividing the balance by an annuity purchase rate (APR) at NRA.

The IRC §415(b) maximum benefit limits applicable to traditional defined benefit plans also apply to cash balance and pension equity plans.

Because neither a cash balance account nor pension equity income credits represent a share of plan assets, it is not possible to allow participants to direct plan investments in a way that would affect their benefit.

Whipsaw Effect

A cash balance plan is a defined benefit plan. Under the law and regulations in effect prior to the enactment of PPA, the calculation of lump-sum distributions for all defined benefit plans (including cash balance plans) was subject to IRC §417(e)(3) minimum cash-out rules. Because the cash balance account must first be projected to normal retirement as defined by the plan, then discounted to the determination date by the (usually lower) applicable rate under IRC §417(e)(3), this can result in immediate lump-sum distributions larger than the cash balance account. This is commonly called the whipsaw effect. PPA eliminated the whipsaw effect for cash balance plans that comply with the rules (*i.e.*, are considered Applicable Defined Benefit Plans) by permitting a lump-sum distribution to equal the participant's cash balance account should the IRC §417(e)(3) lump sum exceed the account balance. If a cash balance plan does not comply with the PPA rules and, in turn, is not considered to be an Applicable Defined Benefit Plan, it will be subject to IRC §417(e)(3) minimum cash-out rules and the whipsaw effect could occur.

Advantages and Disadvantages of Cash Balance and Pension Equity Plans

Since both cash balance plans and pension equity plans base the accrued normal retirement benefit on a hypothetical account, it is convenient to consider them together when detailing their advantages and disadvantages.

Cash Balance Plan vs. Pension Equity Plan:

- Pension equity plans do a better job of achieving desired retirement benefit ratios to final salary than do cash balance plans, while still providing easily understandable buildup of account value. However, this advantage comes with higher required contributions and less predictable contribution levels. Cash balance plans may have lower required contributions, which are more predictable.
- In order for pension equity plans to mimic more closely the benefit levels of traditional final pay defined benefit plans, the plans are often defined with accruals that increase either with age or service (or both), although such increases must be shown not to discriminate in favor of highly compensated employees. Such patterns of increasing accrual levels are also possible in cash balance plans.
- If the employer's goal is to provide relatively higher, transportable benefits for younger workers, then for a given contribution level a cash balance plan does a better job than a pension equity plan.

Advantages of Cash Balance and Pension Equity Defined Benefit Plans Over Traditional Defined Benefit Plans:

- The benefit in a cash balance or pension equity plan is stated in such a way that the participant can easily understand its value.
- Participants may more easily project lump-sum distribution amounts in a cash balance or pension equity plan than they can in a traditional defined benefit plan.
- Providing lump sums makes the pension benefit more transportable when employees change jobs (traditional plans do not always offer lump sums).

- If an employer already sponsors a traditional defined benefit plan, but would prefer an account balance based benefit, the existing defined benefit plan can be amended to become a cash balance or pension equity plan. Terminating the defined benefit plan in order to establish a profit sharing plan could involve significant complexity if the defined benefit plan is overfunded or underfunded.
- A new cash balance plan can be appealing in a company with two owners or partners of different ages with similar compensation since each can receive comparable accruals each year (as they would under a defined contribution plan), yet enjoy the tax benefits of the higher contribution levels permitted under a defined benefit plan. Under a traditional defined benefit plan, the older owner or partner generally would receive accruals with significantly higher value.
- An advantage to the sponsor of a cash balance plan is the transparency of the termination process, since participants receive their account balance and the amount received will not increase unexpectedly due to a drop in interest rates.

Disadvantages of Cash Balance and Pension Equity Defined Benefit Plans Over Traditional Defined Benefit Plans:

- Since higher benefits are paid to younger terminating participants than under a traditional plan, either the cost of the cash balance/pension equity plan will be higher or, as is more often the case, longer term participants will receive lower benefits than under a traditional plan.
- Since the goal of transforming a traditional defined benefit plan into a cash balance or pension equity plan may include maintaining level costs, future benefit accruals for older workers are likely to be reduced. Under ERISA §204(h) this requires disclosure and illustration to the participants of the decrease in future accruals. Traditional defined benefit plans can easily offer subsidized early retirement benefits, while cash balance and pension equity plans rarely do.

Comparison of a Cash Balance Plan to a Profit Sharing Plan

A participant under both a cash balance plan and a profit sharing plan builds wealth by accumulating funds for retirement. In both plans, the participant starts with a zero balance. Each year the account balance is increased with contributions by the employer and by the appropriate rate of return. In both cases the employer makes the contributions, not the employees. The employer contribution in both cases is usually a percentage of pay (although it does not have to be). A profit-sharing plan contribution is discretionary, while the cash balance plan contribution is required (as determined by the plan's enrolled actuary).

Typically cash balance interest credits are based on a flat interest rate defined in the plan document (*e.g.*, 5%) or tied to conservative government interest rates such as the 30 Year Treasury Bond. In some situations, market rates of return can be used for the interest credits (this course will not deal with this situation). A profit sharing plan is an individual account that may be invested in a wide range of investment options such as mutual funds

or stocks. The cash balance plan account is not held in a separate account but is a paper account held as part of the overall plan assets. In a cash balance plan, the participant's account is credited with the stated interest rate regardless of what the plan's assets earn. In a profit sharing plan, the participant's account is credited with the actual rate of return on plan investments.

Distribution options are typically more generous in the cash balance plan since it typically pays not only lump sums but also provides annuities. Profit sharing plans seldom provide annuity options. However, the annuity in a cash balance plan is rarely elected by participants and if elected, an annuity contract is usually purchased to provide the annuity. While it is possible for the plan to pay the annuity, that assumes the plan continues for as long as the participant remains alive. If the plan is terminated, plan assets will we used to purchase an annuity from an insurance company. Typically, employees take the lump-sum distribution if it is available and roll over the funds to an IRA.

The determination of the maximum tax-deductible limits and procedures used for nondiscrimination testing are also quite a bit different between a cash balance plan and a profit sharing plan. The deductible limits under the defined benefit plan can be much higher than those of the profit sharing plan.

Comparison of Employer Risks for Maintaining Cash Balance and Profit Sharing Plans

During the initial meetings with a plan sponsor, when advising as to plan design, an initial consideration is which type of retirement plan is suitable. Since each plan type has different features, it is helpful for the advisor or benefit consultant to compare and contrast the most important features between plans.

Financial and legal risks are a prime consideration, and these can be managed by ensuring compliance tests and government filings are completed accurately and timely.

In a cash balance plan, if assets return more than expected, the employer contribution will decrease (all other assumptions being satisfied). On the other hand, poor returns require increasing employer contributions. The contributions must satisfy the minimum required contribution for the cash balance plan. The minimum required contribution is always tax-deductible, and the plan can be designed such that the contribution is substantially higher than the 25% of pay deduction limit allowed in a profit sharing plan.

A profit sharing plan has discretionary employer contributions, so the employer could contribute anywhere from $0 to a maximum of 25% of pay and be able to deduct the entire contribution. Asset returns are based on the individual participants' investments and not consolidated like a cash balance plan. Any strong investment returns are a reward for the participant, not the employer.

Employer risks in the cash balance plan may be reduced by proactively managing plan

assets so that they move in line with interest crediting rates. The risk/reward trade-off must be considered, though, since many plan participants might favor the flexibility offered in the cash balance plan for annuity type distributions that are not available in the profit sharing plan. Small business owners might not mind the volatility in contribution levels from year to year as long as they can make large tax-deductible contributions. Both plan types are similarly affected by inflation, since the cash balance plan pay credits are year by year, and that is also how the profit sharing plan contributions are usually made.

In the end, the recommendation of a cash balance plan is almost always influenced most strongly by the desire of the plan sponsor to make contributions substantially in excess of those allowed in a profit sharing plan.

Cash Balance Plan Interest Credits

A cash balance plan provides benefits to a participant using a different mechanism than the traditional defined benefit plan. The following two paragraphs describe first the allowable interest credits and then the various pay credit structures that are commonly used.

The interest credit must be given at least annually. Some plans credit interest more frequently, such as monthly, quarterly, or semi-annually. The plan document will describe how to carry out the calculation including the interest rate to be used and how it is applied to the account balance.

In some cases, a minimum interest rate may be defined. For example, the interest rate could be defined to be the rate published for 30-year Treasury securities, but not less than 4%. A definition of this type is often necessary to help the plan satisfy the minimum accrual rules of IRC §411(b). A maximum interest rate may also be used.

Below is a list of valid interest credit options.

- The discount rate on 3-month Treasury Bills
- The discount rate on 6-month Treasury Bills or 12-month Treasury Bills
- The yield on 1-year Treasury Constant Maturities
- The yield on 2-year or 3-year Treasury Constant Maturities
- The yield on 5-year or 7-year Treasury Constant Maturities
- The yield on 10-year or any longer period Treasury Constant Maturities
- Annual rate of change of the Consumer Price Index
- First or second segment funding interest rate
- Any of the three lump-sum segment rates
- Actual asset rate of return (only allowed in certain cases)

IRS rules require the interest crediting rate be no more than a market rate (it is not clear exactly what a market rate is). Generally, the interest rate is applied to the beginning of year account balance. The higher the rate the more generous the benefit is. This would be

paid for by the employer in the form of higher contribution amounts.

A participant can rely on these interest credits just as if it was a GIC. Usually the rate is set once a year in advance of (or at) the beginning of the year.

It is possible for the interest credit rate to be negative in a particular year. In that case, it is required that the participant receive at least the sum of the pay credits made to their accounts since they started participating in the cash balance plan. This means that each participant has a floor below which their account balance cannot fall. As a result, plans tend to impose a minimum interest rate credit to avoid having to compare the current account balance against the sum of the pay credits each year (or whenever a participant is entitled to a distribution).

Example of Preservation of Capital Requirement:

Account balance on 1/1/2016: $12,000

2016 interest credit/loss: $1,500 loss

Account balance on 12/31/2016 before preservation: $10,500

Total pay credits through 2016: $11,000

Account balance with preservation as of 12/31/2016: $11,000

Cash Balance Plan Pay Credits

A wide range of pay credit rates are available. Most plans use a percentage of pay; however, a flat dollar amount is allowable, and the choice is made by the plan sponsor before the plan is adopted. It should be analyzed for cost, ease of administration and to ensure that it fulfills the employer's objectives. For the benefits to be definitely determinable, the plan document must specify the pay credits. If the plan sponsor ever wants to change the pay credit, it is allowed provided that the anti-cutback rules with regard to the accrued benefit are satisfied.

Examples of pay credits include:

- $5,000 for each participant
- 5% of compensation for each participant
- $1,000 per year of service
- 4% of compensation for each participant with fewer than 65 points, and 5% of compensation for each participant with at least 65 points. Total points are equal to the sum of age and years of service.

Note that in the last bullet above, a newly hired 45-year-old participant has 45 points. The same person after 10 years of service will be age 55 with 10 years of service resulting in 65 points. Care must be taken, however, so that pay credits that increase with service do not

violate the accrual rules against back loading under IRC §411(b).

Generally, the pay credit is applied to the current year compensation at the end of the year. Eligible current year compensation will be defined in the plan, and could either include or exclude bonus and overtime, just as in a final average compensation defined benefit plan.

Integration with social security is an allowable option when selecting a pay credit structure, whereby benefits are skewed to the higher paid, similar to a traditional defined benefit plan. An example of this is a 6% pay credit for compensation above the Social Security Taxable Wage Base, plus a 4% pay credit for compensation below the wage base. There is no safe harbor permitted disparity formula available for cash balance plans, therefore general testing is commonplace.

Traditional Plan Conversion to a Cash Balance Plan

There are various reasons (as have been previously mentioned) for a plan sponsor to consider converting from a traditional final average pay defined benefit plan to a cash balance plan. Two methods may be used to accomplish this.

One method is to close the old plan's benefit formula to new participants while letting those that are in the old plan continue to accrue benefits under the old formula. New entrants would be covered by the cash balance portion of the plan.

The other method is to convert accrued benefits under the old plan to cash balances and add new pay and interest credits in the newly converted cash balance plan, while new entrants join the cash balance plan. All converted participants start with their conversion balance and accrue new benefits right away. The accrued benefit from the old defined benefit plan goes away and is replaced by a cash balance at the date of conversion. Additional accruals result from future pay and interest credits.

Careful consideration should be given to early retirement benefits under the former traditional plan since the anti-cutback rules apply to early retirement benefits. An actuarial equivalent basis must be defined in the plan document, which determines the conversion balance. This conversion is the reverse of the process used to convert a cash balance to a benefit (as has previously been described). An ERISA attorney is likely to be involved when making the conversion so that legal risk is reduced.

Floor-Offset Plan

In order to have a floor-offset arrangement, both a defined benefit and a defined contribution plan must be in place. The term floor-offset describes the relationship between the defined benefit and the defined contribution plan.

How the Benefit in the Defined Benefit Plan is Calculated

An equivalent normal retirement benefit that could be provided by the account balance

in the defined contribution plan is calculated using the definition of actuarial equivalence in the defined benefit plan. This requires a projection of the account to the normal retirement date, and the method of projection must be specified in the defined benefit plan document.

Floor-offset plans are subject to a uniformity requirement. A level percentage of compensation must be used to offset the defined benefit plan benefits for all participants, even if the employer provided benefit in the defined contribution plan is not allocated uniformly.

If the equivalent benefit determined from the defined contribution plan exceeds the accrued normal retirement benefit from the defined benefit plan, the participant will receive benefits exclusively from the defined contribution plan. In other words, the participant's net benefit in the defined benefit plan would be $0. Even when the change in a participant's net benefit over the course of a plan year is zero or negative, that participant is still considered to be benefitting under 401(a)(26).

If the equivalent benefit from the defined contribution plan does not exceed the accrued benefit from the defined benefit plan, then the total benefit that the participant will receive from both plans will be equivalent to the full pension benefit under the defined benefit plan's formula. The participant will receive the account balance from the defined contribution plan, plus the net accrued benefit (defined benefit accrued benefit less the defined contribution equivalent benefit) from the defined benefit plan.

Elective deferrals under a 401(k) plan cannot be used to offset a participant's benefit under a defined benefit plan.

The defined benefit plan can use either a flat benefit or unit benefit formula. It can also use permitted disparity.

EXAMPLE 4-6: **Floor-Offset.**
Defined benefit plan participant's gross accrued benefit before offset: $300/month

Defined contribution plan participant's equivalent benefit: $200/month

Defined benefit floor-offset participant's net benefit = $300 - $200 = $100/month

The overall result is that the participant is entitled to the defined contribution account balance and a floor offset benefit of $100/month from the defined benefit plan. Note that the participant does not receive the equivalent benefit of $200/month instead of the defined contribution account balance. This $200/month is just used in the determination of the floor-offset amount from the defined benefit plan.

EXAMPLE 4-7: **Floor-Offset.**
Defined benefit plan participant's gross accrued benefit before offset: $200/month

Defined contribution plan participant's equivalent benefit: $300/month

Defined benefit floor-offset participant's net benefit = zero

The overall result is that the participant is entitled to only the defined contribution account balance.

Reasons an Employer Might Consider a Floor-Offset Arrangement:

- Participants seem to better understand and appreciate a defined contribution plan.
- Younger employees can see a definite build-up of plan assets in the defined contribution plan.
- The effects of compound interest mean younger employees achieve higher retirement income levels in a defined contribution plan. The defined benefit plan allows employees hired later in life to accumulate higher levels of retirement benefits far more rapidly than would be allowed in a defined contribution plan. As a result, both younger and older employees can derive higher benefits than from a single defined benefit or defined contribution plan.
- The defined contribution plan could be a profit sharing plan, thus providing considerable contribution flexibility.
- Employees who continue in service until retirement age are assured of a minimum retirement income equal to that provided by the defined benefit plan. There is no such assurance when the only plan is a defined contribution plan.
- If the employer's intent is to phase out a defined benefit plan in favor of a new defined contribution plan, a floor-offset arrangement can maintain the expected defined benefit for participants near retirement while younger workers will gradually build up defined contribution balances large enough to allow the eventual termination of the defined benefit plan with no decrease in benefit levels from those offered by the traditional defined benefit plan.

DB-K Plan

The DB-K Plan is officially termed an "eligible combined plan." This plan combines features of a defined benefit plan and a 401(k) plan. It is available to sponsors with less than 500 employees on average for the preceding year and at least two employees. The defined benefit plan is generally required to utilize a benefit formula equal to 1% of final average pay times years of service up to a maximum of 20 years. The compensation averaging period for pay must be no more than 5 years. Vesting is 100% after three years. Another option is to use a cash balance design for the defined benefit plan. The 401(k) plan has automatic enrollment. The employer match is 50% of the deferrals, up to a deferral rate of 4%. Top-heavy testing is not required. Each component piece is terminated separately. There is only one Form 5500 and plan document, instead of two.

Because of the limit to either a specific benefit formula or cash balance formula, the 100% vesting requirement, and the automatic enrollment requirement, the cost savings of maintaining only one plan document and filing only one 5500 rarely outweighs the need for flexibility and the ability to impose a longer vesting schedule. DB-K plans are rarely used in practice.

Practical Examples of Concepts Learned

Problem #1

Your client, the XYZ Company, is in the process of evaluating whether to implement a cash balance plan. Address the following practical issues related to a cash balance plan.

- What factors should XYZ Company consider when selecting a rate to be used for crediting interest each year to the participants' accounts?
- How should XYZ Company go about selecting a vesting schedule?
- Discuss with XYZ Company the difficulty of administering a cash balance plan compared to a traditional defined benefit plan or defined contribution plan.

Solution

Discussion 1. Determine an interest rate for crediting annually to participants' accounts.

Relating the interest rate to interest rates available in the marketplace keeps the rate competitive with other rates. A noncompetitive rate could be a source of employee dissatisfaction. The interest rate must be fixed, either as a specified rate or by reference to a specified index, or the plan will fail to provide definitely determinable benefits. For cash balance and similar account based defined benefit plans, lump-sum distributions can equal the participant's account without regard to any present value calculation of the projected accrued benefit. The interest rate may be negative and cannot exceed a "market rate of return" (which has yet to be defined). Although interest credits may be negative, the principal is preserved. Therefore, a participant will never receive less than the sum of each year's pay credits.

Discussion 2. Pick a vesting schedule.

Cash balance plans usually provide full vesting after some minimum period rather than graded vesting, because graded vesting is subject to "buy-back" provisions for those who are reemployed. A participant in an applicable defined benefit plan must become 100% vested after three years of service.

Discussion 3. Discuss the administration of a cash balance plan.

A cash balance plan requires hypothetical account balances to be maintained. Because the cash balance plan is a defined benefit plan, its administration entails all of the work required in any defined benefit plan as well as PBGC premiums. Unlike a profit sharing plan, a cash balance plan cannot be exempt from the qualified joint and survivor annuity requirement. In addition, a cash balance plan requires participant record keeping similar to that for a defined contribution plan.

Cash balance and pension equity plans typically require general testing under IRC §401(a)(4).

Problem #2

Your client BU, Inc. maintains a profit sharing plan. BU is receiving considerable pressure from its employees, whose average age is 45, to implement a defined benefit pension plan. The employees feel that their service with the company should be rewarded with the security provided by a defined benefit plan. However, BU has contributed to the existing defined contribution plan for many years. Therefore, they have approached you for ideas, and you have suggested a floor-offset arrangement.

Using the following monthly benefit data for two different employees, explain how a floor-offset arrangement might be handled for each of the two employees.

Employee Data

	Employee A	Employee B
Benefit to be accrued under the defined benefit plan without respect to the defined contribution plan	$5,000	$7,000
Benefit that could be funded with the discretionary profit sharing contributions	$8,500	$6,000

Solution

Explanation 1. Employee A's benefits using the floor-offset arrangement.

Under the floor-offset arrangement, Employee A would be guaranteed a benefit of $5,000 (as provided by the defined benefit plan). This benefit, however, would be offset by the benefits under the defined contribution plan. Since the defined contribution provided benefit exceeds $5,000, no benefit is due under the defined benefit plan.

Explanation 2. Employee B's benefits using the floor-offset arrangement.

The defined benefit plan guarantees Employee B a benefit of $7,000. Since the defined contribution plan will only provide a benefit of $6,000, Employee B must receive a $1,000 benefit from the defined benefit plan.

Self-Test Questions

Circle your responses:

T F 1. The rate of interest in a cash balance plan must be fixed and may not vary from year to year.

T F 2. The risk of investment performance in a cash balance plan is borne by the employer.

T F 3. A participant's retirement benefit in a cash balance plan is the greater of the benefit that can be provided by the cash balance account or the minimum top-heavy benefit defined by the pension plan.

T F 4. A cash balance plan is exempt from the minimum funding requirements of IRC §430.

T F 5. IRC §415 defined benefit limits apply to a cash balance plan.

T F 6. A floor-offset arrangement may be comprised of a defined benefit pension plan and a pension equity plan.

T F 7. In a floor-offset arrangement, if the benefit from the defined contribution plan exceeds the benefit from the defined benefit plan, the participant receives benefits from the defined contribution plan only.

T F 8. In a floor-offset arrangement, if the benefit from the defined contribution plan is less than the benefit from the defined benefit plan, the participant will receive a benefit from both plans.

T F 9. In a floor-offset arrangement, the defined contribution plan must be a money purchase pension plan.

Sample Test Questions

1. All of the following statements regarding pension equity plans are **TRUE**, **EXCEPT**:

   A. The pension equity plan does a better job of keeping pace with inflation during a participant's career than does a cash balance plan.
   B. Interest is credited each year to a participant's pension equity account.
   C. Benefits are subject to the IRC §415 limits.
   D. Accruals each year are stated as a percentage of final average compensation.
   E. The pension equity plan more closely resembles a final pay traditional defined benefit plan rather than a career average traditional defined benefit plan.

2. Which of the following statements regarding a cash balance plan is/are **TRUE**?

   I. A cash balance plan must allow for payments in annuity form.
   II. A traditional defined benefit plan can be converted to a cash balance design through plan amendment rather than by plan termination.
   III. The interest rate credited to participants' accounts must not vary from year to year or the plan will fail to provide definitely determinable benefits.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

3. Which of the following statements regarding floor-offset arrangements is/are **TRUE**?

   I. A floor-offset arrangement requires the existence of both a defined benefit and a defined contribution plan.
   II. Permitted disparity is allowed in a floor-offset arrangement.
   III. It is possible that a participant will not receive a benefit from the defined benefit plan.

   A. I only
   B. II only
   C. I and III only
   D. II and III only
   E. I, II, and III

4. Based on the following information, determine the monthly accrued benefit of a participant covered by a pension equity plan who was hired at age 25 and terminated employment at age 55, and is considering taking the accrued benefit as a life annuity at age 65 (NRA).

Participant's final average annual compensation at age 55	$50,000
Participant's pension equity credits (10% per year for 30 years)	300%
Annuity purchase rate at NRA (based on 5% interest and GAR 94)	141.53
D_x at NRA	419,466
D_x at participant's current age	683,266

A. $ 170.05
B. $ 575.46
C. $ 1,726.38
D. $ 28,716.51
E. $ 244,344.22

5. All of the following provisions are possible in cash balance plans, **EXCEPT**:

A. The participant's prior account balance may be credited with a variable rate of interest if it is based on a rate or index stated in the plan document.
B. The participant's account balance is credited with hypothetical contributions based on a stated formula such as a percent of compensation.
C. The participant's accrued benefit is the greater of the benefit produced by the account balance or the minimum top-heavy benefit provided by the plan.
D. The participant's minimum top-heavy contribution allocation is 3% of compensation.
E. If the value of the accrued benefit exceeds $5,000, a married participant must be allowed to receive benefits in the form of a qualified joint and survivor annuity.

6. Which of the following is/are characteristics of floor-offset plans?

   I. The participant's defined contribution account balance is converted to an equivalent annuity benefit that is used to offset the participant's benefit under the defined benefit plan.
   II. The participant may not be entitled to any benefits payable from the defined benefit plan.
   III. The participant's salary deferrals are commonly used to offset the participant's benefit under the defined benefit plan.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

7. A participant covered by a floor-offset arrangement has terminated employment and is eligible to receive a lump-sum distribution. The participant is 100% vested in both plans. Based on the following information, determine the amount of the participant's benefit to be distributed from each plan.

Participant's current account balance in the DC plan	$ 52,000
Participant's monthly accrued benefit (at NRA) in the DB plan before offset	$ 3,160
Annuity purchase rate at NRA (based on 6% interest and UP-84 mortality)	109.065
D_x at NRA	24,011.79
D_x at participant's current age	137,911.53

   A. $52,000 from the DC plan only
   B. $2,738 per month from the DB plan only
   C. $52,000 from the DC plan and $422 per month from the DB plan
   D. $52,000 from the DC plan and $2,738 per month from the DB plan
   E. $3,160 per month from the DB plan only

Solutions to Self-Test Questions

1. False
2. True
3. True
4. False
5. True
6. False
7. True
8. True
9. False

Explanation of *False* questions:

1. It is permissible to vary the rate of interest from year to year.

4. Minimum funding standards apply.

6. The arrangement is with a defined benefit pension plan and a defined contribution plan; a pension equity plan is not a defined contribution plan.

9. The defined contribution plan may be a profit sharing plan.

Solutions to Sample Test Questions

1. The correct answer is B.

   Interest is not credited on a pension equity account. Rather, the value of the account increases as average compensation increases.

2. The correct answer is C.

   It is permissible to vary the rate of interest each year. The method to determine the interest rate must be specified in the plan document.

3. The correct answer is E.

   All three statements are true.

4. The correct answer is C.

   $50,000 x 300% = $150,000, the current pension equity account value

   $150,000 x D_{55} / D_{65} = $150,000 x 683,266 / 419,466 = $244,334 projected value at NRA

   $244,334 / APR_{65} = $244,334 / 141.53 = $1,726.38 accrued monthly benefit at NRA.

5. The correct answer is D.

   A cash balance plan is a defined benefit plan and is subject to the top-heavy minimums for defined benefit plans, not defined contribution plans.

6. The correct answer is C.

   Salary deferrals may not be used to offset a defined benefit plan accrued benefit.

7. The correct answer is C.

   The equivalent DC plan benefit is:
   $52,000 / 109.065 x (137,911.53/ 24,011.79) = $2,738 per month

   The excess of the DB benefit over the defined contribution benefit is:
   $3,160 – 2,738 = $422

   The DC account balance of $52,000 is payable to the participant, and in addition the DB benefit of $422 is payable monthly.

Review of Key Concepts

- What are the key elements of a cash balance plan that make it a defined benefit plan?

- Describe how the following requirements apply to cash balance and to pension equity plans.

  - Top-heavy rules

  - Vesting standards

  - IRC §415 limits

- How does a floor-offset arrangement work?

- Why might an employer implement a floor-offset arrangement?

- What payment options are available in a cash balance plan?

- What are some of the practical considerations in designing a floor-offset arrangement?

Chapter 5
Benefits after Normal Retirement Age

Key Terms

- Accrual
- Accrued benefit
- Actuarial adjustment
- Actuarial equivalent
- Ancillary benefits
- Fractional rule
- IRC §411(d)(6) protected benefits
- Normal Retirement Age (NRA)
- Suspension of benefit payments

Introduction

As required under IRC §411(b)(1), a defined benefit plan may not cease or reduce a participant's benefit accrual as a result of a participant attaining any age.

Accrual Requirements for Participants Employed Past Normal Retirement Age

A defined benefit plan's benefit formula does not cease to apply once an employee reaches normal retirement age (NRA). The benefit continues to be calculated using service and salary for each year the employee continues to work. However, the employee must be considered to have been eligible to take the retirement benefit at normal retirement and chose not to do so.

Consider the following example. Suppose Participant C is covered by the ABC Company Traditional Defined Benefit Plan. ABC's plan benefit formula provides that normal

retirement date is the participant's 65th birthday. Participant C has earned a monthly life annuity benefit of $1,000 at normal retirement date. So if Participant C started receiving benefits at age 65, by the time Participant C turned 66, 12 months later, the distribution would have equaled $12,000 (12 months of $1,000). However, Participant C elects to continue working. Under the terms of the plan's benefit formula (taking into account the additional year of service and additional salary paid), Participant C's monthly benefit has increased to $1,010. Did the increase in the annuity benefit by $10 per month for the rest of Participant C's life make up for the fact that Participant C didn't get the $12,000 entitled to Participant C between the 65th and 66th birthdays? This chapter describes the rules that tell us how much Participant C's benefit should be increased from the $1,000 per month Participant C was entitled to at 65 to make up for the fact that Participant C didn't get $12,000 between the 65th and 66th birthdays.

Each year after an employee attains normal retirement age, a plan may be required to compare the benefit under the plan's benefit formula to the actuarial equivalent of the prior year's benefit. In the previous example, the actuarial equivalent of the prior year's benefit is the same as the benefit that would be payable at age 66 for the rest of Participant C's life if we were to make up for the fact that Participant C didn't get $12,000 between ages 65 and 66.

A participant's benefit accrual or rate of benefit accrual may not be reduced because of the attainment of any age. In other words, benefits under the plan's benefit formula must continue to be determined each year as if the employee hadn't reached normal retirement age yet. A plan may not disregard compensation or years of service earned after the attainment of a certain age.

The post-NRA accrual requirements generally apply to all benefits and forms of benefits provided under a plan, including:

- Accrued benefits
- IRC §411(d)(6) protected benefits
- Ancillary benefits
- Optional forms of benefit
- Other benefits, rights, and features (BRF) of the plan

In determining the rate of accrual, the following benefits are disregarded:

- The subsidized portion of any early retirement benefits (either on a temporary or permanent basis);
- Any Social Security supplement; and
- Any qualified disability benefit.

Cash balance plans work similarly to traditional defined benefit plans. The hypothetical account balance at normal retirement age is converted to a retirement benefit payable at normal retirement age. The hypothetical account balance the following year is converted

to a retirement benefit payable at that time. The comparison of retirement benefit to actuarially equivalent benefit is then performed. The end result is that the current hypothetical account balance may need to be increased beyond the amount required by the stated interest and pay credits to account for the actuarial increase due to the delayed retirement of the participant.

Deferral beyond Normal Retirement Age

A participant who is in active status may work beyond normal retirement age. The benefit is often not paid until the participant actually retires. In other words, benefits continue to accrue in the same manner for any service after normal retirement as the benefits did pre-retirement. The defined benefit plan must generally continue to provide accruals under the plan. If a payment of the participant's accrued benefit is postponed beyond normal retirement date, the plan must actuarially increase the amount payable under the normal form (often a single life annuity) to adjust for the postponed retirement date unless a suspension of benefits notice is provided to the participant. The actuarial increase accounts for the concept that the participant is not receiving payments, in addition to accounting for the fact the participant delaying retirement now has a shorter expected life expectancy to receive the pension payments when the participant retires. For example, take a plan with normal retirement age of 65 with a participant age 80 who retires. Not only has the participant not received 15-years of payments, but prospectively the participant has a short-life expectancy to receive future payments. The process of actuarially increasing a benefit, adjusts the participant's normal retirement benefit to be reflective of this.

However, there is one exception to this rule. If the plan administrator provides a timely suspension of benefits notice to the participant, then no actuarially increased benefit for late retirement is needed. Most plans allow the participant to defer commencement of benefit distributions beyond retirement. This means that the participant will typically not start to receive plan benefits until they actually separate from service. For a 5% owner, in no case may this deferral go beyond the age 70½ required beginning date for minimum required distributions. For a non-5% owner, required minimum distributions may be delayed until the later of 70½ or actual retirement. Some plans require the actively employed plan participant to commence benefits at normal retirement date. In that case, they are required to receive distributions while in service. At the end of each year, the accrued benefit is determined and offset by the actuarial equivalent of the benefit distributions received during the year. Commencement of benefits while still employed requires more complex plan administration.

Alternative to Suspension of Benefits: Commencement at Normal Retirement Date

One additional approach to not suspending benefits, would be for a plan sponsor to force commencement at normal retirement date. Payments would commence even if the participant's status was "active" (still employed) or "terminated vested." As a result, the plan sponsor would not have to provide an actuarial increase since the participant receive

their pension payments at normal retirement age.

Summary

If a pension plan does not either (1) suspend benefits or (2) provide mandatory commencement at normal retirement age, the plan must actuarially increase benefits. Again the purpose of the increase is to reflect both foregone pension payments and interest, as well as, a shorter life-expectancy to receive the expected future payments.

Note, a former employee who is in terminated vested status may also defer commencement of benefits beyond normal retirement date. A timely election must be made by the participant. In this situation, the plan may provide an increased benefit to account for the late commencement (but it is not required to do so).

A participant may intentionally defer receipt of benefits either due to their current income tax situation, or because they may not currently need the additional cash flow. Deferral of the receipt of the benefit generally will increase the eventual amount of the monthly payment.

Special Situation – Retired Participant is Rehired

Another situation that may occur is when a retired participant who has begun to receive benefits is rehired. In this case there are two possible options. The plan provisions must specify which one applies. Benefit payments may be suspended and the accrued benefit increased for the additional service, or the benefits are suspended until that person retires. The suspension of benefits notice comes into play in this situation also. There are DOL rules which contain a minimum threshold of hours worked when applying these rules.

Suspension of Benefits

The IRC and DOL regulations govern rules relating to the Suspension of Benefits Notice. The plan may suspend benefits if a notice is given to the participant timely. This is only allowed if it is a plan provision, and different pension plans may have different rules. An employer may want to encourage older employees to retire (so that they can be replaced by younger, lower paid employees), and suspending benefits may encourage participants to retire rather than continue to work while they are losing value in their benefit.

In order for the notice to be timely, the participant must be notified during the first payroll period (or month of reemployment) that their benefits are being suspended. If a suspension of benefits notice is not provided, the accrued retirement benefit must be actuarially increased to reflect benefits lost during continued employment.

A suspension of benefits is generally allowed if the employee works a minimum level of hours. The details of the hours worked depends on how the plan credits service – elapsed time or hours worked.

The notice must identify the plan provisions which allow for the suspension of benefits.

Required Minimum Distributions – Deferral beyond RMD Date and Actuarial Increases

Required Minimum Distributions (RMD's) are beyond the scope of this exam; however, this will provide the reader some broad understanding and how these rules pertain to actuarial increases for postponed retirement. The material presented above discusses the ability for a plan sponsor to not actuarially increase benefits beyond normal retirement date, if the sponsor issues a timely suspension of benefits notice. However, another part of the IRC creates an exception to this rule. IRC 401(a)(9), which governs required minimum distributions, requires that deferred retirement benefits beyond age 70 ½ must be actuarially increased for any participant who is not a 5% owner.

Most plans allow the participant to defer commencement of benefit distributions beyond retirement. This means that the participant will typically not start to receive plan benefits until they actually separate from service. For a 5% owner, in no case may this deferral go beyond the age 70½ required beginning date for minimum required distributions. For a non-5% owner, required minimum distributions may be delayed until the later of 70½ or actual retirement. In this case, the actuarial increase required to satisfy section 401(a)(9)(C)(iii) ***must be provided for the period starting on the April 1 following the calendar year in which the employee attains age 70½.***

The purpose is to highlight to the reader a situation in which benefits may be suspended, yet an actuarial increase may be required due to RMD rules. Note the RMD rules are not covered in detail.

Other Topics Impacting Post-NRD Accruals

Accrual Limits

Some limits on accruals can be included in the terms of a plan. A plan may impose (without regard to age) a limit on the amount of benefits that a participant may accrue. A plan may impose a limit on the number of years of service or years of participation that are taken into account for purposes of determining benefit accruals. In applying a credited service limitation, only years counted for accrual purposes may be counted toward this type of limitation. A limitation expressed as a percentage of compensation is also permissible.

Limitation Imposed on the Amount of Benefits

Any limitation imposed on the amount of benefits or on the number of years of credited service taken into account may not be based, directly or indirectly, on age.

A limitation that is either determined by reference to age or is not determinable except by reference to age is considered to be directly based on age.

Disregarding years of service completed after a participant becomes eligible to receive Social Security benefits would not be an acceptable limitation since eligibility for Social Security cannot be determined without reference to age.

The exclusion of years of service completed after the sum of the participant's age and service equals a specified number is not permissible, because age is a factor in excluding those years.

Rates of Benefit Accrual after NRA

The rates of benefit accrual after NRA may differ from those before NRA as long as the difference is not based, directly or indirectly, on age. Differences created due to the fractional rule of accrual are allowable, however. Also, normal retirement benefit formulas that provide different rates of accrual based on a specified number of years are permitted (for example, 2% of salary for the first 15 years, and 2.5% of salary for years in excess of 15).

Reduction of Post-NRA Accruals

Post-NRA accruals may be reduced (but not below zero) by the actuarial equivalent of distributions made by the end of the plan year. This reduction applies to distributions made during periods in which the plan could have provided for suspension of benefits in accordance with ERISA and DOL regulations. As defined by ERISA, suspended benefits refer to ceased benefit payments upon reemployment and also to benefits that do not commence when the participant reaches normal retirement age. For nonmultiemployer plans, this applies to reemployment with the sponsoring employer only.

Distributions that are in excess of what would have been distributed under the normal form of the plan are disregarded. The adjustment calculation is done as of the end of the plan year. The post-NRA accrual is determined by reducing the additional accrual by the actuarial equivalent of total benefit distributions taken into account. The resulting benefit may not be less than the participant's normal retirement benefit as of the prior plan year end.

Post-NRA accruals depend on the actuarial increase due to the delay in payment beyond normal retirement age. The resulting benefit is equal to the greater of the normal retirement benefit actuarially adjusted for delayed payment or the normal retirement benefit recalculated by including the required additional accruals. This calculation and comparison must be done as of the close of each plan year. The greater benefit at that time becomes the accrued benefit and is carried forward to the next plan year for recalculation and comparison.

Post-NRA accruals may be reduced or offset as a result of coordination with certain other provisions of the IRC. No benefit accrual increase is allowed to the extent the limits of IRC §415 would be exceeded. Post-NRA accruals are not required if they would cause a plan to discriminate in favor of highly compensated employees (HCEs) or if they would cause the plan to violate the permitted disparity rules.

Practical Example of Concepts Learned

Based on the following information, complete the table by determining the correct post-NRA accrual for Participant S for each year shown below:

Assumptions

1. The benefit formula is 5% of average compensation for each year of service up to a maximum of 20 years. Average compensation is for the highest consecutive three years.

2. The plan does not provide for the suspension of benefits.

3. The normal form under the plan is a life annuity.

4. Actuarial assumptions: Preretirement and post-retirement interest of 6 percent; Preretirement and Post-retirement mortality table of IAM'83 M-3 (male setback 3 years).

Age	Annuity Purchase Rate (APR)
65	135.82
66	132.93
67	129.96

5. The plan provides for a late retirement benefit which is the greater of the actuarially increased normal retirement benefit and the formula accrual as of the late retirement date.

6. Participant S attained normal retirement age of 65 on December 31, 2015. Participant S's monthly accrued benefit at NRA is $2,500. No distributions have been made.

Employee Data for Participant S

Year	Age	Years of Service	High 3 Years Average Comp	Prior Yr. Accrued Benefit w/ Additional Accruals	Actuarially Increased Prior Yr. Accrued Benefit	Accrued Benefit as of This Year End
12/31/2016	66	11	$60,000			
12/31/2017	67	12	$60,000			

Solution

Step 1. Determine Participant S's monthly accrued benefit as of 12/31/2016.

A. Accrued benefit with additional accruals

To determine Participant S's 2016 accrued benefit, first determine Participant S's accrued benefit with additional accruals, as follows:

($60,000 / 12) x 5% x 11 years of service = $2,750

B. Actuarially increased accrued benefit

Next, actuarially increase Participant S's monthly accrued benefit at NRA. Participant S's monthly accrued benefit as of December 31, 2015 is $2,500. This benefit is actuarially increased as follows:

(1) Multiply the monthly NRA accrued benefit by the annuity rate at NRA based on plan assumptions. The result of this is the lump-sum value at NRA.

Based on the plan's NRA of age 65, this calculation is as follows:

$2,500 x 135.82 = $339,550

(2) Adjust the results of (1) above by the accumulation factor for interest and mortality based on plan assumptions. The result is the actuarially increased NRA lump sum.

Based on the plan's interest rate and mortality table, this calculation is as follows:

$339,550 x (238,995 / 223,271)* = $363,463

* This is (D_{65} / D_{66}) adjusted for the setback. In other words, look up D_{65} /D_{66} in the D_x table in the appendix using IAM'83 mortality and 6% interest.

(3) Divide the results of (2) above by the APR at attained age using the interest rate based on plan assumptions.

Based on the plan's interest rate and mortality table, this calculation is as follows:

$363,463 / 132.93 = $2,734

C. Determine the 2016 accrued benefit.

The accrued benefit for 2016 is $2,750 (the greater of the accrued benefit with additional accruals ($2,750) or the actuarially increased benefit ($2,734)).

Step 2. Determine Participant S's monthly accrued benefit as of 12/31/2017.

To determine the correct accrued benefit for 2017, follow the same procedures of Step 1. However, the actuarially increased benefit is now based on the accrued benefit for the prior year. Therefore, the 2016 accrued benefit is used to determine the 2017 accrued benefit. In addition, since the 2016 accrued benefit has, in effect, been adjusted to age 66, the factors for age 66 should replace the factors for age 65. Thus, the calculations for the 2017 accrued benefit are as follows:

A. Accrued benefit with additional accruals

To determine Participant S's 2017 accrued benefit, first determine Participant S's accrued benefit with additional accruals, as follows:

($60,000 / 12) x 5 % x 12 years of service = $3,000

B. Actuarially increased accrued benefit

Next, actuarially increase Participant S's monthly accrued benefit at NRA. Participant S's monthly accrued benefit as of December 31, 2016 is $2,750. This benefit is actuarially increased as follows:

(1) Multiply the monthly NRA accrued benefit by the APR at age 66 based on plan assumptions.

$2,750 x 132.93 = $365,558

(2) Adjust the results of (1) above by the accumulation factor for interest and mortality based on plan assumptions. The result is the actuarially increased lump sum.

Based on the plan's interest rate and mortality table, this calculation is as follows:

$365,558 x (223,271 / 208,394)* = $391,655

* This is (D_{66} / D_{67}) adjusted for the setback, again using the table in the appendix.

(3) Divide (2) above by the APR at attained age using the interest rate based on plan assumptions.

$391,655 / 129.96 = $3,014

C. Determine the 2017 accrued benefit.

The accrued benefit for 2017 is $3,014, which is the greater of the accrued benefit with additional accruals ($3,000) or the actuarially increased benefit ($3,014).

Answer

The following table displays Participant S's accrued benefits for the next two years. Note that at age 66 the greater increase comes from the additional formula accrual, while at age 67 the greater increase comes from the actuarial increase. Be sure to apply both the additional accrual and the actuarial increase to the prior year's increased accrued benefit.

Year	Age	Years of Service	High 3 Years Average Comp	Prior Yr. Accrued Benefit w/ Additional Accruals	Actuarially Increased Prior Yr. Accrued Benefit	Accrued Benefit as of This Year End
12/31/2016	66	11	$60,000	$2,750	$2,734	$2,750
12/31/2017	67	12	$60,000	$3,000	$3,014	$3,014

Self-Test Questions

Circle your responses:

T F 1. A plan cannot cap the number of years that may be taken into account in determining benefits since this would be indirectly based on age.

T F 2. Post-NRA accruals are affected by the actuarial increase in benefits due to the delay in payment beyond retirement age, with the participant receiving the greater of the benefit with additional accruals or the actuarially increased benefit.

T F 3. Post-NRA accruals may be limited to the plan's normal form of benefit payment.

T F 4. The IRC §415 limit overrides the Post-NRA accrual requirement.

T F 5. Loans can be eliminated for participants who have reached NRA.

Sample Test Questions

1. All of the following statements regarding post-NRA accruals for defined benefit plans are **TRUE**, **EXCEPT**:

   A. Different accrual rates for the preretirement and the post-retirement periods can exist under the fractional method.
   B. A plan may impose an overall percentage of compensation limit on benefits, which could reduce or eliminate post-NRA accrual increases.
   C. An employee who received a distribution in the prior year is ineligible to receive post-NRA accruals in the subsequent years.
   D. Post-NRA accruals apply to death and disability benefits.
   E. Post-NRA accruals may be reduced or eliminated if the permitted disparity rules would be violated.

2. Which of the following limitations on benefit accrual is/are permitted?

   I. The years of service that are counted for benefit accrual purposes can be limited to a maximum number.
   II. A maximum dollar limit on the benefit that a participant may accrue can be imposed.
   III. A provision that states that all benefit accruals cease upon the participant becoming eligible to receive Social Security benefits can be included in the plan.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

3. Based on the following information, compute Participant A's minimum accrued benefit as of December 31, 2015.

- The normal retirement age under the plan is age 65.
- Retirement benefits are 2% of average compensation times years of service.
- Benefits are actuarially increased for delayed payments, which offset future accruals.
- Participant A is age 66 as of January 1, 2016, and has not yet received any benefit payments.
- At the close of 2015, Participant A's average compensation is $50,000, and Participant A has 45 years of service.
- Participant A's 2015 monthly accrued benefit as of January 1, 2015 is $3,667.
- The amount of actuarial increase in Participant A's accrued benefit is $303.

A. $3,667
B. $3,750
C. $3,970
D. $4,053
E. $4,167

4. Which of the following statements regarding benefit accrual past NRA is/are **TRUE**?

I. Compensation earned after retirement age can be disregarded in calculating benefits.
II. The rate of accrual after retirement age can be less than the rate of accrual prior to retirement age, as long as the change is not determined by age.
III. Optional forms of benefit can be eliminated for an employee working past normal retirement age.

A. II only
B. III only
C. I and II only
D. I and III only
E. I, II, and III

5. Which of the following is/are limits that may be imposed on benefits without violating the post-NRA rules?

   I. Ceasing accrual after eligibility for Social Security benefits.
   II. Ceasing accrual after the total of a person's age and service exceeds 80.
   III. Ceasing accrual after participant has 30 years of service.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

6. All of the following statements regarding post-NRA benefit accrual are **TRUE**, **EXCEPT**:

   A. Ancillary benefits such as life insurance or plan loans may be eliminated for participants who have attained NRA.
   B. The subsidized portion of early retirement benefits can be ignored in the adjustments for participants who retire after NRA.
   C. A plan may impose a limit on the amount of benefits that a participant can accrue as long as the limit is not based on age.
   D. A plan must consider compensation earned after NRA in determining benefits under the plan.
   E. A plan may not reduce the choices of optional forms of payment after NRA.

7. Based on the following information, what is the participant's monthly accrued benefit at age 66 assuming the plan does not operate under the suspension of benefit rules and no benefits have been paid?

Plan Information	**Participant Data**
The benefit formula is 1% of average compensation per year of participation	Participant enters plan at age 35
NRA is 65	Participant's average compensation at age 65 is $5,000 per month
The monthly APR at age 65 is 122.33	Participant's average compensation at age 66 is $5,100 per month
The monthly APR at age 66 is 119.21	
D_x at age 65 is 44,984	
D_x at age 66 is 43,525	

A. $1,500
B. $1,530
C. $1,581
D. $1,591
E. $1,677

Solutions to Self-Test Questions

1. False
2. True
3. False
4. True
5. False

Explanation of *False* questions:

1. The regulations specifically permit a limit on the total number of years taken into account for purposes of determining benefits.

3. Post-NRA accruals apply to all benefits and forms of benefit provided under the plan.

5. Loans cannot be eliminated simply because the participant has reached NRA. This is an example of a "benefit, right, or feature" that is subject to the post-NRA accrual requirements.

Solutions to Sample Test Questions

1. The correct answer is C.

   An employee's post-NRA accrual for the year may be offset by the actuarial value of distributions. Therefore, there may be an accrual if the accrual under the formula exceeds the value of any distributions. Receiving a distribution will not disqualify a participant from receiving future accruals. A is true since different accrual rates for the preretirement and the postretirement periods can exist under the fractional method. B is true since an overall percentage limitation is not deemed to be based on age. D is true since post-NRA accruals apply to all accrued benefits including those paid due to death or disability. E is true since if the permitted disparity rules would otherwise be violated; the plan is permitted to reduce or not provide the post-NRA accruals.

2. The correct answer is C.

   Only statements I and II are true. Statements I and II describe permissible limitations on benefit accruals which do not vary, directly or indirectly, due to age. Statement III describes an impermissible limitation on benefit accruals since the eligibility for Social Security benefits is based on age.

3. The correct answer is C.

   C is correct since the plan provides for actuarial increases that may be used to offset post-NRA accruals. In effect, Participant A must receive the greater of the actuarially increased benefit ($3,667 + 303 = $3,970) or the benefit recalculated for additional accruals ($50,000 /12 x 2% x 45 years of service = $3,750). Consequently, the minimum accrued benefit as of the close of 2015 is $3,970.

4. The correct answer is A.

   Only statement II is true. The accrual rate can change (*e.g.,* due to a service maximum) as long as the change isn't determined by age. Contrary to I and III, compensation after NRA must be included and optional forms cannot be eliminated from post-NRA accruals.

5. The correct answer is B.

   Accrual cannot cease due to attainment of a certain age.

6. The correct answer is A.

   Ancillary benefits may not be eliminated simply because of attainment of a certain age.

7. The correct answer is D.

   Recalculated benefit at age 66 = 5,100 x 1% x 31 years of service = 1,581
   Benefit at NRA 65 = 5,000 x 1% x 30 years of service = 1,500
   Actuarially increased benefit at age 66 =
   1,500 x 122.33 x (44,984/43,525) / 119.21 = 1,591
   Age 66 accrued benefit = greater of 1,581 or 1,591 = 1,591

Cautions

- Actuarial increases are required post-NRA if a suspension of benefit notice is not given to each participant at NRA or upon rehire of a retired participant after NRA.

- Any post-NRA actuarial increases are applied to the accrued benefit at the end of the prior year, not to the benefit that was accrued at NRA.

- The receipt of benefit payments post-NRA complicates the determination of the accrued benefit because there are distributions made while still an employee.

- Minimum required distributions to a participant who works beyond age 70½ complicates the determination of the accrued benefit because there are distributions made while still an employee.

Review of Key Concepts

- Which benefits are subject to the post-NRA accrual rules?
- How does the Suspension of Benefits Notice affect post-NRA accruals?
- Which benefits are exempt from the post-NRA accrual rules?
- What types of limitations on accrual may be imposed in a defined benefit plan?
- How do distributions affect the calculation of post-NRA accruals?
- How are actuarial increases taken into account in the calculation of post-NRA accruals?
- How are the continued accrual requirements coordinated with the following IRC sections?
    - Benefit limits of IRC §415
    - Nondiscrimination rules of IRC §401(a)(4)
    - Permitted disparity rules of IRC §401(l)

Chapter 6
Early Retirement, Death, and Disability

Key Terms

- Automatic form of benefit (vs. normal form of benefit)
- Currently available
- Death benefit
- Disability
- Early retirement
- Effectively available
- Incidental death benefit
- Life insurance
- Qualified preretirement survivor annuity (QPSA)
- Qualified optional survivor annuity (QOSA)
- Qualified joint and survivor annuity (QJSA)
- Subsidized early retirement

Introduction

A defined benefit plan may offer retirement benefits to participants at ages earlier than the plan's normal retirement age (NRA). The plan may also offer ancillary benefits, such as death or disability benefits. A defined benefit plan must provide for certain types of death benefits such as a qualified joint and survivor annuity (QJSA), a qualified optional survivor annuity (QOSA), and a qualified preretirement survivor annuity (QPSA).

Early Retirement Provisions

Early retirement is a plan option that allows a participant to begin receiving retirement

benefits prior to NRA.

A plan can condition availability of early retirement on a participant's attaining a certain age, having a certain number of years of service or both. The plan must permit a former participant who fulfilled the service requirement, but separated from service with a deferred vested benefit before meeting the age requirement, to receive a benefit payment when the former participant meets the plan's age requirement (see IRC §401(a)(14); and Treasury Regulation 1.401(a)-14(c)).

Early retirement benefits are generally paid over a longer remaining life expectancy than normal retirement benefits (NRBs). Therefore, the early retirement benefit is generally calculated at an early retirement date under the plan's formula for the participant's age, service, and salary and then reduced using one of the following methods:

- The early retirement benefit can be the actuarial equivalent of the accrued retirement benefit;
- The early retirement benefit can be the accrued retirement benefit multiplied by a reduction schedule, formula, or percentage that varies by age. For example, the plan's reduction could be 1/15 for each of the first five years that payment precedes NRA plus 1/30 for each additional year that payment precedes NRA; or
- Another approach is for the plan to apply a flat percentage reduction (such as 5% per year) to the accrued retirement benefit.

Subsidized Early Retirement

A plan may provide for a **subsidized early retirement benefit** where the amount of subsidy is equal to the amount that the early retirement benefit calculated under the plan's rules exceeds the actuarial equivalent of the accrued retirement benefit at the early retirement age. For a plan that uses actuarial equivalence as its method of determining early retirement benefits, there is no subsidy because the early retirement benefit equals the actuarial equivalent of the accrued retirement benefit (that is, the reduced benefit payable at the early retirement age has the same value to the participant as if the unreduced benefit was paid at NRA).

If there is no reduction in the benefit for early retirement, then the early retirement benefit is said to be fully subsidized. Note that a fully subsidized early retirement benefit does not change what the definition of NRA is for that participant. It is not always correct to say that NRA is the earliest age at which the NRB is fully payable.

There is no requirement that the early retirement benefit be fully vested, if the participant is not fully vested under the plan's vesting schedule. This is different from the attainment of NRA, at which time the participant must become fully vested regardless of the vesting schedule and actual service with the employer.

Currently and Effectively Available

The availability of an early retirement benefit must not be discriminatory in favor of highly compensated employees (HCEs). Early retirement is considered to be a plan benefit, right, or feature that must be both currently available and effectively available on a nondiscriminatory basis.

A benefit, right, or feature is considered to be **currently available** to a participant if the participant could satisfy the conditions imposed on its availability either now or in the future. For example, an early retirement benefit that could be paid upon attaining age 55 with at least 15 years of service is deemed to be currently available to a participant regardless of whether they have currently satisfied the conditions (or ever will satisfy the age and service requirement prior to reaching NRA). An example of an early retirement benefit that is not currently available to all employees would be a situation where the early retirement benefit is available only to a group of employees, such as only salaried employees. The early retirement benefit would not be currently available to the hourly employees.

Time limited requirements, such as a limited time offer for an early retirement benefit (referred to as an early retirement window benefit), must be considered in determining current availability. Current availability with regard to a plan is tested using either the ratio percentage test or the nondiscriminatory classification test of IRC §410(b); however, the average benefit percentage test of Treasury Regulation 1.401(a)(4)-4(b)(1)) is ignored for purposes of the classification test.

A benefit, right, or feature is considered to be **effectively available** to an employee if it is possible for the employee to satisfy all the requirements for receipt of the benefit, right, or feature. For example, if early retirement requires 20 years of service and NRA is 65, then early retirement would not be effectively available to an employee hired at age 50 because such an employee will not be able to satisfy the early retirement requirement of 20 years prior to the date they reach their NRD. Note that such an early retirement provision may still satisfy the effective availability requirements with regard to the plan even if some employees cannot satisfy the requirements as long as a nondiscriminatory group of employees can satisfy all the requirements. Whether the effective availability of the benefit, right, or feature is discriminatory is determined subjectively based on all relevant facts and circumstances (see Treasury Regulation 1.401(a)(4)-4(c)(1)).

Advantages and Disadvantages of Early Retirement Provisions

Allowing participants to retire early is a feature that has advantages for both the employee and employer.

Advantages for the employee include:

- An older employee may want to terminate employment and retire early in order to pursue a different lifestyle.
- The employee may not have the physical ability to work. This is the case in many

hard manual labor industries.
- The employee may have medical issues or a need to devote full attention to an ailing family member.
- The employee may want to change careers (even if it means lower pay from new employment than what they were receiving before). By retiring, they may begin employment somewhere else to fill the gap of the pay difference with the pension check from the employer that they have left.

In any of these cases, the flexibility associated with fulfilling the eligibility requirements for early commencement is an additional option (to waiting until NRA) that could come in handy for the participant. This is especially true if early retirement benefits are subsidized because in that case the participant is receiving something of greater value.

An employer may have reasons for offering early retirement provisions. One is that business concerns may at times require proactive workforce management. If business conditions are poor, the company may need to control labor costs since it is often the largest business cost component. In many companies it is typical that the older, longer service employees are the ones with the largest pay. If the pension plan allows for early retirement, this could encourage employees to retire early and then the labor costs are decreased. Even if subsidized benefits are offered, the employer could be much better off since they are saving all future payroll costs for those who leave early.

A disadvantage for the employee in retiring early is that they no longer get a payroll check from the employer and possibly lose employment benefits such as medical insurance. A disadvantage for the employer is that it is possible that if too many people leave early, then the employer will lose the experience and productivity of its most valuable workers, creating a shortage of skill. Consider the early retirement feature a tool for both the employer and employee to maximize their worker/employer relationship.

Mandatory Death Benefits

A defined benefit plan is required to provide three types of benefits to married participants, each of which provides a benefit to the spouse upon the death of the participant: the QJSA, QOSA, and QPSA. These benefits are not required for participants married for less than one year.

QJSA and QOSA

The **QJSA** is a form of retirement annuity to a participant that also provides a benefit to the surviving spouse of the participant upon the participant's death after retirement. This benefit payable to the surviving spouse is actually the death benefit portion of an annuity being paid to a participant who has retired and is not a preretirement death benefit.

The QJSA must be defined by a plan to be a level annuity for the life of the participant with a survivor benefit that is not less than 50 percent nor more than 100 percent of the benefit that is payable to the participant. The plan must specify the particular percentage

survivor benefit under the plan's QJSA annuity form. Note that although the plan can provide for more than one "joint and survivor" annuity form, each with a different survivor percentage, only one is specified as the official QJSA. If a participant is not married at retirement, then that participant's QJSA is deemed to be a life annuity (IRC §417(b)). A participant may waive a QJSA with spousal consent within 180 days before the annuity starting date (IRC §417(a)(6)).

Since a plan's QJSA must be paid to a participant unless waived by both participant and spouse, the QJSA is said to be the **automatic form of benefit.** Note that the automatic QJSA annuity form is different from the normal form of annuity that is determined by the accrued benefit definition under the plan. The normal form is the benefit defined in the plan while the QJSA may be actuarially equivalent to the normal form (or adjusted in some other manner).

If the present value of a participant's accrued benefit is no more than $5,000, then the plan may provide that the participant can waive the qualified preretirement survivor annuity without spousal consent.

A **QOSA** is an alternative to a QJSA. The participant can elect to receive the QOSA instead of the QJSA without spousal consent. The QOSA is a 75% joint and survivor annuity if the QJSA percentage is less than 75%. If the QJSA percentage is 75% or more, the QOSA must be a 50% joint and survivor annuity. Like the QJSA form of retirement annuity requirement, a plan must provide for a QOSA form of retirement annuity to all married participants.

QPSA

The **QPSA** is a life annuity payable to the surviving spouse of a vested participant who dies before retirement. Therefore, this is a preretirement death benefit.

Under a QPSA, the surviving spouse must receive the survivor percentage of the vested annuity benefit that would have been received at the earliest retirement date under the terms of the plan (early or normal retirement) if the participant had retired on that date. For purposes of satisfying any service requirement needed to attain early retirement, it can be assumed that the participant would have continued to work for the employer, though this is not required.

The participant may permanently waive the QPSA coverage with spousal consent only after attainment of age 35, or upon termination of employment, up until date of death (IRC §417(a)(6)). If the participant does not waive QPSA coverage following notification, the plan may charge for this coverage by means of a reasonable reduction to the accrued benefit (many plans do not charge for QPSA coverage). There is no limit to the number of times a participant and spouse may waive the QPSA or revoke a waiver (IRC §417(a)(1)). However, the plan document may stipulate limitations on the number of waivers/revocations. Plans may also provide for QPSA coverage at no charge.

A reason that a spouse might want to waive a QPSA is that the plan may offer other preretirement death benefit options (such as a lump-sum option), and if the spouse has not waived the QPSA, then the only option available to the spouse is to receive the QPSA.

Optional Death Benefits

In addition to the mandatory death benefits, a plan may provide for additional benefits upon the death of a participant, which can be funded by:

- A life insurance contract on the life of the participant; and/or
- A distribution upon death of a portion of the plan's assets.

Optional death benefits must qualify as **incidental benefits** of the plan (Treasury Regulation 1.401-1(b)(1)). Life insurance as a preretirement benefit will be considered incidental if it satisfies one of the following two tests:

1. Proceeds of the policy do not provide a death benefit greater than 100 times the projected monthly NRB or the accumulated reserve (surrender value) under the policy, whichever is greater; or
2. If the plan is funded with both whole life insurance policies and a trust fund, less than 50 percent of the employer contribution on behalf of the participant can be used to purchase life insurance. For policies other than whole life (such as universal life), the limit is 25 percent. Since there are no allocations of employer contributions to the participant of a defined benefit plan, the premium is limited to 2/3 of the normal cost for the participant when there are whole life policies and 1/3 of the normal cost when there are policies other than whole life (Revenue Ruling 74-307). This normal cost is the sum of the level dollar amounts required to fund each annual increment of projected benefit from the year of accrual to NRA.

Benefits payable to a beneficiary because of the participant's death are subject to the following incidental benefit rules. At retirement, if a participant elect's installment payments for a period certain to himself and a beneficiary, then at least 50 percent of the entire projected distribution of benefits must be payable to the participant during the participant's lifetime. The death benefit may fail to be incidental when a QPSA is combined with another type of death benefit, such as proceeds from a life insurance policy.

Plans that do not have an insured death benefit often provide for a lump-sum payment to the participant's beneficiary equal to the present value of the vested accrued benefit.

Optional death benefits, whether insured or paid from trust assets, are benefits, rights, and features that must satisfy the current and effective availability nondiscrimination tests that were described under early retirement above.

Both mandatory and optional death benefits apply only to vested accrued benefits; however, plans may (but are not required to) provide for 100% vesting upon death.

Disability Benefits

A defined benefit plan is not required to offer any benefit payable upon the disability of a participant. However, if the plan chooses to offer a disability benefit there are a number of options and requirements to consider. The disability benefit provisions may include granting full vesting to a participant who was not vested or partially vested based on service (though the plan is not required to do so). The disability benefit may include allowing the participant to begin receiving the accrued benefit as if the participant were at NRA, resulting in a subsidized benefit. The disability benefit could allow the participant to continue to accrue benefits while on disability as if the participant were still working at the most recent rate of compensation. In this case immediate disability payments are often also paid outside of the retirement plan.

A plan may require a participant to complete a certain number of years of service with the employer to qualify for a disability benefit. The document must clearly define disability and the disability benefits provided by the plan so that they are not subject to the discretion of the plan administrator.

There is flexibility in how disability can be defined. It could be defined to be eligibility for disability payments under Social Security. Social Security disability requires full and permanent inability to perform any job. The plan could grant disability upon permanent inability to perform the participant's current job. Alternatively, a plan may require that one or more doctors independently determine a disabling condition.

Disability benefits can be difficult for the employer to administer and fund as they are usually not provided by insurance policies within the plan.

Practical Examples of Concepts Learned

Problem #1

Use the assumptions below to determine the following:

- Are the desired age and service requirements for early retirement benefits permitted?

- Describe three methods of adjusting NRBs for early retirement.

- Prepare sample calculations for Participant S to adjust NRBs for early retirement using both the actuarial equivalence method and a reduction schedule that varies by age (*i.e.*, 1/15 for each of the first five years that payment precedes NRA plus 1/30 for each additional year that payment precedes NRA), assuming that early retirement occurs at either age 55 or at age 60.

Assumptions

- BB, Inc. sponsors a defined benefit plan that provides for payment of benefits only upon a participant's attaining NRA at age 65.

- Mr. B, sole owner of the company, is investigating the addition of an early retirement benefit to the plan.

- Mr. B would like to require a participant to be age 55 and have 20 years of service in order to qualify for early retirement.

- Participant S is a 35-year old participant in the plan whose NRA under the plan is age 65. His accrued NRB is $900 per month payable as a life annuity.

- When computing the early retirement benefit under the actuarial equivalence method, use the following factors (which follow the plan document definition of the assumed interest rate and mortality table).

Age	Annuity Purchase Rate (APR)	D_x
55	127.1920	202,518
60	115.2798	135,980
65	102.1413	88,148

- When computing the early retirement benefit under a percentage that varies by age method, use 1/15 reduction per year from 60 to 65, and 1/30 per year from 55 to 60.

Problem #2

Using the information below, can Participant K's beneficiary receive the entire face amount of the insurance policy?

Assumptions

1. The plan provides the maximum death benefit under the incidental rules.
2. Participant K's projected monthly NRB is $1,000.
3. The face amount of Participant K's life insurance policy is $150,000.

Solutions

Problem #1

Step 1. Determine if the early retirement age and service requirements are permitted.

Service requirements to be eligible for early retirement benefits are permitted and commonly used. Testing is required to determine if early retirement is both currently available and effectively available on a nondiscriminatory basis.

Step 2. Describe three methods of adjusting NRBs for early retirement.

A. Actuarial equivalence method

Under the actuarial equivalence method, the plan's actuarial assumptions for distributions are used to adjust the accrued benefit for early payment. Under this method, the lump-sum value of the NRB (at early retirement age) and the lump-sum value of the early retirement benefit are equivalent.

B. Age based reduction method, for example, the 1/15, 1/30 reduction method

Under the 1/15, 1/30 reduction method, the accrued benefit is reduced by 1/15 for each of the first five years prior to NRA that the participant will begin receiving benefits, and the accrued benefit is reduced by an additional 1/30 for each year above five years prior to NRA.

C. Flat percent reduction method

Under the flat percentage method, the accrued benefit is reduced by a flat percentage (for example, 4%) for each year that early retirement precedes normal retirement.

Step 3. Prepare sample calculations for Participant S.

A. Determine the 1/15, 1/30 reductions for an early retirement age of 60 and 55. (Note that this 1/15, 1/30 reduction provides for some subsidy of the early retirement benefit at both ages 60 and 55 as compared to the actuarial reduction for early retirement shown below.)

Age 60

$900 x (1 - (5/15))

$900 x (1 - 0.333333)

$900 x 0.666667 = $600 (This 0.666667 is called the early retirement reduction factor)

Age 55

$900 x (1 – [(5/15) + (5/30)])

$900 x (1 – 0.5)

$900 x 0.5 = $450 (This 0.5 is the early retirement reduction factor)

B. Determine the early retirement benefit at age 60 and 55 using the actuarial equivalence method.

Age 60

$Benefit_{NRA} \times APR_{65} \times (D_{65} / D_{60}) / APR_{60} = Benefit_{ERA}$

$900 x 102.1413 x (88,148 / 135,980) / 115.2798 = $517

Age 55

$Benefit_{NRA} \times APR_{65} \times (D_{65} / D_{55}) / APR_{55} = Benefit_{ERA}$

$900 x 102.1413 x (88,148 / 202,518) / 127.1920 = $315

Problem #2

Step 1. Perform the "100 times" incidental insurance test.

Under the "100 times" incidental test, proceeds of a life insurance policy may not provide a death benefit greater than 100 times the projected monthly NRB. Thus, the limit under the "100 times" test is $100,000:

$$\$1,000 \times 100 = \$100,000$$

Since the policy has a face amount of $150,000 (which is greater than the limit of $100,000), the "100 times" test of incidental benefits is not satisfied.

Step 2. Perform the incidental insurance test under Revenue Ruling 74-307.

There is not enough information to perform this test, and it is beyond the scope of this course.

Self-Test Questions

Circle your responses:

T F 1. A monthly payment of a benefit commencing at early retirement age is often less than the benefit payable at NRA.

T F 2. A plan may require a participant to have more than two years of service to qualify for a disability benefit.

T F 3. A plan may define disability as being determined by a licensed physician.

T F 4. A plan must provide for full vesting of the participant's accrued benefit upon disability.

T F 5. A 1/15 reduction for the first five years and 1/30 reduction for the next five years prior to normal retirement is a method that can be used to compute an early retirement benefit.

T F 6. An insured death benefit of 100 times the projected monthly benefit may be provided with types of insurance other than whole life.

T F 7. A QJSA must be an annuity that has at least 25 percent of the annuity continuing to the spouse upon the death of the participant.

T F 8. A QPSA must be available to all married participants at no cost to them.

Sample Test Questions

1. Which of the following statements regarding disability benefits is/are **TRUE**?

   I. A participant must qualify for disability benefits for purposes of Social Security in order to receive disability benefits from a plan.
   II. A defined benefit plan must provide for a disability benefit if a participant is married.
   III. A participant's benefit can continue to accrue while the participant is on disability leave.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

2. All of the following statements regarding early retirement in a defined benefit plan are **TRUE**, **EXCEPT**:

   A. An early retirement benefit may not discriminate in favor of HCEs.
   B. A participant must have at least ten years of participation to qualify for early retirement benefits.
   C. A plan is not required to offer an early retirement benefit to plan participants.
   D. An early retirement benefit can be smaller than the NRB to compensate for its being paid over a longer period of time.
   E. An early retirement benefit may be equal to the actuarial equivalent of the NRB.

3. Which of the following statements regarding early retirement is/are **TRUE**?

   I. The early retirement subsidy is $450 per month at age 55 for a participant with an accrued retirement benefit payable at age 65 of $1,500 per month, with an actuarially equivalent benefit at age 55 of $750 per month and an early retirement benefit at age 55 of $1,200 per month.
   II. Using the 1/15, 1/30 reduction method, an accrued NRB of $1,000 at age 65 is reduced to $800 at age 62.
   III. It is permissible to place a cap on the dollar amount payable as an early retirement benefit, provided at least the actuarial equivalent of the accrued benefit is paid.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

4. Which of the following statements regarding incidental death benefits is/are **TRUE**?

   I. If a participant elects installment payments to himself or herself and a designated beneficiary, at least 50 percent of the entire projected distribution of benefits must be payable to the participant during the participant's lifetime.
   II. If a plan is funded with policies (exceeding 100 times the projected monthly retirement benefit) other than whole life insurance contracts, no more than 25 percent of the normal cost attributable to the participant may be used to purchase the insurance.
   III. If a plan provides a lump-sum death benefit equal to 100 times the projected monthly retirement benefit, in addition to a QPSA, then both benefits must be considered together to determine whether total death benefits provided are incidental.

   A. I only
   B. II only
   C. I and III only
   D. II and III only
   E. I, II, and III

5. Which of the following statements regarding the QPSA benefit is/are **TRUE**?

   I. The QPSA is payable to the estate of a single participant.
   II. The QPSA cannot be paid to the surviving spouse until the participant would have attained age 65.
   III. The plan document may stipulate limitations on the number of times the QPSA may be waived and the waiver revoked.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

6. Based on the following information, determine the early retirement benefit at age 60 for a participant:

Projected NRB payable at age 65	$6,000
Method of determining early retirement benefit	A benefit equal to the greater of the projected NRB reduced 10% for each year before age 65, or the current accrued benefit reduced 5% for each year before age 65
Participant's current age	60
Participant's current accrued benefit	$5,000

   A. $2,500
   B. $3,000
   C. $3,500
   D. $3,750
   E. $4,500

7. All of the following statements regarding early retirement provisions are **TRUE, EXCEPT**:

   A. Early retirement must be currently available and effectively available in a nondiscriminatory manner.
   B. A former participant who did not meet the age requirement for early retirement at the time of termination does not need to be offered the benefit at a later time.
   C. Early retirement annuity benefits are normally reduced to reflect the longer period that the benefits will be paid.
   D. Early retirement benefits may be larger than a true actuarial equivalent of the NRB.
   E. Early retirement benefits can be conditioned on both age and service requirements.

8. All of the following statements regarding mandatory death benefits are **TRUE, EXCEPT**:

   A. The plan must continue to pay benefits to the surviving spouse of a deceased participant under the QJSA even if the surviving spouse remarries.
   B. The plan does not have to provide a death benefit on behalf of an unmarried participant who dies before the annuity starting date.
   C. The plan may distribute the benefit in the form of a QJSA to a married participant without spousal consent once benefits are immediately distributable.
   D. The QJSA option under a plan may increase a retired participant's annuity upon the death of the spouse since there is then no death benefit being provided.
   E. The plan can base the automatic survivor benefit on benefits in which the participant was vested immediately before death.

Solutions to Self-Test Questions

1. True
2. True
3. True
4. False
5. True
6. True
7. False
8. False

Explanation of *False* questions:

4. Disability benefits are not required in a plan, and there is no requirement to fully vest participants upon disability.

7. The QJSA must have at least 50 percent of the annuity continuing to the spouse upon the death of the participant.

8. There can be a charge for the QPSA.

Solutions to Sample Test Questions

1. The correct answer is B.

   Statement I is incorrect since a plan *may* provide that a participant qualify as disabled for Social Security purposes in order to receive disability benefits, but it is not required by law. Statement II is incorrect since there is no requirement for a defined benefit plan to provide disability benefits to any participants. Statement III is correct since a participant may receive additional accruals as permitted by the plan while disabled (although the plan does not have to provide additional accruals).

2. The correct answer is B.

   B is the appropriate answer since it is a false statement. There is no minimum participation requirement under the law for qualifying for early retirement benefits, although a plan may have such a requirement (Treasury Regulation §1.401(a)-14(c)).

3. The correct answer is E.

   Statement I correctly determines the value of the early retirement subsidy as the amount that the early retirement benefit ($1,200) exceeds the actuarially equivalent benefit ($750). Statement II correctly states the value of the $1,000 benefit reduced for early retirement at age 62 as being $800 using the 1/15, 1/30 reduction method ($1,000 x (1 - (3 / 15)) = $1,000 x (12 / 15) = $800). Statement III is correct since a dollar cap on early retirement benefits would be permissible provided a participant would not receive an early retirement benefit worth less than the actuarial equivalent of the participant's accrued benefit.

4. The correct answer is E.

   Statements I, II, and III are all true.

5. The correct answer is B.

   Statement I is false because there is no QPSA payable for a single participant. Statement II is false because the QPSA is paid as an annuity at the earliest retirement age of the participant.

6. The correct answer is D.

   This is the greater of:
   $6,000 x (1 – (0.1 x 5 years) = $3,000 and
   $5,000 x (1 – (0.05 x 5 years) = $3,750

7. The correct answer is B.

   Once a participant, either active or inactive, meets the requirements for early retirement, the early retirement benefit must be made available.

8. The correct answer is D.

   A QJSA annuity may not change the retired participant's benefit amount upon the death of the spouse, although annuity options with such a feature can be made available as optional forms under the plan.

Review of Key Concepts

- Discuss three types of ancillary benefits and their distinguishing characteristics.
- Define QPSA.
- Define QJSA.
- Discuss the different methods for adjusting accrued benefits for payment at early retirement.
- What are the restrictions on death benefits in a defined benefit plan?
- Discuss the use of disability benefits in a pension plan.

Chapter 7
Benefit Limitations under IRC §415

Key Terms

- Average compensation
- Cost-of-living adjustment
- Dollar limit
- Life annuity
- Limitation year
- Maximum annual retirement benefit
- Percentage limit
- Qualified joint and survivor annuity (QJSA)

Introduction

The IRC, regulations, and related rulings limit benefits that can be provided in a qualified defined benefit plan.

Maximum Annual Retirement Benefit

According to IRC §415(b)(1), the maximum annual retirement benefit that a defined benefit plan may provide is limited to the lesser of:

- A **dollar limit** of $160,000 that is indexed by a cost-of-living adjustment in $5,000 increments. For years ending in 2016, the dollar limit has increased to $210,000. **OR**
- 100% of the participant's average compensation (commonly referred to as the **percentage limit**).
    - Compensation is averaged over the highest three consecutive calendar years.
    - The IRC §401(a)(17) maximum compensation limit of $265,000 as indexed for cost-of-living adjustments through 2016 applies to a plan's accrual formula, as well as to the IRC §415 100% of average compensation

percentage limit.

- If the employer never maintained a defined contribution plan in which the employee has participated, a $10,000 *de minimis* annual benefit can be provided, regardless of compensation.

Both the dollar and the percentage limit apply to the plan's **limitation year**, which is the calendar year unless the employer adopts some other twelve-month period by written resolution usually in conjunction with the adoption of the plan. All defined benefit plans of the employer are treated as a single plan for purposes of the IRC §415 limitations. This includes plans that have terminated and distributed assets. As discussed below, adjustments may need to be made to these limits depending on retirement age and length of service and/or participation. The limits do not apply to any benefits derived from mandatory employee contributions or to benefits derived from rollover contributions.

There are a couple of exceptions where portions of the IRC §415 do not apply. The percentage limit does not apply to collectively bargained plans that meet certain requirements. The percentage limit also does not apply to governmental or multiemployer plans.

IRC §415 limits the benefits that can be paid to an individual participant from defined benefit plans sponsored by the same employer and limits the contributions that can be made to defined contribution plans sponsored by the same employer. These limits (defined benefit and defined contribution) are independent of each other. There is no IRC §415 limit on the combined amounts that can be received from defined benefit plans together with defined contribution plans.

For cash balance plans, the allocation of employer contribution to the cash balance account can exceed the IRC §415 defined contribution maximum annual addition; however, the actuarially equivalent accrued benefit must not exceed the IRC §415 defined benefit maximum benefit.

Both the dollar and the percentage limits can be increased after separation of service for cost of living if the plan so allows. Because the effective limit can be increased after separation of service, it is sometimes said that the IRC §415 limits do not apply to the accrued benefit, but only to the amount of the accrued benefit that can be distributed in a given limitation year.

The IRC §415 limits apply to each limitation year as a whole and not separately to the months within the year.

When an actuary calculates contribution requirements for a defined benefit plan, the actuary may not assume future increases to the IRC §415 limits and also may not assume future increases to the IRC §401(a) (17) compensation limits even though the actuary may have included an assumption for future inflation, and by law these limits increase each

year based on inflation. The IRS considers changes to these limits to be plan amendments (future year plan amendments cannot be taken into account in a current year valuation), though it allows language in plan documents permitting the increases annually as they are announced by the IRS.

Limitation Adjustments

The IRC §415 **dollar** limit is reduced by 10% for each year of plan **participation** less than ten at the determination date, although it is never reduced below 10% of the full limit. The **percentage** limit (100% of average compensation), as well as the $10,000 *de minimis* benefit, are both reduced by 10% for each year of **service** less than ten at the determination date, although they are never reduced below 10% of the full limit. That the **dollar** limit reduces based on **participation** while the **percentage** limit reduces based on **service** is important to remember (although it does not have an obvious rationale).

EXAMPLE 7-1: Participant's Dollar Limit.

The IRC §415 Dollar Limit is $210,000 and the IRC §401(a)(17) pay cap is $265,000 for 2016 and 2015 and $260,000 for 2014. The participant has 8 years of participation and 9 years of service. The Dollar Limit is reduced to $210,000 × 8/10 = $168,000. The percentage limit is reduced to (($265,000+$265,000+$260,000)/3) × 9/10 = $237,000.

There are reductions to the dollar limit (but not the percentage limit) for payments prior to age 62. The dollar limit is increased when the payments start after age 65. If benefits begin before age 62, the dollar limit is reduced to equal the lesser of:

- The actuarial equivalent benefit based on the plan's interest rate and mortality table (or tabular factors) for early retirement reductions; **OR**
- The actuarial equivalent benefit based on 5% interest and the applicable mortality table prescribed by the Secretary of the Treasury.

If benefits begin after age 65, the dollar limit is increased to equal the lesser of:

- The actuarial equivalent benefit based on the plan's interest rate and mortality table (or tabular factors) used to determine late (postponed) retirement benefits; **OR**
- The actuarial equivalent benefit based on 5% interest and the applicable mortality table.

There are additional reductions in both the dollar and the percentage limits if the benefit is payable in a form other than a life annuity or qualified joint and survivor annuity (QJSA). In these situations, special interest rates and mortality tables must be used to determine actuarial equivalence of the life annuity benefit.

A participant who is an active employee, beyond normal retirement age and whose accrued benefit is limited by the IRC §415 percentage limit is in a unique situation. If the participant's current pay is not impacting the high 3-year average used in the determination of the 100% of compensation limit, then this participant is not receiving additional accruals (it is assumed that they are beyond the 10-year service period for full IRC §415 limits). In this particular case the participant is effectively frozen at the 415 limit. There is no notification required to be given to the participant since accruals are determined by plan provisions and the IRC limits, and there are no choices for the employer or the participant to make.

Lump-Sum Calculation Subject to the IRC §415 Limit

A participant upon separation from service may be eligible to receive a lump-sum distribution. As mentioned earlier, some plans offer unlimited lump-sum amounts while others only pay lump sums up to the $1,000 or $5,000 minimum threshold level.

After the plan benefit is determined, the IRC §415 limits which apply to this participant are determined as detailed in this chapter. A comparison is made between the plan benefit and the IRC §415 limit. The lesser benefit is used. Recall that the IRC §415 limit is itself the lesser of the percentage and dollar limits. So in actuality, the accrued benefit is the smallest of three different numbers.

The administrator provides election forms to the participant so that they can decide which benefit options should be selected. One of these options may be a lump sum, payable as of a certain date. Adjustments must be made to the IRC §415 limit as a result of a form of benefit payment other than a life annuity or a QJSA.

Practical Examples of Concepts Learned

Use the following information to solve problems #1, #2, #3, and #4.

Assumptions – as indicated in problems #1, #2, #3, and #4. These assumptions are being applied as of January 1, 2016.

1. SSS, Inc. currently sponsors a defined benefit plan. The plan began January 1, 2009.

2. The defined benefit plan provides for a normal retirement age of 65 and a benefit of 50 percent of the highest five consecutive plan years' average compensation, payable as a life annuity.

3. Participant K fully owns the company (established January 1, 2006). Participant K, Participant K's spouse, and P. K's brother have always been the only participants.

4. Participant K and the brother began employment on January 1, 2006. The spouse began employment on January 1, 2008.

5. Participant K, spouse, and brother all plan to retire on January 1, 2019.

   - Participant K was born on January 1, 1954
   - Spouse was born on January 1, 1956
   - Brother was born on January 1, 1949

   Until they retire, each employee's compensation is expected to be $20,000 per year.

6. The 2016 IRC §415(b) annual dollar limit is $210,000.

Compensation History for each Employee

Year	Compensation
2006	$50,000
2007	$75,000
2008	$155,000
2009	$140,000
2010	$130,000
2011	$80,000
2012	$50,000
2013	$93,000
2014	$50,000
2015	$20,000

Problem #1

Determine the projected benefit for Participant K at retirement .

Problem #2

Assume that Participant K actually retired on January 1, 2016. Determine the maximum benefit under IRC §415.

Problem #3

Assume that Spouse didn't enter the plan until January 1, 2011 and actually retired on January 1, 2016. Determine the maximum benefit under IRC §415.

Problem #4

Assume that Brother actually retired on January 1, 2016. Determine the maximum benefit under IRC §415.

Solutions

Problem #1

- The plan began on January 1, 2009, Participant K will be 65 on January 1, 2019, and she will have 10 years of plan participation.

- Since Participant K began her business in 2005, she will have more than 10 years of service on January 1, 2019.

- The highest three-year consecutive average compensation is determined by averaging the years from 2008-2010. This average is:

  ($155,000 + $140,000 + $130,000) / 3 = $141,667

- The highest five-year consecutive average compensation is determined by averaging the years from 2007-2011. The average compensation is:

  ($75,000 + $155,000 + $140,000 + $130,000 + $80,000) / 5 = $116,000

- The benefit under the plan's formula is as follows:

  50% x $116,000 = $58,000 per year

- The IRC §415 limit is the lesser of the 2016 dollar limit ($210,000) and the percentage limit ($141,667). The limit is $141,667.

- The projected benefit at retirement for Participant K is $58,000 since it is less than the maximum benefit.

Problem #2

Step 1. The dollar limit must be reduced for less than 10 years of plan participation.

Participant K has only 7 years of plan participation (from January 1, 2009 through January 1, 2016). The dollar limit is reduced proportionately:

$210,000 x (7/10) = $147,000

Step 2. Check if the dollar limit needs to be reduced for retirement before age 62.

Participant K is 62 on January 1, 2016 so the dollar limit does not need to be reduced. The dollar limit is $147,000.

Step 3. Calculate the percent limit.

The highest three-year consecutive average compensation is determined by averaging the years from 2008 - 2010. This average is:

($155,000 + $140,000 + $130,000) / 3 = $141,667

Note that Participant K will have 10 years of service as of January 1, 2016.

Step 4. Compare the percent limit and the dollar limit.

Since $141,667 is less than $147,000, the IRC §415 limit is $141,667.

Problem #3

Step 1. The dollar limit must be reduced for less than 10 years of plan participation.

Spouse has only 5 years of plan participation (from January 1, 2011 through January 1, 2016). The dollar limit is reduced proportionately:

$210,000 x (5 / 10) = $105,000

Step 2. Check if the dollar limit needs to be reduced for retirement before age 62.

Spouse is 60 on January 1, 2016, so the dollar limit must be reduced. The reduction is whichever is the largest reduction between actuarial equivalence under the plan and a 5% interest rate using the applicable mortality table. Assume that it is given that the reduction factor for actuarial equivalence is 12% and the reduction for the 5% interest rate with applicable mortality table is 14% for the 2 years from age 62 to age 60. The larger reduction of 14% is used. Therefore, the dollar limit is:

$105,000 × (1 - 0.14) = $90,300 at age 60.

Step 3. Calculate the percent limit.

The highest three-year consecutive average compensation is determined by averaging the years from 2008 - 2010. This average is:

($155,000 + $140,000 + $130,000) / 3 = $141,667

Spouse has 8 years of service, so a reduction factor of 8/10 must be applied to the percent limit.

$141,667 × 8/10 = $113,334

Step 4. Compare the percent limit and the dollar limit.

Since $90,300 is less than $113,334, the IRC §415 limit is $90,300.

Problem #4

Step 1. The dollar limit is reduced for less than 10 years of plan participation.

Brother has only 7 years of plan participation (from January 1, 2009 through January 1, 2016). The dollar limit is reduced proportionately:

$210,000 x (7/10) = $147,000

Step 2. Check if the dollar limit needs to be increased for retirement after age 65.

Brother is 67 on January 1, 2016 so the dollar limit is increased. The increase is whichever is the smallest increase between actuarial equivalence under the plan and a 5% interest rate using the applicable mortality table. Assume that it is given that the increase factor for actuarial equivalence is 12% and the increase factor for the 5% interest rate with applicable mortality table is 14% for the 2 years from age 65 to age 67. The smaller increase factor of 12% is used. Therefore, the dollar limit is:

$$\$147,000 \times (1 + 0.12) = \$164,640 \text{ at age } 67.$$

Step 3. Calculate the percent limit.

The highest three-year consecutive average compensation is determined by averaging the years from 2008 - 2010. This average is:

$$(\$155,000 + \$140,000 + \$130,000) / 3 = \$141,667$$

Brother has 10 years of service so there is no service adjustment. The percentage limit is $141,667.

Step 4. Compare the percent limit and the dollar limit.

Since $141,667 is less than $164,640 the IRC §415 limit is $141,667.

Self-Test Questions

Circle your responses:

T F 1. If the elected form of an annuity is a qualified joint and survivor annuity, the maximum benefit under IRC §415 will have to be reduced.

T F 2. If the elected form of an annuity is a life and ten-year certain annuity, the maximum benefit under IRC §415 will have to be reduced.

T F 3. For the percentage limit of IRC §415, compensation must be averaged over the highest five consecutive years.

T F 4. The dollar limit of IRC §415 must be reduced 10% (but not below 10% of the full limit) for each year of service less than ten at normal retirement age.

T F 5. The $10,000 *de minimis* benefit of IRC §415 must be reduced by 10% (but not below 10% of the full limit) for each year that a participant participated in a defined contribution plan of the same employer.

T F 6. A previously terminated defined benefit plan that has distributed all of its assets can be ignored in determining the maximum benefit under IRC §415 for a current plan.

T F 7. The dollar limit of IRC §415 must be reduced at a retirement age below 62.

Sample Test Questions

1. All of the following statements regarding the limitations under IRC §415 are **TRUE, EXCEPT:**

   A. The dollar limit must be reduced if the participant has only five years of participation at retirement.
   B. The dollar limit must be reduced if a qualified joint and survivor annuity is the elected form of benefit.
   C. The dollar limit is increased if the retirement age is greater than age 65.
   D. A $10,000 minimum benefit cannot be provided in a defined benefit plan if the employer also maintains an IRC §401(k) plan in which all employees are participating.
   E. The dollar limit must be reduced where benefit payments begin before age 62.

2. Which of the following statements regarding the limitations under IRC §415 is/are **TRUE**?

   I. The annual benefit that may be paid to a participant under a defined benefit plan is limited to the greater of the dollar limit or 100% of the participant's highest consecutive three-year average compensation.
   II. For the percentage limit, the compensation must be averaged over the highest consecutive three-year period.
   III. The percentage limit must be reduced proportionately for years of service less than ten (but not to less than 10% of the full limit).

   A. I only
   B. II only
   C. I and III only
   D. II and III only
   E. I, II, and III

3. Based on the following information, which of the following represents the maximum annual benefit that a participant reaching NRA of 65 in 2016 can have?

- The participant has never participated in another plan of the employer.
- The IRC §415 dollar limit for 2016 is $210,000.

I. $120,000 for a participant with 7 years of participation and 9 years of service with average compensation of $150,000 per year
II. $9,000 for a participant with 8 years of participation and 9 years of service with average compensation of $6,000 per year
III. $180,000 for a participant with 8 years of participation and 10 years of service and average compensation of $180,000 per year

A. I only
B. II only
C. I and III only
D. II and III only
E. I, II, and III

4. Based on the following information, determine the maximum monthly benefit under IRC §415 for a participant based on the following information. The participant has never been in any other plan of the employer.

Average monthly compensation	$600
Years of service	6
Years of participation	5

A. $300
B. $360
C. $417
D. $500
E. $600

5. Based on the following information, determine the maximum annual benefit under IRC §415 for a participant at age 65 in 2016 (when the dollar limit is $210,000).

3-year annual compensation average	$200,000
5-year annual compensation average	$150,000
Years of service	8
Years of participation	7

A. $120,000
B. $126,000
C. $147,000
D. $160,000
E. $200,000

6. Based on the following information, given the IRC §415 dollar limit of $210,000 for 2016 and the following table of values, which of the following represents the IRC §415 dollar limit for a participant commencing benefits in 2016 at age 59?

- The participant has eight years of participation and ten years of service.
- Preretirement mortality should be considered.

Factors	**Plan Actuarial Equivalence**	**Prescribed Interest and Mortality**
D_{62}	75,003	403,000
D_{59}	96,894	487,123
APR_{62}	116.31	149.30
APR_{59}	121.12	159.40

A. $124,880
B. $130,181
C. $138,988
D. $161,328
E. $210,000

7. Based on the following information, and given the IRC §415 dollar limit of $210,000 for 2016 and the following table of values, which of the following represents the IRC §415 dollar limit for a participant commencing benefits in 2016 at age 69?

- He has eight years of participation and ten years of service.
- His Social Security Retirement Age is 66.

Factors	**Plan Actuarial Equivalence**	**Prescribed Interest and Mortality**
Interest	7%	5%
APR_{65}	109.60	138.40
APR_{66}	107.20	134.40
APR_{69}	99.60	122.90

A. $210,000
B. $212,679
C. $221,511
D. $229,959
E. $242,324

Solutions to Self-Test Questions

1. False
2. True
3. False
4. False
5. False
6. False
7. True

Explanation of *False* questions:

1. The dollar maximum under IRC §415 must be reduced for elected forms of benefit **other** than a straight life annuity or a qualified joint and survivor annuity.

3. For the percentage limit, compensation must be averaged over the highest **three** consecutive years.

4. The **dollar** limit must be reduced for **participation** less than ten years.

5. The $10,000 limit is not available at all to an employee who was in a defined contribution plan of the same employer. If the person had not participated in a defined contribution plan, then the 10-year reduction of the $10,000 *de minimis* benefit is based upon years of service with the employer.

6. Prior defined benefit plans must always be included.

Solutions to Sample Test Questions

1. The correct answer is B.

   Statement B is false since it is not necessary to reduce the dollar limit for a qualified joint and survivor benefit.

2. The correct answer is D.

   Statement I is false, since it should say "lesser" not "greater." The other two statements are correct.

3. The correct answer is B.

   In statement I, the maximum benefit is $135,000. This is equal to the compensation limit of $150,000 x 9/10 (note that the dollar limit of $210,000 x 7/10 is larger). In statement II, it is true that the maximum benefit is $9,000. This is true even though it exceeds the $6,000 compensation due to the *de minimis* $10,000 benefit, which must be reduced by $1,000 due to service less than 10 years. In statement III the maximum benefit is the dollar limit of $168,000 = $210,000 x 8/10.

4. The correct answer is D.

   $500 = $10,000/12 x 6/10. Note that the $10,000 annual *de minimis* amount applies since the annual compensation is less than $10,000. The dollar limit would clearly not apply since it is so much larger than $10,000 (on an annual basis).

5. The correct answer is C.

   The dollar limit is $210,000 x 7/10 = $147,000. Note that the compensation limit is $200,000 x 8/10 = $160,000, which is greater than the dollar limit of $147,000. So $147,000 is the maximum annual benefit.

6. The correct answer is A.

   $124,880 = 210,000 × 8/10 × 75,003 / 96,894 × 116.31 / 121.12

   Which is less than

   $130,181 = 210,000 × 8/10 × 403,000 / 487,123 × 149.30 / 159.40

7. The correct answer is D.

   The dollar limit is increased using the 5% prescribed interest rate (and mortality) rather than the plan equivalence rate of 7% since the accumulation at the higher interest rate will end in a higher result. The dollar limit is the **smaller** of the results using the two sets of assumptions. Note that the Social Security retirement age is irrelevant – the adjustment is made from age 65.

   $229,959 = 210,000 × 138.4 / 122.9 × 1.05^4 × 8/10

Cautions

- The **dollar** limit is reduced for years of **participation** less than ten.
- The **percentage** limit is reduced for years of **service** less than ten.
- The *de-minimis* $10,000 is reduced for years of **service** less than ten.

Review of Key Concepts

- What is the limit on annual retirement benefits in a defined benefit plan?
- What factors affect these limits?

Chapter 8
Permitted Disparity

Key Terms

- Average annual compensation
- Base benefit percentage
- Covered compensation
- Covered compensation table
- Excess allowance
- Excess benefit percentage
- Excess plan
- Final average compensation
- Gross benefit percentage
- Integration level
- Maximum excess allowance (MEA)
- Maximum offset allowance (MOA)
- Offset benefit percentage
- Offset plan
- Offset level
- Permitted disparity
- Primary insurance amount (PIA)
- Social Security retirement age (SSRA)
- Taxable wage base (TWB)
- Uniform disparity

Introduction

Permitted disparity is the allowable use of either supplementing or offsetting for employer paid Social Security benefits in a retirement plan. The permitted disparity rules are covered in IRC §401(l). Permitted disparity applies to both defined benefit and defined contribution plans (only defined benefit permitted disparity is described in this course). The permitted disparity rules specify ways to provide additional benefits that favor higher-paid employees without creating a need to perform the IRC §401(a) general nondiscrimination test.

Defined benefit plans use permitted disparity by defining the benefit formula in one of two ways: an **excess** benefit formula or an **offset** benefit formula. In an excess plan, the benefit amounts based on social security are added to a base benefit. In an offset plan, a gross benefit is offset by an amount that is based on social security. These types of formulas are defined in more detail below. Special terminology is required to provide these details.

Special Terminology

The **taxable wage base (TWB)** is the amount of compensation that is counted toward Social Security benefits, and for which Social Security taxes are collected. Both the employee and the employer pay Social Security taxes on compensation up to the TWB. In 1994 the TWB was set by law to be $60,600. Every year, the TWB increases in proportion to increases in the national average wage index. For 2016 the taxable wage base is $118,500. The TWB is also known as the **Social Security wage base**. Because of productivity gains, the TWB has on average increased faster than the rate of inflation.

Average annual compensation must conform to all five of the following conditions according to IRC §401(l)(5)(C) and Treasury Regulations 1.401(l)-1(c)(2) and 1.401(a)(4)-3(e)(2):

- Compensation is averaged over at least three years, or, if shorter, a participant's full period of service;
- Average annual compensation must use a participant's highest consecutive years' compensation;
- If the plan design so specifies, compensation can be disregarded if paid more than 10 years ago;
- An IRC §414(s) definition of compensation is required; and
- Any plan that satisfies the permitted disparity rules must use an acceptable definition of average annual compensation in its benefit formula.

Final average compensation is defined as follows according to IRC §401(l)(5)(D) and Treasury Regulation 1.401(l)-1(c)(17):

- Compensation is averaged over exactly three years, or if shorter, the participant's full period of service;
- Final average compensation must use the participant's final consecutive years of IRC §414(s) compensation, though the plan may in its design choose to omit compensation in the year of termination and must use the same form of IRC §414(s) compensation used in

the definition of average annual compensation; and
- The amount of compensation in excess of the TWB in effect at the beginning of each year is excluded before averaging.

Any plan that is an offset plan (defined later in this chapter) under the permitted disparity rules must use an acceptable definition of final average compensation to determine the amount of offset from the gross benefit, while using average annual compensation to calculate the gross benefit.

Covered compensation according to IRC §401(l)(5)(E) and Treasury Regulation 1.401(l)-1(c)(7) is defined as the average (without indexing) of the TWBs over the 35 calendar years ending in the year the employee reaches Social Security retirement age (SSRA). For an employee younger than SSRA, the most recent TWB is projected at the current level to the year of SSRA.

Covered compensation as defined by a plan using permitted disparity can be based on a fixed table that is updated only after five years rather than being adjusted each year for the new TWB. (This means that the same table can be used for six years.)

This definition of covered compensation is used for both excess plan and offset plan formulas (both defined later in this chapter).

Updated **covered compensation tables** are published annually by the IRS. Two tables are published: a full table rounded down to the nearest multiple of twelve, which has a different covered compensation value for each year of birth, and a shorter table rounded to the nearest three thousand dollars under which groups of birth years share the same covered compensation value. The following tables show these two covered compensation tables for the 2016 year. (Rev. Rul. 2016-05). Depending on the year of birth, SSRA gradually increases from 65 to 67. Note that in this table, anyone at least 35 years from their SSRA has covered compensation equal to the 2016 TWB of $118,500 with no rounding applied. Although new covered compensation tables are published every year, integrated plans often continue to use a table for a number of years in a row to simplify administration and communication with participants.

2016 COVERED COMPENSATION TABLE		
CALENDAR YEAR OF BIRTH	**CALENDAR YEAR OF SSRA**	**2016 COVERED COMPENSATION TABLE II**
1907	1972	$ 4,488
1908	1973	4,704
1909	1974	5,004
1910	1975	5,316
1911	1976	5,664
1912	1977	6,060
1913	1978	6,480
1914	1979	7,044
1915	1980	7,692
1916	1981	8,460
1917	1982	9,300
1918	1983	10,236
1919	1984	11,232
1920	1985	12,276
1921	1986	13,368
1922	1987	14,520
1923	1988	15,708
1924	1989	16,968
1925	1990	18,312
1926	1991	19,728
1927	1992	21,192
1928	1993	22,716
1929	1994	24,312
1930	1995	25,920
1931	1996	27,576
1932	1997	29,304
1933	1998	31,128
1934	1999	33,060
1935	2000	35,100

2016 COVERED COMPENSATION TABLE		
CALENDAR YEAR OF BIRTH	**CALENDAR YEAR OF SOCIAL SECURITY RETIREMENT AGE**	**2016 COVERED COMPENSATION TABLE II**
1936	2001	$ 37,212
1937	2002	39,444
1938	2004	43,992
1939	2005	46,344
1940	2006	48,816
1941	2007	51,348
1942	2008	53,952
1943	2009	56,628
1944	2010	59,268
1945	2011	61,884
1946	2012	64,560
1947	2013	67,308
1948	2014	69,996
1949	2015	72,636
1950	2016	75,180
1951	2017	77,640
1952	2018	80,004
1953	2019	82,308
1954	2020	84,564
1955	2022	88,884
1956	2023	90,984
1957	2024	93,000
1958	2025	94,920
1959	2026	96,780
1960	2027	98,580
1961	2028	100,320
1962	2029	101,964
1963	2030	103,608
1964	2031	105,204
1965	2032	106,716
1966	2033	108,144
1967	2034	109,464
1968	2035	110,664

2016 COVERED COMPENSATION TABLE		
CALENDAR YEAR OF BIRTH	**CALENDAR YEAR OF SOCIAL SECURITY RETIREMENT AGE**	**2016 COVERED COMPENSATION TABLE II**
1969	2036	111,756
1970	2037	112,716
1971	2038	113,616
1972	2039	114,492
1973	2040	115,308
1974	2041	116,004
1975	2042	116,604
1976	2043	117,072
1977	2044	117,408
1978	2045	117,744
1979	2046	118,080
1980	2047	118,320
1981	2048	118,452
1982 and Later	2049 and Later	118,500

2016 ROUNDED COVERED COMPENSATION TABLE	
YEAR OF BIRTH	**COVERED COMPENSATION**
1937	$ 39,000
1938 - 1939	45,000
1940	48,000
1941	51,000
1942	54,000
1943	57,000
1944	60,000
1945	63,000
1946 - 1947	66,000
1948	69,000
1949	72,000
1950	75,000
1951	78,000
1952 - 1953	81,000
1954	84,000
1955 - 1956	90,000
1957	93,000
1958 - 1959	96,000
1960 - 1961	99,000
1962	102,000
1963 - 1964	105,000
1965 - 1967	108,000
1968 - 1969	111,000
1970 - 1973	114,000
1974 - 1978	117,000
1979 and Later	118,500

The **integration level or offset level** is the breakpoint in the compensation such that compensation above that level has the permitted disparity applied, resulting in a larger percentage of compensation above that level being applied to the retirement benefit (IRC §401(l)(5)(A), Treasury Regulation 1.401(l)-1(c)(20), IRS Notice 89-70). The integration level or offset level must apply to all participants on a consistent basis. The plan must specify the integration level or offset level in effect for the plan year for each participant.

The integration level or offset level generally is covered compensation for the participant. As discussed below, a plan may define other integration or offset levels, but this generally requires

a reduction to the amount of disparity permitted.

Excess Plan

The **excess benefit percentage** is the percentage of compensation at which benefits are accrued with respect to average annual compensation above the integration level for the plan year (IRC §401(l)(3)(A)).

The **base benefit percentage** is the percentage of compensation at which the benefits are accrued with respect to average annual compensation at or below the integration level for the plan year (IRC §401(l)(3)(A)).

The **maximum excess allowance (MEA)** is the largest amount that the excess benefit percentage can exceed the base benefit percentage and still be allowable (IRC §401(l)(4)(A)). The difference between the excess benefit percentage and the base benefit percentage is called the **excess allowance** (or more simply, the disparity).

The following Figure 9-1 illustrates how the components that define an excess plan formula fit together (with the area within the white rectangles representing the benefit):

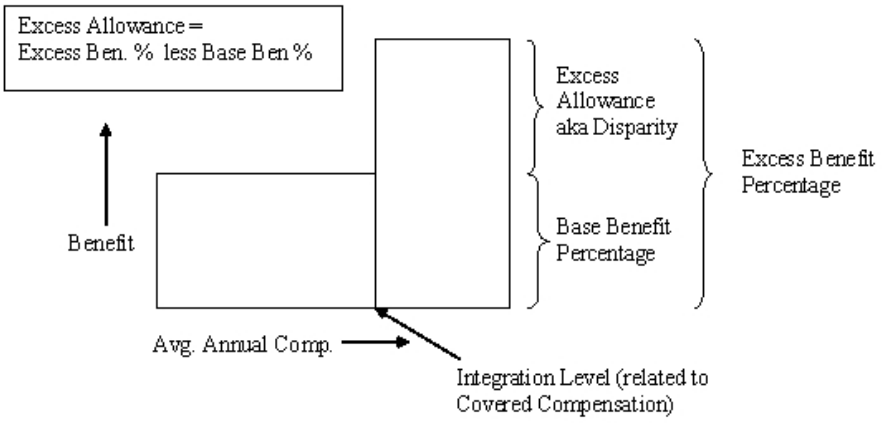

Fig. 9-1: Excess Plan

Offset Plan

The **offset benefit percentage** is the percentage of *final average compensation* by which benefits are reduced with respect to final average compensation at or below the offset level (Treasury Regulation 1.401(l)-1(c)(24)).

The **gross benefit percentage** is the percentage of compensation at which benefits are provided with respect to *average annual compensation* (Treasury Regulation 1.401(l)-1(c)(18)).

The **maximum offset allowance (MOA)** is the largest amount that can be used as an offset benefit percentage (IRC §401(l)(4)(B)).

Offset plans are discussed in more detail later in this chapter. The following Figure 9-2 illustrates how the components that define an offset plan formula fit together (with the area within the white rectangles representing the benefit):

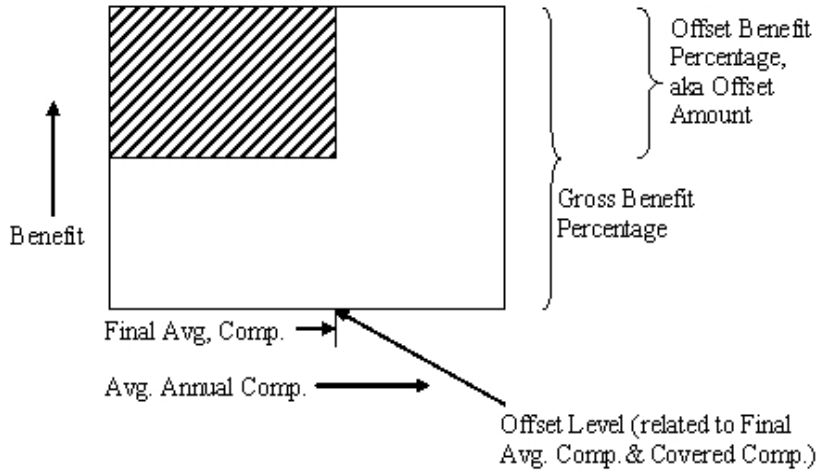

Fig. 9-2: Offset Plan

Excess and Offset Plans Compared

It is clear from Figures 9-1 and 9-2 that excess and offset plans take different routes to arrive at very similar results. This was by design, as the goal of the current permitted disparity rules is to establish parity between excess and offset plans.

Prior to 1989, offset plans were allowed to subtract a percentage (often 50%) of a participant's expected Social Security **primary insurance amount (PIA)** from the gross formula benefit. Prior to 1989, excess plans, while looking similar to the current design were permitted to be excess only with a zero base benefit percent. This resulted in offset plans allowing more disparity than was possible in excess plans, and excess only plans were perceived by many as an inappropriate use for tax subsidies since they only benefited higher paid employees.

As seen in Figures 9-1 and 9-2, permitted disparity excess and offset plans have much in common. The key difference, however, is that offset plans are required to work with *final average compensation* in defining the offset as well as with *average annual compensation* in defining the gross benefit while excess plans work only with average annual compensation. This complicates the administration of offset plans.

Since an offset under post-1989 permitted disparity is no longer directly related to a participant's PIA (half of which is paid for by employer taxes) the disparity involved in an offset plan is more difficult to explain to participants than it was prior to 1989. Many plans that had used a direct PIA offset design prior to 1989 have continued to use the same formulas, which offset by a percentage of PIA, although such plans now need to do general nondiscrimination testing since

that plan design does not satisfy the current permitted disparity rules.

The Impact of Changes in Covered Compensation on Accrued Benefits

When covered compensation changes because the plan updates to a newer table, a participant's benefit upon termination would typically be lower under the newer table than under the older table. Under current law this would not be considered a forfeiture of accrued benefit when the formula applies the covered compensation level to all years of service. In this case, the formula is interpreted as saying the accrued benefit is the result of applying this formula in the year of termination.

However, a plan amendment that changed the formula or the definition of the integration or offset limit would need to grandfather accrued benefits under the prior formula in order to avoid an impermissible forfeiture.

It is a different situation when the plan uses an accumulation formula that specifically applied the current covered compensation level to a benefit accrual in the current year. In this case, every change of covered compensation would apply only to future accruals.

Excess Benefit Plan

Excess benefit plans are plans that credit a lower percentage of average annual compensation below the integration level, and a higher percentage of average annual compensation above the integration level. Another way to state this is that a percentage of total average annual compensation is provided by the plan formula, plus a percentage of average annual compensation in excess of the integration level.

The maximum excess allowance (MEA), with regard to the benefit accrual for any year, cannot exceed the lesser of 0.75% or the base benefit percentage for any year of service. There is also a lifetime maximum excess percentage that is limited to 26.25%, if 35 years of service can be accumulated (0.75% × 35 years = 26.25%). If a flat benefit formula is used, there generally must be a reduction for participants with less than 35 years of credited service.

As discussed later in more detail, adjustments are needed in the 0.75% MEA in the following situations :

- The integration level is not equal to covered compensation.
- The benefits do not begin at SSRA.

EXAMPLE 8-1: Excess Benefit Formula.

Years of participation multiplied by the sum of:
1.25% of a participant's average annual compensation up to $10,000, plus
1.75% of average annual compensation in excess of $10,000.

In this example, the excess benefit percentage is 1.75%, the base benefit percentage is 1.25%, and the integration level is $10,000 for all participants. The other way to state this formula is that the plan provides a benefit of 1.25% of total average annual compensation plus 0.50% of average

annual compensation in excess of $10,000. As previously mentioned, the 0.50% is also known as the excess allowance.

Whenever working with an excess benefit formula, it must be understood which way the benefits are being stated. It can be helpful to label all three: the base benefit percentage, the excess benefit percentage, and the excess allowance.

In this formula, the integration level is the single $10,000 dollar amount for all participants, rather than each participant's covered compensation. The excess allowance of 0.50% is less than the unreduced MEA of 0.75%. As will be described in more detail, a single dollar amount can be used for the integration level only if there is a reduction in the amount of disparity otherwise permitted.

Offset Plan

Offset plans include those plans with a benefit formula determined as a percentage of average annual compensation, minus an offset amount stated as a percentage of final average compensation up to the integration level.

EXAMPLE 8-2: Offset Formula.
An example of an offset formula is years of credited service up to 35 multiplied by the difference between 3% of average annual compensation for each year of credited service and 0.75% of final average compensation (limited to covered compensation). In this example, the gross benefit percentage is 3%, the offset percentage 0.75%, and the integration level is covered compensation.

The MOA per year of service is the **lesser** of:

- 0.75%; or
- 50% of the gross benefit percentage multiplied by a fraction (not to exceed one), the numerator of which is the participant's average annual compensation and the denominator of which is the participant's final average compensation up to the offset level (therefore there is no need to multiply the gross benefit percentage by this fraction if final average compensation is defined to be limited by annual average compensation).

The cumulative lifetime offset limit is 26.25% of pay after 35 years of service, which is the same lifetime limit as with an excess benefit plan. As discussed later in more detail, adjustments are needed in the 0.75% MOA whenever any of the following apply in an offset plan (note that these are the same conditions that trigger adjustments in an excess plan):

- The offset level is not equal to covered compensation.
- The benefits do not begin at SSRA.

Reductions to the Maximum Excess or Offset Allowance

The 0.75% factor must be adjusted so that all normal and optional benefit forms satisfy the 0.75% requirement (IRC §401(l)(3), Treasury Regulation 1.401(l)-3(b)) (this assumes that the same benefit formula will apply for all participants regardless of SSRA.) This only becomes a problem if there is an optional form of benefit that is less valuable than the normal form—"less valuable" meaning

that the optional form of benefit will be paid over a shorter period of time than the normal form. For example, if the normal form is a qualified joint and survivor annuity (QJSA) with an optional life annuity that is the actuarial equivalent, an actuarial equivalent adjustment will be needed so that the life annuity optional benefit does not fail the 0.75% test.

When excess or offset integration levels are defined to be other than covered compensation, the maximum excess or offset allowance must generally be adjusted (IRC §401(l)(5)(E), Treasury Regulations 1.401(l)-1(c)(7) and 1.401(l)-3(d), Notice 89-70):

- The adjustment is based on a table depending on the integration level chosen.
- No adjustment is necessary if the integration level is covered compensation or is the greater of:
    - $10,000; or
    - One-half of covered compensation for a person attaining SSRA in the calendar year in which the plan year begins.
- If the integration level is an intermediate fixed amount (greater than the amount above, but not more than the TWB for an excess plan or the participant's final average compensation for an offset plan), the plan must adjust the 0.75% factor to the percentage detailed in the table below. In certain cases where certain demographic requirements are not satisfied, the adjusted factor is not more than 0.60% (80% of the otherwise applicable 0.75% factor).
- The following table shows the adjustment percent to the 0.75% factor when a uniform percentage (which must be greater than 100%) of covered compensation capped at the Social Security TWB is used:

If the integration or offset level is:	**The 0.75% factor is replaced by:**
100% of covered compensation	0.75%
125% of covered compensation	0.69%
150% of covered compensation	0.60%
175% of covered compensation	0.53%
200% of covered compensation	0.47%
TWB or final average compensation	0.42%

Adjustments are necessary if the normal retirement age (NRA) is not equal to the SSRA (Treasury Regulation 1.401(l)-3(e)). If 65 is the NRA, you can use 0.65% for everyone, rather than adjusting for people with SSRAs of 66 and 67 (this assumes the same benefit formula will apply for all participants regardless of SSRA.)

EXAMPLE 8-3: **Integration Factor.**

SSRA	**Base Ben %**	**Excess Ben %**
65	1.00%	1.75%
66	1.05%	1.75%
67	1.10%	1.75%

There is no adjustment necessary in the 0.75% if there is a supplemental benefit equal to the amount of the disparity that is provided until the person reaches their SSRA.

There are tabular adjustments to the 0.75% factor for retirement as early as age 55, and actuarial equivalent adjustments are used at retirement ages prior to age 55.

If more than 35 years of disparity are used, the maximum excess/offset allowance (MEA and MOA) must be reduced proportionately so that the lifetime maximum is not exceeded.

EXAMPLE 8-4: Reduction to MEA.
If a plan provides 40 years of disparity, the MEA that could normally be 0.75% would be reduced to:

$$0.75\% \times 35/40 = 0.65625\%$$

Note that if 0.65625% is multiplied by 40 years, the lifetime maximum of 26.25% is obtained.

Uniform Disparity Requirements

In general, a plan's benefit percentages (excess, base, gross, and offset) must be the same for all employees with the same number of years of service. A plan using the fractional accrual method must incorporate special adjustments to the permitted disparity factors in order to satisfy the uniformity rules. This is because the fractional accrual method bases the current accrued benefit on the projected benefit at NRA multiplied by a fraction equal to service credited to date divided by the projected credited service at NRA. If a plan uses 35 years of disparity with additional benefits provided as a percentage of total average annual compensation for years in excess of 35 (in other words, no more disparity for years in excess of 35) then the following adjustment applies:

- A valid permitted disparity formula must be used for years 1 through 35; and
- The percentage of total compensation used after 35 years must not exceed the excess (or gross) rate used in the first 35 years.

EXAMPLE 8-5: Fractional Accrual Method Adjustment.
An example of a formula that would work when benefits are accrued using the fractional rule would be:

(1) 1.50% of pay below the integration level for each of the first 35 years of service plus
(2) 2.15% of pay above the integration level for each of the first 35 years of service 35 years, plus
(3) 2.00% of total pay for years of service in excess of 35.

If a plan uses less than 35 years of disparity, then the following rules apply:

- A valid permitted disparity formula must be used for the permitted disparity years.
- For the rest of the years up to 35, the excess (or gross) rate must be applied to all pay.
- The rate used for years above 35 must not exceed the excess (or gross) rate.

EXAMPLE 8-6: Fractional Accrual Method with Less than 35 Years of Service.
An example of a formula using less than 35 years when benefits are accrued using the fractional rule would be:

(1) 1.50% of pay below integration level for each of the first 20 years of service plus

(2) 2.15% of pay above integration level for each of the first 20 years of service, plus

(3) 2.15% of total pay for years 21 through 35, plus

(4) 2.00% of total pay for years of service in excess of 35.

Plans need to reduce the amount of disparity allowed when an integration level other than covered compensation is used to discourage plan sponsors from artificially choosing an integration level that would increase HCE benefits while not increasing NHCE benefits, or would exclude additional participants from benefiting by the disparity while still making it available to the HCEs.

In general, any benefit, right, or feature that an excess plan grants based on the excess portion of the benefit must be equally available based on the base portion of the benefit. A similar requirement applies to offset plans.

Multiple Plan Limitations

There are multiple plan limitations on the amount of permitted disparity whenever there are two integrated plans or when there has been a prior integrated plan.

First, the annual fraction for each plan must be calculated for each plan year. It is the ratio of the actual disparity to the maximum allowable disparity. It is always equal to 1.0 for a plan that is imputing permitted disparity to the maximum extent allowed in the general test of IRC §401(a)(4). It is also equal to 1.0 for any year prior to 1989 (when the integration rules for retirement plans were completely different from the current permitted disparity rules) if there was an integrated defined benefit plan.

Second, the fractions for each plan of the employer that uses permitted disparity (or imputes disparity) for the general test of IRC §401(a)(4)) must be added for the current year. The total cannot exceed 1.0. As a result, no participant can have more than 100% of the maximum disparity limit used for them over all plans of the employer for any year.

Third, the fractions for all years must be added. The sum over all years cannot exceed 35. This is called the cumulative disparity fraction.

Practical Examples of Concepts Learned

Problem #1:

Determine both the maximum excess percentage and a normal retirement benefit (NRB) formula that can be used for any employee retiring at age 65 from a plan that allows only 15 years of service for excess benefit purposes. The plan uses the fractional accrual method. The integration level is covered compensation.

Problem #2:

You are reviewing integrated defined benefit plans for the 2010 plan year that use the 2010 covered compensation table with an offset formula. Determine the effect of each of the following integration levels on the 0.75% factor and on compliance with the permitted disparity rules each year.

Integration Levels

- Covered compensation
- 150% of covered compensation
- $66,750 (assuming covered compensation for employees reaching SSRA in 2010 is $53,400)

Solutions

Problem #1

Step 1. Determine the maximum excess percentage at age 65.

The maximum excess percentage at age 65 that can be used for all employees is 0.65%. Note that this is smaller than necessary for participant with SSRAs of 65 and 66 (where the maximum disparity is 0.75% and 0.70%, respectively). However, the question is asking for the maximum disparity that would work for **any** employee, so the worst case of 0.65% must be used.

Step 2. Determine the general formula.

(X % of total pay + 0.65 % of excess pay) per year of service up to 15, plus
(X + 0.65%) of total pay per year of service in excess of 15 years.

Note that in order to satisfy the requirement for fractional accrual, the additional benefit granted for years after 15 and up to the maximum 35 years for disparity purposes must be equal to the excess percent for the 15 years that disparity is used. This is (X + 0.65%), which is why that was used for years after 15. Note that beginning with the 36th year of service, any percentage no greater than (X + 0.65%) could have been used.

Problem #2

Step 1. Covered compensation.

The 0.75% factor would not need to be adjusted if each individual employee's covered compensation is used.

Step 2. 150% of covered compensation.

The 0.75% factor must be adjusted to 0.60%, since the integration is more than 100% of covered compensation and must be reduced using the table from the regulations that applies when the integration level is defined this way.

Step 3. $63,750.

The 0.75% factor must be adjusted to 0.69% since $66,750 is 125% of covered compensation. Also, demographic tests must be satisfied or the 0.75% factor must be further reduced to 0.60% (80% of 0.75%).

Self-Test Questions

Circle your responses:

T F 1. Final average compensation is defined to be the participant's highest consecutive years of compensation averaged over three years, or if shorter, the participant's full service period.

T F 2. Covered compensation is defined to be the Social Security TWBs averaged over the 35 calendar year period ending in the year the employee reaches SSRA.

T F 3. Covered compensation is applicable only to excess plans.

T F 4. If a participant's benefit in the form of a life and 10-year certain annuity is calculated using the maximum offset allowance, it is still properly integrated if the benefit is converted to a life annuity using the actuarial equivalence definition in the plan document.

T F 5. The cumulative maximum offset allowance is 26.25% of final average compensation for 35 years of credited service.

T F 6. If an integrated plan is terminated and there are excess plan assets, the use of the excess funds to increase benefits under the plan must not violate the permitted disparity rules.

T F 7. If the NRA of a plan is age 65, then disparity of 0.65% can be used for all participants rather than adjusting the maximum excess percentage of 0.75% for participants with SSRAs of 66 and 67.

T F 8. In determining the maximum permitted disparity, you can ignore integrated defined benefit plans that were terminated prior to 1989.

T F 9. Offset plans are defined as plans that include a benefit determined as a percentage of pay, minus an offset amount.

Sample Test Questions

1. Which one of the following formulas satisfies the permitted disparity rules for all possible plan participants for a plan with a NRA of 65 and no alternative forms of benefit?

   A. 1% of average compensation plus 0.75% of average compensation in excess of covered compensation, times years of service, paid as a life annuity.
   B. 1% of average compensation plus 0.65% of average compensation in excess of the TWB, times years of service, paid as a life annuity.
   C. 1% of average compensation plus 0.65% of average compensation in excess of covered compensation, times years of service up to 40, paid as a life annuity.
   D. 1% of average compensation plus 0.65% of average compensation in excess of covered compensation, times years of service up to 35, paid as a qualified joint and survivor annuity for married participants and a life annuity for single participants.
   E. 1% of average compensation plus 0.75% of average compensation in excess of covered compensation, times years of service, paid as a qualified joint and survivor annuity for married participants and a life annuity for single participants.

2. Which of the following statements regarding satisfaction of the permitted disparity rules under IRC §401(l) is/are **TRUE**?

   I. Benefit accruals under each alternative form of benefit must satisfy the permitted disparity rules.
   II. If the formula uses 40 years of service, the MEA must be reduced in order to ensure that the lifetime maximum disparity is not exceeded.
   III. There is no reduction in the MEA for integration levels below covered compensation.

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

3. All of the following statements regarding permitted disparity are **TRUE, EXCEPT**:

   A. The excess benefit percentage is the percentage of compensation at which benefits are accrued with respect to compensation above the integration level.
   B. The maximum offset allowance for a plan year is the lesser of 0.75% or one-half of the gross benefit percentage where final average compensation is defined not to exceed average annual compensation.
   C. Covered compensation is defined as the average of the Social Security TWBs for the 35 calendar years ending with the year the employee reaches SSRA.
   D. Benefits in an excess or offset plan cannot commence prior to SSRA.
   E. Average annual compensation is the participant's highest average for any period within the compensation history years of at least three consecutive years, or if shorter, the participant's full period of service.

4. All of the following statements regarding reductions to the maximum permitted disparity rate are **TRUE, EXCEPT**:

   A. If lump sums are allowed, and an actuarial equivalent interest rate of less than 7.5% is used, the 0.75% factor must be reduced, based upon the maximum service that can be accrued.
   B. If the TWB is used as the integration level, the 0.75% factor does not need to be reduced.
   C. If the normal form is a life annuity, and an unreduced joint and survivor annuity is elected by the participant, the 0.75% factor does not need to be reduced.
   D. If the NRA is 65, the 0.75% factor will need to either be reduced uniformly or reduced for some participants.
   E. If the greater of 50% of covered compensation for a participant reaching SSRA in the current year or $10,000 is used as the integration level, no adjustment to the 0.75% factor is necessary.

5. Based on the following information, determine the participant's annual retirement benefit at the plan's NRA of 65? (Choose the closest answer.)

   - The NRB is a life annuity of 2.5% of average annual compensation up to covered compensation plus 3.0% of average annual compensation in excess of covered compensation for each year of participation up to 30.
   - The participant's average annual compensation is $74,000.
   - The participant's covered compensation is $66,000 .
   - The participant will have 35 years of participation.

   A. $56,700
   B. $65,000
   C. $66,800
   D. $69,600
   E. $77,200

6. Based on the following information, determine the projected annual benefit at NRA for a participant using the following information.

Plan benefit formula	1% of average annual compensation per year of service plus .75% of the portion of average annual compensation in excess of covered compensation per year of service up to 35 years
Average annual compensation	$60,000
Covered compensation	$54,000
NRA	65
SSRA	65
Years of service at retirement	10
Years of service through the current year	9
TWB	$94,200

   A. $6,450
   B. $7,600
   C. $8,100
   D. $8,500
   E. $10,500

7. Based on the following information, determine the maximum offset percentage that will satisfy the permitted disparity requirements, making appropriate adjustments to the 0.75% factor.

Normal form of plan formula	Joint and 100% survivor annuity
Optional form of payout elected	Life annuity
Interest rate	8%
Joint and 100% survivor APR	115.875
Life APR	95.987
Current age and NRA	65
SSRA	67

A. 0.42
B. 0.47
C. 0.54
D. 0.69
E. 0.75

Solutions to Self-Test Questions

1. False
2. True
3. False
4. False
5. True
6. True
7. True
8. False
9. True

Explanation of *False* questions:

1. Final average compensation does not include amounts in excess of the Social Security TWB in effect at the beginning of the year and is an average of the final 3 years.

3. Covered compensation applies to both offset or excess plans.

4. The offset used in calculating a benefit will need to be adjusted if the benefit is converted to a less expensive optional form of benefit.

8. There is no exemption from the multiple plan limitation on permitted disparity for defined benefit plans terminated prior to 1989. For each year a prior integrated defined benefit plan was in existence, 1.0 is used in calculating the ratio of actual disparity to maximum allowable disparity.

Solutions to Sample Test Questions

1. The correct answer is D.

   A and E must have the 0.75% reduced for employees with SSRA of 66 or 67. B has the incorrect integration level for the excess percent listed (the integration level should be covered compensation, not the TWB). C needs to have a reduction in the excess percentage for the use of 40 years (which is more than 35 years) or use only a maximum of 35 years. A, B, and E need a service cap of no more than 35 years.

2. The correct answer is C.

   Statement III is incorrect, as there can be reductions for some integration levels below covered compensation. However, there is no reduction if the integration level is the greater of $10,000 or one-half of the covered compensation of an individual attaining SSRA in the plan year.

3. The correct answer is D.

   Statement D is incorrect since benefits can commence prior to SSRA. However, the maximum excess or offset percentage must be reduced in this situation.

4. The correct answer is B.

   The 0.75% factor must be adjusted unless covered compensation is used as the integration level.

5. The correct answer is A.

   [(0.025) ($66,000) + (.03) ($74,000 – $66,000)] x 30 years = $56,700

6. The correct answer is A.

   [(0.01) ($60,000) + (.0075)($60,000 – $54,000)] x 10 years = $6,450

7. The correct answer is C.

   Because the NRA is 65 and the SSRA is 67, the 0.75% factor is reduced to 0.65%. In addition, the joint and 100% survivor normal form is more valuable than the life annuity that is elected, so an adjustment to the 0.65% must be made. The actuarial equivalence rate to adjust from a life annuity to a joint and 100% survivor annuity is 95.987 / 115.875 = 0.8284. The adjusted factor for the offset percentage = 0.65% × 0.8284 = 0.5385%

Cautions

- Do not forget that the existence of a prior integrated plan requires a reduction in the maximum permitted disparity.

- Do not forget that the 0.75% must be satisfied for each alternative form of distribution, including lump sums.

Review of Key Concepts

- What is the maximum excess allowance (MEA) for an excess plan?

- What is the maximum offset allowance (MOA) for an offset plan?

- What adjustments have to be made to the MEA and MOA for retirement before SSRA?

- What adjustments have to be made to the MEA and MOA for alternative forms of benefits?

- How do you adjust for a uniform NRA when different participants have different SSRAs?

- What are the limitations for multiple integrated plans?

- What special limitations apply to plans with prior integrated plans?

Chapter 9
Qualified Domestic Relations Orders (QDROs)

Key Terms

- Alternate payee
- Anti-assignment rules
- Domestic relations order (DRO)
- Earliest retirement eligibility age
- Early retirement subsidy
- Qualified domestic relations order (QDRO)
- Separate interest
- Shared payment

Introduction

Qualified domestic relations orders (QDROs) are orders pursuant to state domestic relations law and approved (qualified) by the plan administrator. QDROs assign to a spouse, former spouse, or dependent of a plan participant a portion of the participant's benefits under a retirement plan subject to IRC §401(a). QDROs are an exception to the anti-assignment rules of IRC §401(a)(13). QDROs were established by the Retirement Equity Act of 1984 and the QDRO rules are contained in IRC §414(p). Before this law introduced QDROs, there was no clear way for plan administrators to conform to domestic relations orders (DROs) without risking the qualified status of the retirement plan. The ASPPA Defined Benefit examination will consider the plan administrator's responsibilities in approving and administering QDROs but will not consider the actuarial, legal, and negotiation steps required to formulate a proposed QDRO.

The Elements of a QDRO

QDROs must contain all of the following information:

- The name and last known address of each **alternate payee** (the person or persons other than the participant who are being assigned benefits under the QDRO);

- The name of each plan to which the order applies;
- The dollar amount or percentage of benefits to which the order applies (or a method by which the dollar amount or percentage can be determined); and
- The time period to which the order applies (*e.g.*, when payments to the alternate payee may begin) and the duration of the payments—often for the life of the alternate payee or of the participant.

QDROs are not allowed to contain any of the following:

- A requirement that a plan provide the participant or alternate payee with any benefit or option not otherwise provided by the plan (*e.g.*, a lump sum) or payments commencing before the participant would have been eligible to receive benefits;
- A requirement that the plan provide benefits with a greater actuarial present value than would have been provided to the participant;
- A requirement that a plan pay benefits to an alternate payee that are required to be paid to another alternate payee under an earlier QDRO; or
- A requirement that the plan provide for a joint and survivor annuity with survivor payments to the alternate payee's subsequent spouse.

Special Circumstances

If retirement benefits have already commenced, a QDRO can require that benefits currently being paid to the participant be split, with a portion going to the alternate payee during the life of the participant. However, the QDRO cannot change the annuity option elected or require a benefit be paid for the life of the alternate payee except where such a benefit would already have been paid under the terms of a qualified joint and survivor annuity (QJSA).

A QDRO need not be a separate document but may be incorporated into a divorce decree or property settlement provided it meets all of the QDRO requirements. An order issued in a probate proceeding begun after the death of the participant is not a QDRO unless it relates to the dissolution of a marriage or support obligations. A QDRO may provide for payment to the guardian of an alternate payee. A single QDRO may apply to more than one retirement plan with more than one sponsor if the obligations of each plan are clearly identified.

The QDRO rules only apply to qualified plans that are also subject to the anti-assignment requirements. In particular, they do not apply to government plans, church plans, and some plans of nonprofit corporations. Some of these plans choose to adopt rules similar to the QDRO rules, but many of them do not permit any alienation of retirement benefits.

QDRO Policy and Procedures

Each qualified retirement plan must have written procedures for establishing the qualified status of a **domestic relations order** (DRO) and for making distributions under a QDRO.

This QDRO policy must include a provision that the plan administrator will, upon receipt of a DRO, send the plan's procedures for making a QDRO determination to the participant and proposed alternate payee. There also must be a provision granting permission for an alternate payee to designate a representative to receive all plan communications relating to the qualification of the DRO.

These are the steps a plan administrator must follow upon receipt of a proposed QDRO:

- Notify the participant and the designated alternate payee (and any designated representatives) of the receipt of the DRO (the proposed QDRO).
- Mail a copy of the plan's written QDRO policy to the participant and designated alternate payee (and any designated representatives).
- Place a freeze or hold on any participant changes that would dilute the benefits available to the alternate payee. The hold must be kept in place for 18 months or, if sooner, until the proposed QDRO is cured of any defects and is qualified. During the hold period, the participant would not be allowed to commence receiving benefits, though benefits already in pay status could continue.
- Determine within a reasonable period of time whether the proposed QDRO contains all the required elements and can be administered by the plan. The plan's written QDRO policy should set out what this reasonable period is.
- Notify the parties if the proposed QDRO has been qualified, or if not, explain what the defects are. Where there are defects, plan administrators commonly suggest ways the defects might be cured, though this should be done in a neutral way not favoring either of the parties.

Repeat these steps (except for the second bulleted item) each time the proposed QDRO is resubmitted.

Related Administrative Issues

A draft DRO will often be submitted to the plan for review before it is approved by the court. In this case, the law does not require that a hold be placed on the plan's benefits, but plans may do so (provided this is clearly required by their written QDRO policy).

The plan administrator should accept any proposed QDRO that meets the legal requirements and can be administered. The plan administrator is not responsible for determining whether the proposed QDRO treats the participant and alternate payee fairly, or whether its terms conform to state domestic relations law. Usually, the QDRO is intended to implement a property settlement. Although it is not the responsibility of the plan administrator to ensure that the QDRO has been properly drafted to conform to the property settlement, plan administrators may choose to point out any discrepancies that come to their attention and suggest that the parties consider redrafting the proposed QDRO.

Many plans, as part of their QDRO policy, provide the parties with model QDRO

language (including optional paragraphs or blanks to be filled in) which if followed would automatically be accepted by the plan. However, the parties are always free to modify the model to better meet their needs. As required by law, the IRS (in Revenue Notice 97-11) provided sample QDRO language and also provided useful discussion of a number of QDRO issues.

Many plan administrators include default provisions in their QDRO policy that the plan will follow when a QDRO does not address an issue. These defaults will have been sent to the parties as part of the plan's written QDRO policy, but when the proposed QDRO is accepted, plan administrators often summarize their understanding of how the QDRO will be handled and what effect the default provisions have on the QDRO.

Status of the Alternate Payee

Until a proposed QDRO has been approved by the plan, the proposed alternate payee has no claim on the benefits of the plan and is protected only by the required hold on the plan's benefits—though the alternate payee would have standing to bring legal action against the plan on the grounds of unreasonable QDRO procedures or policies.

A proposed QDRO can specify that the former spouse is to be considered the participant's spouse for the purposes of qualified preretirement survivor annuity (QPSA) and QJSA benefits. However, if the divorce becomes final before the proposed QDRO is approved, the former spouse no longer is eligible for QPSA benefits in the event of the participant's death. To deal with this possibility, some attorneys will submit an abbreviated interim proposed QDRO just to maintain the former spouse's status as spouse for QPSA and QJSA purposes.

Once the QDRO has been approved, the alternate payee becomes a quasi-participant with all of the ERISA rights that any participant or beneficiary is entitled to.

Benefits Assigned to the Alternate Payee

Amount of Assigned Benefit

There is no restriction on the amount of the benefit assigned to the alternate payee except that it cannot exceed the actuarial equivalent of the amount that could have been paid to the participant.

If a monthly benefit amount is specified, it is important to be clear that this is a portion of the amount that would have been paid to the participant at normal retirement age and that the amount actually available to the alternate payee would be the actuarial equivalent taking into account the age and benefit form in which it will be paid to the alternate payee.

If the assignment is a percentage of the accrued benefit, it is important to specify the date as of which the benefit is to be determined and to specify how future changes in the benefit due to amendments or increases in final average compensation will affect the benefit due the alternate payee.

Form of Assigned Benefit

The form of the assigned benefit will generally be either a **shared payment** (where the alternate payee is assigned a portion of each check that otherwise would be sent to the participant and possibly also a portion of the death benefits) or a **separate interest** (where the alternate payee is eligible to receive payments independently of payments to the participant with annuity forms based on the lifetime of the alternate payee rather than the lifetime of the participant).

Features of a Shared Payment Assigned Benefit

If benefits payments have already commenced when the QDRO is approved, then the QDRO must be a shared interest since the form of benefit and the total amount cannot be changed after commencement. Generally, a shared interest will be a fixed percent of the participant's benefit checks continuing for the life of the participant (though it is important to clarify whether the alternate payee is to share in any post retirement increases such as might be due to cost of living increases or plan amendments). Less often, a shared interest will continue only until a fixed date or perhaps only until the alternate payee remarries, though some state courts have questioned such provisions.

If the alternate payee should die while the participant is still alive, it is important that the QDRO specify what is to happen to the portion of the benefit being sent to the alternate payee. Generally, the form of annuity selected will be the decision of the participant at the time benefits commence, but the QDRO may require that certain forms of annuity be selected. Generally, a shared payment assignment can be combined with a stipulation that the alternate payee continue to be considered the spouse for at least a portion of the QPSA and QJSA death benefits.

Features of a Separate Interest Assigned Benefit

As discussed below under timing of assigned benefit, the alternate payee can generally choose for benefits to commence before the participant begins receiving payments. Generally, the alternate payee can chose any form of benefit available to the participant under the plan other than a QJSA, but cannot choose forms of benefit not available to the participant—for example, a lump sum if that is not available under the plan.

Separate interest assignments provide much greater flexibility for the alternate payee regarding commencement date, form of annuity, and the guarantee that payments can continue for the alternate payee's lifetime. Separate interest assigned benefits result in additional responsibilities for the plan administrator.

If the plan provides for subsidized early retirement benefits (greater than the benefit that would be payable under the plan's actuarial equivalency assumptions) the subsidy cannot be paid to the alternate payee if the alternate payee's benefits commence prior to the actual retirement of the participant. In this case, it is important for the QDRO to clarify whether or not the payments to the alternate payee would be adjusted upward to include a subsidized early retirement benefit should the participant begin to receive such a

subsidized early benefit at a later date.

If the PBGC becomes the trustee of the plan, and the QDRO is issued after plan termination, the PBGC will limit the form of payment that the PBGC will pay under the QDRO to the form permitted by the PBGC (*e.g.*, a life annuity or life and years certain).

Timing of Assigned Benefit

Under a shared payment assignment, the QDRO would generally not have an impact on the commencement date of the payments.

Under a separate interest assignment, the alternate payee is generally eligible to commence benefits at the **earliest retirement eligibility age** defined as:

- The date the participant is entitled to a distribution; or
- If earlier, the later of the date the participant attains age 50 or the earliest date the participant could begin receiving benefits if separated from service.

Although it is not common, a plan can provide for an early retirement date for the alternate payee that is earlier than the date the participant would be eligible to retire; however, a QDRO cannot require this if the plan doesn't already provide it.

Death Benefit Issues

It is important that a QDRO specify what is to happen in the event that either the alternate payee or the participant dies prior to the commencement of benefits. This can either be done through explicit language in the QDRO or by means of default provisions in the plan's QDRO policy.

Absent specific death benefit provisions, the QDRO would have no effect in the event of preretirement death of either the participant or the alternate payee (which may not be the intent of the interested parties).

In addition to any other death benefit provisions, the QDRO can always specify that the alternate payee is to remain the spouse for QPSA and QJSA purposes for at least a portion of the benefit amount.

DOL Interim and Final QDRO Regulations

To satisfy a PPA directive, the DOL issued an interim final rule in 2007 clarifying issues relating to the timing and order of QDROs. Per the interim regulations, a DRO does not fail to be a QDRO merely because of the time it is issued or because it modifies a prior order or QDRO. In 2010, the DOL finalized these regulations, providing some additional clarifications.

Provided the order meets the requirements otherwise applicable to QDROs, it may still qualify as a QDRO when it is:

- Issued after, or revises, another earlier DRO or QDRO; or
- Issued after a plan participant's death, divorce, or annuity starting date.

The qualification rules for revised or second QDROs indicate that:

- A subsequent DRO between the same parties will not fail to be a QDRO solely because it changes the original division of benefits before payments have commenced.
- A second DRO will not fail to be a QDRO solely due to an earlier QDRO pertaining to a previous former spouse, provided the benefits assigned to the second former spouse were not already assigned to the first spouse.
- A second DRO between the same parties must receive its own 18-month segregation period if it is issued after the initial 18-month segregation period of the DRO has expired.

The qualification rules regarding the effect of timing on a DRO's qualified status indicate that:

- If a DRO is found to be deficient, a corrective DRO will not fail to be a QDRO solely because it was issued after the participant's death.
- A DRO issued after the parties' divorce will not fail to be a QDRO solely because it treats a former spouse as a surviving spouse for purposes of receiving death benefits.
- A QDRO issued after the annuity starting date may assign a portion of the participant's benefit to an alternate payee under a shared payment arrangement, including a spouse who previously waived rights to a survivor benefit.

Self-Test Questions

Circle your responses:

T F 1. A QDRO must be a stand-alone document separate from the divorce decree and the property settlement.

T F 2. A QDRO may specify that the former spouse is considered the participant's spouse for purposes of QPSA and QJSA benefits.

T F 3. A QDRO cannot require a plan to provide benefits greater than the actuarial equivalent of the benefit that would have been provided to the participant.

T F 4. A QDRO may provide for payment to the guardian of an alternate payee.

T F 5. A QDRO must apply to only a single retirement plan.

T F 6. The plan administrator should review each QDRO to be certain that both the participant and the alternate payee are being treated fairly as to the level of benefits provided.

T F 7. If the assignment is a percentage of the accrued benefit, the QDRO should explicitly outline such details as to the date the benefit is to be determined and how future changes in the benefit due to plan amendments or increases in final average compensation affect the alternate payee's benefit.

T F 8. The plan administrator should accept any proposed QDRO which can be administered and meets all legal requirements.

T F 9. Shared payment assignments provide much greater flexibility for the alternate payee regarding the commencement of benefits than do separate interest assignments.

Sample Test Questions

1. All of the following items must be included in a QDRO, **EXCEPT**:

   A. The name and address of each alternate payee
   B. A requirement that a lump-sum option be available to an alternate payee, whether or not such option is available to the participant
   C. The name of each plan to which the order applies
   D. The time period to which the order applies
   E. The dollar amount or percentage of benefit (or method to calculate an amount or percentage) to which the order applies

2. Which of the following statements regarding a shared payment form of assignment is/are **TRUE**?

   I. An alternate payee is assigned a portion of each benefit payment amount.
   II. The alternate payee can chose any form of benefit available under the plan.
   III. Generally, the form of payment is not determined by the QDRO.

   A. I only
   B. III only
   C. I and III only
   D. II and III only
   E. I, II, and III

3. All of the following statements regarding advantages of the separate interest approach to the alternate payee are **TRUE, EXCEPT**:

   A. The alternate payee can generally make an election for benefits to commence before the participant commences payments.
   B. The alternate payee can generally choose any form of benefit available to the participant, except for the QJSA.
   C. The alternate payee can commence payment at the earliest early retirement date available to the participant and receive the subsidized early retirement benefit (regardless of whether the participant has elected to begin receiving benefits).
   D. Payments can continue for the alternate payee's lifetime.
   E. Payment can continue beyond the lifetime of the participant.

Solutions to Self-Test Questions

1. False
2. True
3. True
4. True
5. False
6. False
7. True
8. True
9. False

Explanation of *False* questions:

1. Even though it is often a stand-alone document, a QDRO may be incorporated in a divorce decree or property settlement.

5. A QDRO may apply to more than one plan if each plan and provisions to each plan are clearly identified.

6. It is not the responsibility of the plan administer to determine fairness in the assignment of benefits.

9. Separate interest assignments allow the alternate payee to choose a commencement date.

Solutions to Sample Test Questions

1. The correct answer is B.

   Only benefit options available to the participant are available to the alternate payee, except for the QJSA.

2. The correct answer is C.

   Statement II is incorrect, as the alternate payee cannot choose the QJSA.

3. The correct answer is C.

   Statement C is false. With a separate interest assignment, the alternate payee cannot receive the subsidy if the alternate payee's benefit begins before the participant begins receiving benefits.

Cautions

- Until a proposed QDRO has been approved by the plan, the proposed alternate payee has no claim on the benefits of the plan and is protected only by the required hold on the plan's benefits.

- When a proposed QDRO is accepted, it is a good idea for the plan administrators to summarize their understanding of how the QDRO will be handled, especially with regard to the effect of any default provisions specified in the QDRO procedure.

- If the divorce becomes final before a QDRO is approved, the former spouse is no longer eligible for the QPSA benefit in the event of the participant's death.

- It is important for the QDRO to specify what happens in the event the participant or alternate payee dies before the commencement of benefits.

Review of Key Concepts

- What information must a QDRO contain?
- What requirements are QDROs not allowed to contain?
- What can a QDRO require when benefits have already commenced?
- What items must be included in a plan's QDRO procedure?
- What steps must a plan follow upon receipt of a proposed QDRO?
- What are the features of a shared payment assignment of benefits?
- What are the features of a separate interest assignment of benefits?

Chapter 10
Distribution Issues

Key Terms

- Account balance method
- Adjusted funding target attainment percentage (AFTAP)
- Annuity method
- Annuity starting date
- Cost basis
- Direct rollover
- Distribution calendar year
- Eligible rollover distribution
- Qualified joint and survivor annuity (QJSA) notice
- Qualified optional survivor annuity (QOSA)
- Required minimum distribution (RMD)
- Retroactive annuity start date (RASD)
- Top-25 paid HCE restrictions

Introduction

Distributions from defined benefit plans are very different than their defined contribution counterparts. One major difference is that a distribution to a participant could be impacted by the funded status of the plan. Underfunding of a defined benefit plan could limit or restrict the ability of a participant to receive a distribution. This is an extremely important consideration and should be reviewed prior to consulting with an employer or providing a distribution packet to a participant for a defined benefit plan.

Another situation that could cause a disruption of a participant's benefit entitlement occurs when the participant is found to be a restricted employee and the plan's funding level is less than 110%. In this situation, the restricted employee may not receive a lump sum distribution. This distribution restriction may affect an HCE, but not an NHCE.

When making distributions, a qualified defined benefit plan is required to provide the participant with notices regarding the ability to opt out of the qualified joint and survivor annuity (QJSA) form of annuity, the ability to roll a lump-sum distribution into an individual retirement account (IRA) or another qualified plan, and the taxability of distributions. The ability to designate a retroactive annuity start date earlier than the actual receipt of benefits has eased the impact of the QJSA timing notices on the participant. When optional forms of benefit are available, the plan must provide the participant with disclosures of the relative value of the available options.

Favorable tax treatment is given to the benefits in a qualified retirement plan. Plans are required to make minimum distributions to help assure that plan assets will be used primarily to support the participant (and possibly a beneficiary) during retirement rather than add to the estate of the participant. Because taxes have been deferred on retirement plan benefits, it is important for the administrator to explain the taxation of benefits to the participant and to follow the withholding rules on distributions.

Other important issues related to distributions (including accruals, forms of benefit, IRC §415 limitations, and early retirement) have been covered in earlier chapters of this study guide.

Required Distribution Disclosures

There are required disclosures that must be provided to participants considering a distribution from a defined benefit plan. These disclosures are incorporated as part of the distribution packet provided to the participant, however, they are individually outlined below.

Explanation of the Qualified Joint and Survivor Annuity (QJSA)

A joint and survivor annuity provides a benefit to the participant for their lifetime plus a continuing payment to the beneficiary, usually the spouse, after the participant's death. Typically, a joint and survivor annuity is the required form of payment for married participants. If the participant is single, it is a life annuity or other form specified by the plan. Requiring a joint and survivor option as a default under the plan was intended not only to provide a retirement benefit to the participant during their lifetime but also provide for the spouse after the participant's death. When deciding which form of benefit to take at retirement, a participant often compared the monthly dollar amount and would select the option with the highest dollar value - the life annuity. Upon the participant's death, the spouse would be surprised to learn that the payment ceased, creating a financial

hardship for the spouse. The purpose of the notice is to protect the spouse by disclosing information about these options available under the plan.

The Qualified Joint and Survivor Annuity (QJSA) notice must be given no more than 180 days before the annuity start date and must be given no sooner than 30 days before the annuity start date. Although this implies a 30-day wait period before the annuity can start, regulations allow benefit payments to begin after the expiration of a 7-day period that begins on the day after the explanation has been provided to the participant. In practice, most participants are provided with a distribution packet containing the notice that explains the waiver. This allows participants to make a benefit election within a shorter period to receive an immediate payment instead of waiting for the 30-day period to expire.

The explanation of QJSA notice must include the following information:

- Terms and conditions of the QJSA;
- The participant's right to waive the QJSA and the effect of a waiver;
- The spouse's right to consent or not consent to a QJSA waiver;
- The spouse's right to revoke a QJSA waiver and the effect of a revocation, if allowed by the plan document; and
- Description of optional forms other than the QJSA and disclosure of the relative value of these forms.

Qualified Optional Survivor Annuity (QOSA)

The Pension Protection Act (PPA) requires that plans subject to the Qualified Joint and Survivor Annuity (QJSA) requirement must offer participants a specific optional form of benefit as an alternative. This optional form of benefit is called the Qualified Optional Survivor Annuity (QOSA). As defined benefit plans are subject to QJSA, they are also subject to the QOSA.

If the QJSA survivor percentage is less than 75%, then the QOSA survivor percentage must be equal to 75%. If the QJSA survivor percentage is greater than or equal to 75%, then the QOSA survivor percentage must be equal to 50%.

EXAMPLE 10-1: QJSA is 50%.
The MA Company offers a defined benefit plan to their employees. Participant H is retiring and considering distribution options under the plan. As a married participant, the qualified joint and survivor annuity option is a 50% joint and survivor annuity. The plan also offers a life annuity and lump sum option. When providing the distribution packet to Participant H, MA Company, and its actuary must ensure that Participant H is presented with the 50% joint and survivor annuity, life annuity, lump sum, and a 75% joint and survivor annuity to satisfy the QOSA requirements.

EXAMPLE 10-2: QJSA is 100%.
Let's assume the same information, however, as a married participant, the Qualified Joint and Survivor Annuity Option is a 100% Joint and Survivor Annuity. The plan also offers a life annuity and lump-sum option. When providing the distribution packet to Participant H, MA Company, and its actuary must ensure that Participant H is presented with the 100% Joint and Survivor Annuity, Life Annuity, Lump Sum, and a 50% Joint and Survivor Annuity to satisfy the QOSA requirements.

As a practical matter, amending the plan to offer a 50%, 75%, and 100% joint and survivor annuity option allows defined benefit plans to comply with the Qualified Optional Survivor Annuity requirements. If the plan doesn't offer the appropriate options, then the actuary and plan administrator would need to ensure these are offered in the distribution packet.

IRC §402(f) Special Tax Notice

The IRC §402(f) special tax notice, which describes the rollover rules, must be provided no more than 180 days and no less than 30 days before the distribution. An eligible rollover distribution is any distribution of all or part of the benefit in the plan except the following:

- Installment or annuity payments: A series of substantially equal payments made over the recipient's lifetime, life expectancy, or a period of at least ten years.
- Mandatory payment: A required minimum distribution (RMD).
- Nontaxable payment: Any distribution not includable in the recipient's gross income (*e.g.*, a portion attributable to after-tax employee contributions or a previously taxed cost basis such as the PS-58 cost of life insurance).

The notice must explain the right to maintain the tax sheltered status of the distribution either through a direct rollover into an IRA or eligible retirement plan or through deposit of the distribution (including any amounts withheld) within 60 days. Qualified plans are required to allow direct rollovers out of the plan of eligible distributions and may (but are not required to) accept direct rollovers from other plans. The notice must explain the tax consequences of not rolling over the distribution.

IRS Form 1099-R, showing the total distribution for the year and the portion reportable as ordinary income, must be distributed to the recipient by January 31 of the year following the distribution.

Retroactive Annuity Start Date (RASD)

The ERISA requirement that the QJSA information be distributed and acted upon no more than 180 days and no less than 30 days before the annuity start date often caused problems for participants. Beginning with plan years on or after January 1, 2004 the law was changed to allow the QJSA notice and benefit election to occur after the intended annuity

start date with the intended annuity start date then being called a retroactive annuity start date (RASD). An RASD was allowed under these conditions:

- The participant and spouse must have had 30 days before payments actually began to consider their options.
- The plan must have been amended to permit RASDs.
- The participant and spouse must agree to use an RASD.

An RASD has these effects:

- The actual annuity start date rather than the RASD is used to determine whether the QJSA notice requirements were met.
- The recipient receives makeup payments from the RASD to the actual start date with interest.
- The payments are calculated as of the RASD using the participant's age at that time and plan provisions then in effect, though IRC §415 and IRC §417(e)(3) requirements must be met at both the RASD and the actual annuity start date.

Relative Value Calculations

The purpose of relative value calculations is to provide the participant with a comparison of the value of different forms of benefit. This allows the participant to make an informed decision concerning their benefit options. Some benefit options under a plan could be subsidized and thus offer a greater value than other options under the plan. Lump sums are subject to IRC §417(e)(3) which mandates the use of an applicable mortality table and interest rate. Often the end result is the use of assumptions that are different that the actuarial equivalence under the plan; therefore, the lump sum will have a different relative value than an optional form.

In calculating the relative value of benefit options, a single set of interest rates and mortality tables that are reasonable and uniformly applied must be used. These calculations are made using a set of assumptions similar to the present value calculations discussed in Chapter 3. The plan can use any set of actuarial assumptions in determining the relative value of different benefit options. In general, it is a common practice for plans to use the actuarial equivalence assumptions defined in the plan document for the purpose of determine the optional forms. Most optional forms in a plan are the actuarial equivalent of the normal form and have a 100% relative value to the normal form. Exceptions include benefits that are subsidized and the lump-sum options.

The interest rates must be disclosed and a statement must be made that the calculations use life expectancy assumptions but that the actual relative value of the options will depend on the actual longevity of the recipients. The explanation must be written in order to be understood by the average plan participant. The plan may wish to include explanations of factors such as ill health and their impact on the desirability of the various

options. The explanations must be provided in writing by first-class mail or hand delivery; posting a notice in the workplace is not an acceptable form of delivery.

The relative value calculations can either compare all options to the QJSA for a married participant or to a life annuity for an unmarried participant. The relative value calculations can use any of the following three techniques:

1. Express the actuarial present value of each form as a percent of the actuarial present value of the QJSA;
2. State the amount of an annuity that is the actuarial equivalent of the optional form and is payable at the same time and under the same conditions as the QJSA; or
3. State the actuarial present value of both the optional form and the QJSA.

The relative value disclosures may be simplified by using any of these three methods:

1. Through the use of estimates, provided the participant is told of the right to request a more precise calculation.
    - An estimated age of both the participant and spouse can be used.
    - An estimated applicable interest rate can be used to illustrate lump sums.
    - The estimates can be based on data from an earlier time.
2. Through the use of banding. Under the final regulations, if an optional form is compared to either the QJSA or to a single life annuity and the actuarial present value of the optional form is within a range of 95% to 105% of the value of the comparison annuity, the optional form may be described as "approximately equal in value to the QJSA (or single life annuity)."
3. By using generally applicable rather than participant specific information.
    - The general illustrations must state that illustrations using participant specific information are available upon request.
    - The illustrations can be limited to generally available options and not show options only available to specific groups of participants.
    - General ages can be illustrated, such as 55, 60, and 65 and a general assumption can be made regarding the age of the spouse, such as the same age or two years younger.

EXAMPLE 10-3: Relative Value Lump Sum.
Participant J is about to retire and the actuarial firm has been contacted to provide the benefits available at age 65. The actuary has determined the following information to calculate the relative value as comparable lump sums.

Benefit Option	Benefit Amounts	Relative Value Rates
Life Annuity	$1,500	133.6831
10 Yr Cert & Life Annuity	$1,400	140.9583
100% QJSA	$1,150	159.1183
Lump Sum	$250,000	N/A

To calculate the lump sum relative values, the benefit amounts must be multiplied by the relative value rates to covert from an annuity payment to a present value.

Benefit Option	Benefit Amounts	Relative Value Lump Sums
Life Annuity	$1,500	$200,525
10 Yr Cert & Life Annuity	$1,400	$197,342
100% QJSA	$1,150	$182,986
Lump Sum	$250,000	$250,000

The amounts of the Relative Value Lump Sum are not actually payable to the participant (with the exception of the lump sum), however, they illustrate the relative value of each option.

EXAMPLE 10-4: Relative Value Percentages.
Participant K is about to retire and the actuarial firm has been contacted to provide the benefits available to John at age 65. The actuary has determined the following amounts and optional forms are available to Participant K under the plan document.

Life Annuity	$1,050
10 Year Certain and Continuous	$1,040
100% Joint and Survivor Annuity	$1,030

The 100% Joint and Survivor Annuity is considered to be the normal form used for determining relative value. Using the same relative value rates for Participant J, the relative value percentages are determined by multiplying each option by its annuity factor and then dividing the amount by the 100% Joint and Survivor Annuity factor.

Life Annuity	($ 1,050*133.6831) / ($ 1,030*159.1183) = 97%
10 Year Certain and Continuous	($ 1,040*140.9583) / ($ 1,030*159.1183) = 96%
100% Joint and Survivor Annuity	($ 1,030*159.1183) / ($ 1,030*159.1183) = 100%

Required Minimum Distributions (RMDs)

Special deferred tax treatment is given to retirement plan assets in order to encourage employers to provide retirement plans and participants to save for retirement. However, the government has put rules into place under IRC §401(a)(9) in order to collect on the deferred tax revenue if the participant hasn't taken a distribution by age 70½. In addition, these rules restrict the amount of retirement plan assets that are passed on to heirs. These are called required minimum distributions. IRC §401(a)(9) requires that minimum distributions be made and imposes a 50% excise tax (to be paid by the plan participant) for required minimum distributions (RMDs) that are not made.

Required minimum distributions (RMDs) generally start in the year a participant turns 70½ (the date six months after the participant's 70th birthday). There are different rules that apply for five percent owners and those that are not. For participants who are five percent owners, the RMDs must start for the year in which they turn 70½. For non-five-percent owners, RMDs must start the later of the year in which they turn 70½ or the year in which they terminated service. A year for which a RMD is required is called a distribution calendar year. Once minimum distributions begin for a participant they will continue as long as they have a benefit under the plan.

Any lump-sum distribution made during a distribution calendar year will only be eligible for rollover to the extent it exceeds the RMD for the year. Defined benefit plans must use the annuity method to determine the RMD. If the entire accrued benefit is being distributed as a lump sum, the account balance method can be used. Defined contribution plans generally use the account balance method to determine the RMD. If the QJSA benefit is not waived, a defined contribution plan must use the annuity method.

Under the account balance method, the RMD is the level payment amount of the current account balance over the life expectancy of the participant or the joint life expectancy of the participant and beneficiary. However, if a joint life expectancy is used, a nonspouse beneficiary must be treated as no more than ten years younger than the participant. This is part of the minimum incidental distribution benefit (MIDB) requirements.

Under the annuity method, the RMD is generally that amount that would be paid as a level annuity to the participant or jointly to the participant and a beneficiary. As with the account balance method, a nonspouse beneficiary must be treated as no more than ten years younger than the participant to satisfy the MIDB requirements.

For the first distribution calendar year, the RMD must be made no later than April 1st of the next calendar year. If the annuity method is being used, subsequent RMD payments must be made no less frequently than annually. For instance, if the annuity method is being used, the first payment is on April 1st, and the payments are annual, the next payment must be made by the following April 1st. Under the account balance method, however, the RMD for each successive distribution calendar year must be made by

December 31st of that year. In most cases, this means the participant will receive two RMDs in the year following age 70½ if using the account balance method, one for their first distribution calendar year and one for their second distribution calendar year.

EXAMPLE 10-5: Date of First RMD.
In 2016, Participant D as the sole owner of the MCRE Company turned age 70½. Participant D must take a distribution by April 1, 2017 for the participant's first distribution calendar year (2016). Participant D elected to receive the RMD in the form of an annuity so the participant must take the next payment by April 1, 2018.

Unless further benefits accrue, the RMD under the annuity method will generally remain fixed in future distribution calendar years. However, if the annuity is for a period certain without any life contingency, the RMD can be recalculated as an annuity certain over the greater age of the participant and any beneficiary. This recalculation approach results in slightly smaller subsequent RMDs although it requires more administrative effort.

These are the most common increases allowed when using the annuity method to calculate the RMD:

- Annual increases that do not exceed the twelve-month increase in cost of living index
- Increases that reflect better than assumed investment return, provided the assumed return is at least three percent
- Fixed increases of less than five percent (*i.e.*, 4.99% is allowed)
- Increases due to plan amendment

Once the RMD is determined for a distribution calendar year, the amount of the RMD is not an eligible rollover distribution for that year, though additional distributions in that distribution calendar year are eligible rollovers if they satisfy the rollover requirements.

Taxation of Distributions

Generally, distributions from qualified plans are taxed as ordinary income in the year of distribution. The determination of withholding on defined benefit plan distributions depends on whether the distribution is eligible for rollover. Income averaging is available only in limited circumstances. Nontaxable distributions include mandatory after-tax employee contributions and other cost basis items (such as PS-58 cost of death benefits) that have already been treated as taxable income.

The cost basis is recovered using simplified recovery rules. The simplified recovery rules provide a chart showing approximately the number of expected payments at each participant's age. The cost basis is then recovered evenly over that number of payments.

Withholding on Lump-Sum Distributions

In general, most lump-sum distributions from defined benefit plans are eligible for rollover. Distributions that are eligible for rollover are subject to mandatory 20% federal tax withholding and applicable state withholding. Some states have mandatory tax withholding, usually based on the Federal tax withholding amount, and this should be withheld at the point of distribution, if required. The only way to avoid withholding on eligible rollover distributions is to directly roll over the distribution to an IRA or qualified plan. There are two types of rollover. The first method is a direct rollover in which the cash from the distribution is sent directly to the new qualified plan or IRA. In this situation, the check is made out to the new investment provider for the benefit of the participant. No taxes are withheld from the distribution, however, a Form 1099R is issued to the participant after year end reporting the nontaxable distribution.

The second method of rollover is called an in-direct or 60-day rollover. This is where the participant received a cash distribution from the plan less the 20% federal withholding and any applicable state tax. The participant has 60 days to roll the money into a qualified plan or IRA. The participant must also contribute the amount of the taxes to the receiving plan or IRA, otherwise the amount is taxable income. Depending on the participant's specific tax situation, the participant will recover the withholding on the original distribution when they file their personal tax return. This method is less common in practice because it involves the participant coming up with the withholding to contribute to the receiving plan or IRA along with additional administration on part of the participant.

Withholding on Annuity Distributions

Annuity payments are taxable distributions that are not eligible for rollover and are subject to the same withholding rules as ordinary income. Participants can elect withholding on their annuity distribution by completing and filing a Form W-4P. Alternatively, they may elect tax withholding on their distribution forms. The tax a participant will ultimately owe to the IRS is determined based on the participant's specific tax situation and reconciliation on their personal tax return. While they may elect a small withholding amount on their Form W4-P, they could owe the IRS a more significant amount when they file their taxes for that year. It should also be noted that some states have mandatory tax withholding, usually based on the Federal tax withholding amount, and should be withheld, if required.

Tax advice and strategy are beyond the scope of this course. Participants seeking specifics on their tax situation should be directed to their personal tax professional.

Adjusted Funding Target Attainment Percentage (AFTAP)

Measuring the Funded Status of a Defined Benefit Plan

The PPA created a measurement of the funded status of a defined benefit plan. The measurement is called the Adjusted Funding Target Attainment Percentage (AFTAP). The

purpose of the measurement is to impose benefit payment restrictions defined under IRC §436 if the plan falls below certain funding benchmarks that will be discussed later in this section. The AFTAP is the actuarial value of the plan's assets **minus** funding balances (*i.e.,* PPA carryover balance and the PPA prefunding balance), **divided by** the funding target. For this course it is assumed that annuities purchased for NHCEs within the last two years is zero and, therefore, the annuities are not included in the AFTAP equations.

If the Assets/Funding Target is equal to or greater than 100%, than the funding balances are not subtracted from the assets to obtain the AFTAP. In this case, the AFTAP is:

AFTAP = (Assets)/ Funding Target

If the Assets/Funding Target is less than 100%, then:

AFTAP = (Assets – Funding Balances)/ Funding Target

Example:
Plan Assets = $95,000
Funding Target = $100,000
Carry Over Balance = $2,000
Prefunding Balance = $3,000

Initial AFTAP = $95,000/$100,000 = 95% which is less than 100%, therefore, the Carry Over and Prefunding Balances must be factored into the equation.

AFTAP = ($95,000-$2,000-$3,000)/$100,000 = 90%

The AFTAP is generally determined as of the first day of the plan year. The details of creating and maintaining the funding balances are beyond the scope of this course.

The AFTAP is calculated, certified and provided to the plan sponsor by the plan's enrolled actuary.

Benefit Restrictions for Under-Funded Plans

PPA imposes distribution and other restrictions for plans whose AFTAP falls below certain funding thresholds. The chart below outlines the restrictions based upon the level of funding:

AFTAP	Restrictions
less than 60% funded	– must freeze accruals – cannot pay "accelerated benefit payments" – cannot pay shutdown benefits without funding up to 60% – if over 60% but payment of shutdown benefits would push AFTAP below 60%, must fund up to pay shutdown benefits
60 to 80% funded	– limited ability to adopt benefit improvements without funding up to the 80% level including the liabilities created by the plan amendment – limitations on the payment of "accelerated benefit payments"
over 80% funded	– if shutdown or benefit improvements through amendments causes AFTAP to fall below 60% (for shutdowns) or 80% (for amendments), need to fund more to pay the shutdown benefits or accrue additional benefits.

Plans that are less than 60% funded must freeze the accrual of benefits to participants. Defined benefit plans that offer accelerated benefit payments such as lump-sum distributions, period-certain annuities, or other certain benefits, such as Social Security leveling annuities, must also be restricted.

Plans that are less than 80% funded but more than 60% funded cannot adopt benefit improvements without funding the plan to 80%. The 80% funding includes liabilities created by a plan amendment to improve benefits. At this funding level the plan is restricted from paying accelerated benefit payments such as lump sums. If there is a restriction on "accelerated benefit payments" the plan must not pay any prohibited payment (*i.e.,* lump sum, period certain annuities or other certain benefits such as Social Security leveling annuities) to the extent the payment exceeds the lesser of (1) 50% of the amount otherwise payable under the plan or (2) the present value of the maximum PBGC

maximum guaranteed benefit with respect to a participant. Note that if the plan provides for a forced cash-out of no more than $5,000 payable as a lump sum, the restriction on accelerated benefit payments does not apply to the forced cash-out.

A plan sponsor that would like to pay shutdown benefits would need to fund the shutdown benefits if the Plan is currently over 80% funded—but when shutdown benefits are paid it causes the funded status of the plan to drop below 60%. If the plan sponsor wants to adopt an amendment that would cause the funded status of the plan to drop below 80%, the plan sponsor would likewise be required to contribute the amount for the liability created by the plan amendment.

If a plan falls into the underfunded status, the plan administrator must immediately determine:

- How much can be paid to participants in the current year; and
- What information needs to be disclosed to participants.

It is possible that the plan provisions do not contain forms of benefit payment that are restricted. In that case these restrictions do not adversely affect a participant's choice of optional forms of benefit payment. AFTAP restrictions apply to all plan participants.

AFTAP Certification Timing Issues

If the actuary has not certified the plan's AFTAP within three months of the beginning of the plan year, a presumed AFTAP is used. It is equal to the prior year's AFTAP reduced by 10 percentage points. The presumed AFTAP is used until the actuary certifies the actual AFTAP for the plan year. Furthermore, if the actuary has not certified the AFTAP by the first day of the tenth month of the plan year, the AFTAP is then deemed to be less than 60% for the balance of the plan year regardless of later certification.

EXAMPLE 10-6: AFTAP Certification Timing.
Assume that the **PRIOR YEAR AFTAP = 85%**. The CZ Corporation has a calendar year defined benefit plan. It is March and the actuary hasn't certified the AFTAP, therefore, the presumed AFTAP is 75% (85%-10%).

Let's assume that it is now October 15th and the actuary still hadn't certified the AFTAP, the presumed AFTAP is assumed to be less than 60%.

The actuary later certifies the AFTAP in November and it is 90%, however, the AFTAP is still presumed to be less than 60% for the remainder of the year.

Exception for New Plans Less than Five Years Old

Restrictions requiring the freezing of benefit accruals, limiting benefit improvements through amendments, and disallowing payment of shutdown benefits shall not apply to

a plan for the first five plan years of the plan. Predecessor defined benefits plans are included when determining whether or not a plan is five years old for this purpose. Restrictions on accelerated benefit payments can apply during the first five years of a plan.

Top-25 Paid HCE Restrictions

There are restrictions on the distributions to highly compensated employees (HCEs) to help ensure they cannot draw out nearly all the assets from a plan, leaving insufficient assets for rank and file employees.

General Restriction

If a plan is not well funded, then the 25 highest paid highly compensated employees are not allowed to take a lump-sum distribution or other accelerated payment of benefits under the plan. Forced cash-outs of no more than $5,000 are exempt from this restriction.

The restriction on distributions only applies if each of the following conditions is met:

- The plan is funded less than 110% *after* the distribution;
- The distribution is more than 1% of the plan's liability *before* the distribution; and
- The participant is a top-25 paid highly compensated employee or former highly compensated employee.

If the restriction applies, a straight life annuity may still be paid to the participant. In addition, a Social Security supplemental benefit may also be paid, although not a Social Security level income option, which is considered an accelerated form of payment.

25 Highest Paid HCEs

The determination of the 25 highest paid HCEs is based on all plan years. The top-25 includes the highest paid HCEs in the current and all prior plan years. An HCE need not be currently employed to be in the top-25. This determination is made on a controlled group basis.

In lieu of restricting the benefit payments to a top-25 paid HCE, a participant may provide security for the lump-sum payment or a letter of credit. The security must be for 125% of the restricted amount.

110% Funding Ratio

The 110% funded ratio is determined by comparing assets to liabilities of the plan. Assets may be valued at market value or actuarial value. Liabilities must be some type of "current liability." Whatever methods are chosen, the methods must be consistent for any plan year and any changes in methods must not discriminate in favor of HCEs.

An annual measurement is acceptable, and re-measurement during the plan year is allowable. Contributions receivable are not included in assets.

EXAMPLE 10-7: Top-25 Paid HCE Restriction.
FX is the CEO of the BC Company. FX is one of the top-paid highly compensated employees. FX is about to retire. FX wants to know if benefits will be restricted if FX takes a lump sum. Assume:

Plan Assets = $7,750,000
Funding Target = $7,000,000
Funding Target Associated with Francis' benefit = 1,500,000
Lump Sum Distribution to Francis = $2,000,000
Prior to FX's distribution, the plan is 111% funded ($7,750,000/$7,000,000).

The funded status of the plan after the distribution must be determined. The plan assets are reduced by the amount of the actual distribution the participant would receive ($7,750,000 - $2,000,000 = $5,750,000). The Funding target is reduced by the amount of FX's individual funding target ($7,000,000 - $1,500,000 = $5,**5**00,000). The fund status after the distribution is calculated based on these revised numbers and equals 104% ($5,750,000 / $5,**5**00,000). FX is a **top-25** HCE. The distribution is more than 1% of the liability and the funded status of the plan is less than 110% **after** the distribution. **Therefore,** FX would be restricted from taking a lump sum distribution.

Practical Examples of Concepts Learned

The three problems below all use the following information:

Participant J, age 65, is about to retire and elect to receive a benefit from the defined benefit plan. Both Participant J and spouse are 65 years old. The plan subsidizes the certain options. Below are options which reflect these subsidizes.

Life Annuity at age 65 of $3,000 per month.
10 Year Certain and Life Annuity at age 65 of $2,700
100% Qualified Joint and Survivor Annuity at age 65 of $2,700.
Lump Sum at age 65 of $ 407,278

The relative value annuity factors to determine present values are indicated below.

Benefit Option	Relative Value Rates
Life Annuity	133.6831
10 Yr Cert & Life Annuity	140.9583
100% QJSA	159.1183

Problem #1

Using the actuarial present value method, prepare a chart showing the relative value of the four options available.

Problem #2

Using the monthly amount method and comparing each option to the 100% QJSA, prepare a chart showing the relative value of the four options available.

Problem #3

Determine the relative value percentages by comparing each option to the 100% QJSA. Prepare a chart showing the relative value of the four options available.

Solutions to Problems

Problem #1

Option	Benefit Amount	Relative Value
Life Annuity	$ 3,000	$ 401,049
10 Year Certain & Life	$ 2,700	$ 380,587
100% QJSA	$ 2,700	$ 429,619
Lump Sum	$ 407,278	$ 407,278

The relative actuarial present values of the annuities are calculated by multiplying the monthly annuity amount by the relative value annuity factors. The lump sum requires no conversion since it is already shown as an actuarial present value.

Problem #2

Option	Benefit Amount	Equivalent 100% QJSA Benefit
Life Annuity	$ 3,000	$ 2,520
10 Year Certain & Life	$ 2,700	$ 2,392
100% QJSA	$ 2,700	$ 2,700
Lump Sum	$ 407,278	$ 2,560

For the annuity options, the equivalent 100% QJSA benefits are calculated by multiplying the monthly benefit by that annuity form's relative value annuity factor, and then by dividing that result by the 100% QJSA APR derived using those same rates. For the lump-sum option, the equivalent 100% QJSA benefit is calculated by dividing the lump-sum amount by the 100% QJSA APR derived using the relative value rates.

Problem #3

Option	Benefit Amount	Relative Value Percent
Life Annuity	$ 3,000	93%
10 Year Certain & Life	$ 2,700	89%
100% QJSA	$ 2,700	100%
Lump Sum	$ 407,278	95%

These relative value percentages can be derived from either the Problem #1 solutions or from the Problem #2 solutions by dividing the table value for an option by the table value for the 100% QJSA option and expressing the result as a percentage.

Self-Test Questions

Circle your responses:

T F 1. If there is no retroactive annuity start date, the explanation of the QJSA must be given no more than 180 days and no less than 30 days before the annuity start date.

T F 2. The explanation of the QJSA must explain the tax consequences of electing some other form of benefit.

T F 3. The IRC §402(f) special tax notice must explain the right to maintain the tax sheltered status of the distribution.

T F 4. A plan can allow the use of a retroactive annuity start date whether or not the participant agrees.

T F 5. When a retroactive annuity start date is used, the participant receives makeup payments.

T F 6. If a plan illustrates the amount of each optional form of distribution, the plan does not also need to show relative value calculations.

T F 7. Relative value calculations must compare all optional forms to the QJSA for a married participant.

T F 8. The relative value disclosures can be distributed by posting a notice in the workplace.

T F 9. The relative value disclosures may be based on generally applicable rather than participant specific information.

T F 10. RMDs must commence for the year of termination even if it is before age 70½.

T F 11. The entire amount of a lump-sum distribution made during a calendar year for which there is an RMD is eligible for rollover.

T F 12. Under the annuity method, RMDs may be paid in the form of an annuity that increases by five percent per year.

T F 13. The top-25 paid HCE restriction applies to the top-25 paid HCEs in the current year.

T F 14. A distribution of 1% of the plan's liabilities after the distribution is allowable.

T F 15. In lieu of restricting benefit payments, an affected HCE may provide security for an otherwise restricted lump-sum payment, equal to 110% of the restricted amount.

Sample Test Questions

1. Which of the following statements regarding the required QJSA notice for a retroactive annuity start date (RASD) is/are **TRUE?**

I. The participant and spouse must have at least 30 days to consider their options before annuity payments actually begin.
II. Payments are calculated as of the date that the annuity actually begins.
III. The RASD is used to determine whether the QJSA notice requirements have been met.

A. I only
B. III only
C. I and II only
D. II and III only
E. I, II, and III

2. All of the following statements regarding required minimum distributions (RMDs) are **TRUE, EXCEPT**:

A. A 50% excise tax must be paid by the participant whenever an RMD is not made timely.
B. A distribution calendar year is any year for which RMDs must be made.
C. An RMD must be made for the year in which a non-owner participant attains age 70½.
D. Defined benefit plans must calculate RMDs using the annuity method if the entire accrued benefit is not being distributed as a lump sum.
E. Defined contribution plans must calculate RMDs using the account balance method if the QJSA benefit is not waived.

3. Which of the following statements regarding the required QJSA notice is/are **TRUE**?

I. If the plan allows the spouse to revoke a QJSA waiver, the QJSA notice must describe this right and its consequences.
II. The QJSA notice must be given no less than 30 days before the actual annuity start date.
III. Generally, relative value calculations must be shown for all benefit options other than the QJSA.

A. I only
B. III only
C. I and II only
D. II and III only
E. I, II, and III

4. The following statements regarding distributions are TRUE, EXCEPT:

A. Qualified plans are required to accept direct rollovers from other plans.
B. An IRC §402(f) tax notice must explain the right to maintain the tax deferred status of the distribution.
C. If an IRC §402(f) tax notice is given when the participant reaches the earliest retirement age and the participant does not retire at that age, then it needs to be given again (prior to actual retirement).
D. An IRC §402(f) tax notice is required to explain the tax consequences of not rolling over the distribution.
E. The portions of a distribution that is withheld rather than rolled over to another plan or IRA is included in taxable income.

5. Which of the following statements regarding the taxation of defined benefit plan distributions is/are **TRUE**?

I. Generally, distributions from defined benefit plans are taxable as ordinary income during the year of distribution.
II. When an annuity payout is elected, any cost basis is recovered first before any of the annuity payments are considered to be taxable income.
III. The PS-58 cost of death benefits is an example of a cost basis that is nontaxable upon distribution.

A. I only
B. II only
C. I and III only
D. II and III only
E. I, II, and III

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6. All of the following statements regarding withholding on defined benefit plan distributions are **TRUE**, **EXCEPT**:

A. Withholding on a defined benefit plan distribution that is not eligible for rollover follows the same rules as withholding for ordinary income.
B. Withholding on a defined benefit plan distribution that is not eligible for rollover can be waived by the participant.
C. When withholding is required on defined benefit plan distributions that are eligible for rollover, the withholding rate is 20%.
D. It is possible for a participant to avoid withholding on all defined benefit plan distributions either by making a direct rollover or in certain situations by filing Form W-4P.
E. Withholding is mandatory on defined benefit plan distributions that are eligible for rollover unless the rollover is accomplished within 60 days after the distribution.

7. Which of the following statements regarding benefit restrictions imposed when the plan's AFTAP falls below a certain threshold is/are **TRUE**?

I. If a plan's AFTAP is less than 60%, then all benefit accruals must cease.
II. If a plan's AFTAP is between 60% and 80%, then lump-sum distributions are generally limited to one-half of the benefit value.
III. If a plan's AFTAP is less than 60%, then the plan is precluded from paying a lump sum (other than forced cash-outs of no more than $5,000).

A. I only
B. II only
C. I and III only
D. II and III only
E. I, II, and III

8. All of the following statements regarding restrictions on defined benefit distributions in under-funded plans that are more than five years old are **TRUE, EXCEPT:**

A. Plans with an AFTAP of 90% can increase benefits through an amendment.
B. If a plan's AFTAP is at least 80%, the employer can amend the plan to increase benefits to current employees if after the amendment the AFTAP is still at least 80%.
C. Benefit accruals must be frozen if the plan's AFTAP is 55%.
D. No lump-sum distributions can be paid if the plan's AFTAP is 65%.
E. A participant may receive a lump-sum distribution as long as the plan AFTAP is at least 80%.

9. All of the following statements regarding accelerated distributions to the top-25 highly compensated employees are **TRUE, EXCEPT:**

A. The highest paid 25 highly compensated employees are determined considering both current and former employees.
B. The restrictions on distributions to the top-25 highly compensated employees may apply if the plan would be less than 110% funded after the distribution.
C. The restrictions on distributions to the top-25 highly compensated employees may apply if the distribution is more than 1% of the plan's liability before the distribution.
D. If lump sums and other accelerated distributions to the top-25 highly compensated employees are restricted, a social security level income option can still be paid.
E. If lump sums and other accelerated distributions to the top-25 employees are restricted, a Social Security supplement can still be paid.

10. All of the following statements regarding accelerated distributions to highly compensated employees from defined benefit plans are **TRUE, EXCEPT:**

A. The restrictions on distributions will not apply to distributions if $5,000 or less.
B. The restrictions on distributions will not apply to the distribution to a restricted highly compensated employee if the distribution is less than 1% of the plan's liability before the distribution.
C. The restrictions on distributions will not apply when the value of plan assets equals or exceeds the present value of accrued benefits.
D. The plan may limit the restricted group to the 25 highest compensated employees with the highest compensation.
E. The restrictions can be avoided if an escrow agreement or similar arrangement is established.

Solutions to Self-Test Questions

1. True	7. True	13. False
2. False	8. False	14. True
3. True	9. True	15. False
4. False	10. False	
5. True	11. False	
6. False	12. True	

Explanation of *False* questions:

2. The explanation of the QJSA need not include any discussion of taxes, though the special tax notice distributed at the same time must include a discussion of taxes.

4. A retroactive annuity start date may be used only if the participant does agree.

6. Relative value calculations must be shown in addition to the amount of each benefit option.

8. Posting in the work place is not an acceptable way to deliver the relative value disclosures.

10. RMDs never need to be made for years before the attainment of age 70½.

11. Only the portion of a lump-sum distribution that exceeds the RMD for a year is eligible for rollover.

13. The top-25 group is based on the current plan year and all prior plan years.

15. The security must be for 125% of the restricted amount.

Solutions to Sample Test Questions

1. The correct answer is A.

Payments are calculated as of the RASD, not as of the date payments actually begin and catch up payments are made. The actual date payments begin, not the RASD, is used to determine whether the QJSA notice requirements have been satisfied.

2. The correct answer is C.

RMDs must begin in the year the participant attains age 70½ only for five percent owners. Other participants must begin RMDs at the later of the attainment of age 70½ or actual retirement.

3. The correct answer is E.

All statements are true.

4. The correct answer is A.

Qualified plans are required to allow direct rollovers to other plans but are not required to accept direct rollovers. The notice must be given no more than 180 days prior to the distribution even if it has already been given at an earlier date. The notice must explain the consequences of not rolling over the distribution. Portions of the distribution that are withheld rather than rolled over must be included in taxable income.

5. The correct answer is C.

Statements I and III are true. Statement II is false. Under current rules, any cost basis must be recovered evenly over the number of expected payments.

6. The correct answer is E.

Withholding is mandatory on defined benefit distributions that are eligible for rollover unless the rollover is made directly at the time of distribution.

7. The correct answer is E

All of the statements are true.

8. The correct answer is D.

A plan cannot pay a lump-sum distribution if the plan's AFTAP is less than 60%.

9. The correct answer is D.

If the restriction applies, a straight life annuity may still be paid to the participant. In addition, a Social Security supplemental benefit may also be paid, although not a Social Security level income option which is considered an accelerated form of payment.

10. The correct answer is C.

The restrictions on distributions may not apply if the plan is funded at 110% or greater after the distribution. The 110% funded ratio is determined by comparing assets to liabilities of the plan.

Cautions

- If a rollover is made after the distribution date, taxation can be avoided only if the total amount of rollover equals the money received at distribution plus the 20% withheld.

- If a distribution is not made within 180 days of providing the QJSA explanation, another explanation must be provided.

- In addition to showing the amount of each distribution option, the QJSA explanation must also show the relative value of all options generally available.

- Annuity payments are not eligible rollover distributions.

- Except for the first distribution year, RMDs must be made by the end of their distribution year.

- For a 5% owner, the first required minimum distribution year is the year the 5% owner attains age 70½, and is not delayed until actual retirement as it is for non-5% owners.

- In order to take advantage of the retroactive annuity start date option, the plan must be amended to allow it and the participant and the spouse must agree to its use.

- Relative value calculations can use any reasonable interest rate and mortality table that is uniformly applied for all options except for options subject to IRC §417(e)(3), *e.g.*, lump sums, in which case the applicable interest rate and mortality table must be used.

- If a plan is not well funded, the top-25 highest paid employees are generally not allowed to take a lump-sum distribution unless the participant provides appropriate security for 125% of the restricted amount.

Review of Key Concepts

- Describe the items that must be included in the explanation of the QJSA.
- Describe the timing requirements for distribution of the QJSA explanation including how those requirements are met when a retroactive annuity start date is used.
- Describe the items that must be included in the IRC §402(f) special tax notice.
- Describe how annuity benefits are calculated when a RASD applies.
- Explain how relative value calculations can be presented using any one of these three methods: a) as a relative value percentage, b) as an annuity amount that is the actuarial equivalent of each optional form, or c) by showing actuarial present values.
- Describe the rules governing relative value calculations and explanations.
- Describe the three methods by which relative value calculations and explanations can be simplified.
- Describe how the annuity method and the account balance method are used when calculating minimum required distributions from both defined benefit and defined contribution plans.
- Although RMDs calculated under the annuity method must in general be made as level annual amounts, describe four common types of increases that are allowed.
- For defined benefit distributions, describe how the withholding rules for distributions eligible for rollover differ from the withholding rules for distributions not eligible for rollover.
- How are the top-25 highest paid employees determined?

Chapter 11
Participant and PBGC Notices

Key Terms

- Annual funding notice
- ERISA §204(h) notice
- Flat-rate premium
- PBGC notices
- Pension Benefit Guaranty Corporation (PBGC)
- PPA benefit restrictions
- Summary annual report (SAR)
- Suspension of benefits notice
- Variable-rate premium

Introduction

This chapter focuses on a variety of participant notifications that include: the annual funding notice, failure to meet minimum funding requirements, suspension of benefits, notices associated with plan amendments, restricted distributions, and required PBGC notices.

Notices to Plan Participants

Plan sponsors of defined benefit plans are required to provide notices to plan participants in special circumstances. Notices include the following:

- Annual Funding Notice (ERISA §101(f)) or Summary Annual Report
- Failure to Meet Minimum Funding Requirement Notice (ERISA §101(d))
- Suspension of Benefits Notice
- Reduction in Future Accruals Notice (ERISA §204(h))
- Restricted Distributions Notice (ERISA §101(j))

Annual Funding Notice (ERISA §101(f))

The Annual Funding Notice must be provide to the participants of a defined benefit plan that is covered by the PBGC. The purpose of this notice is to inform the participants on the funded status of the plan as the funded status could indicate the health of the plan and the likelihood that the plan will deliver on the promised benefits to participants. This notice is sometimes referred to as the 101(f) notice, which corresponds to the ERISA code that contains this requirement. The Annual Funding Notice replaces the Summary Annual Report (SAR). If the plan isn't required to provide an Annual Funding Notice, they must provide a Summary Annual Report to participants. The Annual Funding Notice must be distributed no later than 120 days after the end of the plan year for a large plan. The definition of a large plan in this case is a plan with more than 100 participants. For small plans with fewer than 100 participants, the notice is due by the Form 5500 filing date. Below is a summary of the information that must be provided in the Annual Funding Notice.

General plan information:

- Plan name
- Address and phone number of the plan administrator and the plan's principal administrative office
- Sponsor's Employer Identification Number (EIN)
- Plan number

Funding information:

- The plan's Funding Target Attainment Percentage (FTAP) for the current and two preceding plan years;
- A statement of the total assets and liabilities of the plan for the current plan year and for the two preceding years;
- A statement of the value of plan's assets and estimated liabilities as of the end of the current plan year; and
- A summary of the rules governing the termination of single-employer plans under Title IV of ERISA.

Additional information:

- A statement of the number of participants who are retired or separated from service and are receiving benefits, retired or separated participants entitled to future benefits, and active participants under the plan;
- A statement setting forth the funding policy of the plan and the asset allocation of investments under the plan (expressed as percentages of total assets) as of the end of the plan year to which the notice relates;
- An explanation of any plan amendment, scheduled benefit increase or reduction, or other known event taking effect in the current plan year and having a material

effect on plan liabilities or assets, and a projection to the end of such year of the effect of such amendment, scheduled increase or reduction, or event on plan liabilities;

- A general description of the benefits under the plan that are eligible to be guaranteed by the PBGC, and the limitations on the guarantee and the circumstances under which such limitations apply;
- A statement that a person can obtain a copy of the plan's Form 5500 at the DOL's website or through an Intranet website by the plan sponsor; and
- Any additional information a plan administrator elects to include.

Summary Annual Report

The Summary Annual Report is a condensed version of information that appears on the Form 5500 filing for the purpose of disclosure to the participant. It provides a narrative summary of financial information and a statement of the participants' right to receive a copy of the annual report. A model notices are available from DOL. As mentioned above, plans that are not covered by the PBGC must supply the Summary Annual Report and are exempt from the requirement to distribute the Annual Funding Notice. The SAR is sent by the plan administrator to participants and beneficiaries and there is no filing requirement. In general, it must be sent by the later of nine months after the plan year end or two months after the Form 5500 extended due date if the employer goes on extension In comparison, the Annual Funding Notice contains additional information relating to the plan's liabilities and funded status that are not included on a Summary Annual Report.

Failure to Meet Minimum Funding Requirement Notice (ERISA §101(d))

A notice of failure to meet minimum funding requirements is required if the plan sponsor fails to make a required contribution to the plan. This includes situations in which required quarterly contributions are missed or late. This also applies if the minimum required contribution for the year has not been made in a timely fashion to the plan. The notice is required if the contribution is not made following the 60-day grace period after the payment is due. This notice is sent to participants, beneficiaries, and alternate payees, and there is no governmental filing requirement. In certain situations, there may be a required filing with the PBGC, however, that is beyond the scope of this text.

Suspension of Benefits Notice (SOBN)

If payment of a participant's accrued benefit is postponed beyond the normal retirement date, the plan must increase the amount payable to reflect a later commencement date. The reason is that a participant commencing benefits at age 65 will receive more payments than if the participant commenced payment at age 70. This assumes the same payment amount and the same date of death. Therefore, the value of benefits commencing at age 65 have a greater value than benefits commencing at age 70. The actuarial adjustment for later payment attempts to equalize the value between the benefit options. Participants must receive credit for compensation and service beyond normal retirement date. In

general, the participant will be given the greater of the increase from compensation and service credit or the actuarial increase of the benefit.

A defined benefit plan may provide for the suspension of benefit payments for employees who continue to work past normal retirement age or those that return to work after benefit commencement (employees in pay status). Under this rule, the plan is not required to provide an actuarial increase for late retirement. This has the economic impact of permanently forfeiting payments. If the rule is satisfied, the plan will not violate anti-cutback or prohibited forfeiture of vested benefits regulations.

If the plan provides for this feature, a suspension of benefits notice is required. The notice must be provided to the participant by personal delivery or first class mail during the first calendar month or payroll period in which the payments are suspended (ERISA §203(a)(3)). As a provision of the plan, the suspension of benefits provision would be outlined in the Summary Plan Description (SPD) as well.

The notice must contain the following items:

- A description of the specific reasons why benefit payments are being suspended;
- A general description of the plan provisions relating to the suspension of payments;
- A copy of such provisions; and
- A statement to the effect that applicable DOL regulations may be found in §2530.203–3 of the Code of Federal Regulations.

In addition, the suspension notification shall inform the employee of the plan's procedure for affording a review of the suspension of benefits.

The suspension of benefit provision is important when determine the amount of a benefit due to a participant for distribution or in connection with valuing liabilities on the funding valuation. Not correctly accounting for the suspension of benefits could lead to over\under payment of a plan participant or an incorrect statement of plan liabilities which directly impact the amount of contribution owed to the plan.

Reduction in Future Accruals Notice (ERISA §204(h))

A disclosure, called a 204(h) notice, must be provided to participants prior to an amendment that will significantly reduce or cease future accruals, early retirement benefit, or early retirement subsidies. The 204(h) notice applies to pension plans which includes defined benefit plans and money purchase plans. The notice is named after the section of ERISA for which it applies.

The notice is not necessarily required to be distributed to all participants of the plan. The notice is required to be provided to "applicable individuals." This includes a participant or alternative payee under a qualified domestic relations order (QDRO) whose future

accruals or early retirement benefits are reasonably expected to be reduced by the amendment. It also includes employee organizations, such as unions, that represent participants in the plan. For example, former participants with benefits under the plan are rarely impacted by such amendments and may not need the notice.

In general, the notice must be provided at least 45 days before the effective date of the amendment reducing future accruals or early retirement benefits. There are exceptions to this timing for small plans, business transactions (mergers, acquisitions or dispositions), and multiemployer plans. The exception allows the notice to be provided at least 15 days prior to the effective date of the amendment. The definition of small plan in this case is different than the definition used for the "small plan filer" for the Form 5500 filing. A small plan for the purpose of this notice is a plan reasonably expected to have fewer than 100 participants with accrued benefits as of the effective date of the amendment.

The 204(h) notice must include sufficient information to allow individuals to understand the effect of the plan amendment. The notice must be in a written form that is reasonably understood by the average participant. At a minimum, the notice must describe the old formula or subsidy, the new formula or subsidy, and the effective date of the change. Illustrative examples may be required to communicate the magnitude of the change to the participant.

Restricted Distributions Notice (ERISA §101(j))

The restricted distributions notice is sometimes referred to as the 101(j) notice, a reference to its ERISA section. The purpose of this notice is to inform participants of restrictions on accelerated distribution options, shutdown benefits, frozen accruals, and disallowed plan amendments when the plan's Adjusted Funding Target Attainment Percentage (AFTAP) falls below 80% or 60%. The plan administrator must provide a notice to plan participants and beneficiaries within 30 days after the plan becomes restricted from providing those benefits. It is important to realize that this notice is only provided when the restrictions are imposed by the underfunded status of the plan. This notice is not required when the employer amends the plan at its discretion.

The notice is not necessarily required to be distributed to all participants of the plan. The notice is only required to be furnished to participants and beneficiaries to whom the restrictions will apply or could apply. This could include terminated vested participants that have a benefit payable under the plan.

Comparison of the 204(h) Notice with the 101(j) Notice

The 204(h) notice is required whenever the future rate of benefit accrual has been significantly decreased in connection with a discretionary amendment by the plan sponsor. This could occur if the plan sponsor amends the plan to freeze benefits or to change to a smaller benefit formula. The 101(j) notice only applies in cases where the plan is restricted due to its funding level falling below either the 60% or 80% threshold. A 204(h) notice would normally apply with respect to a reduction in benefits, however, if an

ERISA 101(j) notice applies, it will satisfy both the timing and content requirements of ERISA 204(h). In other words, a plan is not required to supply the ERISA 204(h) notice when the ERISA 101(j) notice applies. Each notice applies to the participant group that is affected. In most cases the 204(h) notice generally only applies to active participants who continue to accrue future benefits. The 101(j) could impact active and terminated-vested participants.

The 204(h) notice deals with reductions in future benefit accruals by plan amendment and the notice is required ahead of the effective date of the change. The 101(j) deals with restrictions as a result of the underfunded status of the plan and notice is due within a certain time period after the restrictions take effect.

Pension Benefit Guaranty Corporation (PBGC)

The Pension Benefit Guaranty Corporation (PBGC) is a quasi-governmental corporation within the Department of Labor that is responsible for overseeing the administration of Title IV of ERISA which only applies to defined benefit plans. Plans that are covered by the PBGC are required to complete annual filings and pay premiums. The annual filing is called the PBGC Comprehensive Premium Filing. In addition, PBGC covered plans must follow a specific procedure if they wish to terminate their plan. In the event that a plan sponsor doesn't have sufficient funds to pay benefits, the PBGC guarantees participants will receive benefits up to specified levels even if the plan is terminated with insufficient assets to pay all plan participants the promised benefits. PBGC plan terminations are beyond the scope of this course, however, we will discuss covered plans and the annual premium filing and payment.

Plans covered by the PBGC are also required to provide specific notices to participants and\or the PBGC based on certain events.

PBGC Comprehensive Premium Filing

Who Must File

The PBGC covers most qualified defined benefit plans and requires them to file annually, however, the following plan types are exempt from PBGC coverage:

- A plan of a professional service employer that has never had more than 25 active participants;
- A plan of a government agency including Indian tribal governments; however, if the plan covers workers carrying out significant commercial activities it may require PBGC coverage (*e.g.*, gaming casinos, lumber operations);
- A church plan, unless coverage is irrevocably elected;
- A plan open only to non-resident aliens; and
- A plan established only for substantial owners or their spouses (in this case a substantial owner is a sole proprietor, partner, or shareholder who owns more than 10% of the business, and the typical stock attribution rules do not apply).

Unless otherwise specified, this text will deal specifically with single employer PBGC filings and requirements. More information about multiemployer or multiple-employer plans can be found on the PBGC's website.

When to File

The Normal Premium Due Date for a plan is the 15th day of the 10th full calendar month in the plan year. Generally, this is October 15th for a calendar plan and coincides with the extended filing deadline of the 5500 form. If the actual date falls on a Saturday, Sunday, or Federal Holiday, the deadline is the first business day following the actual due date. Below is a chart of due dates:

Plan Year Begins	Premium Due Date
01/01	10/15
02/01	11/15
03/01	12/15
04/01	01/15
05/01	02/15
06/01	03/15
07/01	04/15
08/01	05/15
09/01	06/15
10/01	07/15
11/01	08/15
12/01	09/15

The Normal Premium Due Date applies unless:

- The plan is a new or newly covered Plan,
- The plan year changed since last year, or
- All assets are distributed during the premium payment year pursuant to a standard termination.

How to File

Electronic filing of these forms is required using the PBGC's My PAA system. Payment of the premium can be made online or by check. The plan sponsor and the actuary, if necessary, each e-sign the filing. Close coordination between the benefit practitioner and the plan sponsor is suggested so that filing is done timely with the correct premium amount submitted. Failure to timely submit PBGC premium filings and payments will result in interest charges at rates set by the PBGC and can result in additional penalties and fines.

Participant Premium

The sponsor of a plan covered by the PBGC must pay annual insurance premiums composed of two elements: a ***flat portion*** per participant and a ***variable-rate portion*** based on the unfunded value of vested accrued benefits. All plans covered by the PBGC must pay the flat-rate portion of the premium. The flat-rate premium for a single employer plan is $64 per participant in 2016. The number of participants is based on the count at the end of the prior year. This flat-rate premium per participant is reviewed on a periodic basis and can change. An alternate payee under a QDRO is not considered a participant for PBGC premium purposes.

EXAMPLE 11-1: FLAT RATE PREMIUM**.**
The AHS Company had a participant count of 157 participants at the beginning of the year, compared to 177 at the end of the year. The PBGC flat rate premium for the plan is 177 participants multiplied by $64 which equals $11,328.

Variable Rate Premium

For 2016, the **variable-rate premium** is $30 for each $1,000 of unfunded vested benefits (UVB). In other words, if the value of the vested benefits is $1,000,000 and the plan assets are $900,000, the plan is underfunded by $100,000, so the variable-rate portion of the premium is $3,000. This is equivalent to taking 3.0% of the unfunded vested benefits. Some plans are exempt from the variable-rate premium even if they have unfunded vested benefits.

Plans with 100 or fewer participants may determine the variable-rate premium using the "lookback" method. Vested benefits and plan assets are determined on the prior plan year's valuation date under this method. This provides relief to the plan sponsor and is a practical option for a plan that has a funding valuation date at the end of the plan year.

There is a cap on the variable-rate premium for small plans with fewer than 25 employees in the controlled group as of the beginning of the premium year. Note that this is based on employees, not participants. The cap per plan participant is $5 times the number of participants squared.

EXAMPLE 11-2: VARIABLE RATE PREMIUM CAP**.**
Assume that BC Company has 15 employees with only ten participants in their defined benefit plan. The maximum variable-rate premium under the cap is 10^2 x $5 = $500.

A plan will not be required to pay the variable-rate premium if it satisfies at least one of the following exemptions:

- The plan has no vested participants;
- The plan is fully insured under IRC §412(e)(3); or
- The plan is terminating in a standard termination where all benefits are funded or

some benefits are being waived for a more than 50 percent substantial owner in accordance with PBGC regulations.

If the plan does not have sufficient money to pay all of the benefits at the time the plan terminates, the PBGC will step in to provide the missing funds (to certain limits). If the plan sponsor requests the PBGC step in to cover the unfunded benefits, the plan incurs a distress termination. If the PBGC steps in without the plan sponsor asking them to, the termination is an involuntary termination. The sponsor of a plan covered by the PBGC must pay a termination premium to PBGC annually for three years after plan termination for certain distress and involuntary pension plan terminations. The premium is $1,250 per participant for each of the three years, except for certain airline-related plans.

Detailed instructions are provided by the PBGC for the practitioner to follow in order to determine the variable-rate premium. The plan sponsor has the choice of two methods that can be used to determine the variable rate premium: ***standard method*** or the ***alternative method***. The small plan cap on the variable premium applies regardless of which method is used.

Using the standard method for determining the variable-rate premium requires the employer to value the unfunded vested benefits (UVB) using prescribed interest rates, which are generally different than what is used for the purposes of funding the plan. These interest rates are published by the PBGC and the appropriate rates are selected based on when the premium payment year begins. These rates are called spot segment rates and have a first, second, and third segment interest rate. All other assumptions, such as mortality, retirement age, and termination rates, are the same as used in funding.

Rather than using the standard method, the plan sponsor may choose to use the alternative method. This method uses the same interest rates as in the funding valuation with all other assumptions being the same as for funding. If the employer uses such a method, they must elect to do so on the PBGC annual filing and are generally locked into keeping that method for at least a five-year period. It is usually good practice for the actuary or benefits consultant to discuss this choice with the plan sponsor to communicate the advantages and disadvantages of electing such treatment. Underfunded plans generally have large PBGC premiums which increase the cost of the plan to the plan sponsor. This is a good reason for keeping the plan well-funded to avoid the cost of premiums whenever possible.

Liabilities are determined using either the standard or alternative method. Once the unfunded vested benefit liabilities are known it is necessary to determine the asset value. Asset value is determined using market value of assets and includes contributions receivable for the prior year discounted back to the valuation date. This calculation is beyond the scope of this course.

The unfunded vested benefit is equal to the difference between the premium funding target and the asset value. This difference is rounded up to the next even multiple of $1,000 before multiplying by 3.0%.

EXAMPLE 11-3: Variable Rate Premium.
Calculate the PBGC Variable Rate Premium for the AHS Company assuming the following:

Vested liability = $1,500,500
Market value of assets = $1,000,000
Premium funding target = $500,500
Unfunded vested benefits (rounded up to next multiple of $1,000) = $501,000
Variable-rate premium = 3.0% x $501,000 = $15,030

EXAMPLE 11-4: Total PBGC Premium.
The plan sponsor of the AHS Company wants to know the total premium due to the PBGC. Using the information from the prior examples, the total PBGC premium is:

The Flat Rate Premium of $11,328 plus the Variable Rate Premium of $15,030 for a total of $26,358 due to the PBGC.

PBGC Notices

The PBGC requires notices to be filed by the plan administrator with the PBGC when situations occur that are considered to be reportable events. These filings/notices are classified into two broad categories based on whether or not the filing should be before or after the event.

The annual funding notice has already been described and is jointly administered with the PBGC. For plans with unfunded liabilities of at least $50 million, the notice must be filed with the PBGC also.

Advance notices to the PBGC include situations such as the following: change in controlled group, loan default, and transfer of benefit liabilities (note that this is not a complete list). The timing of filing is 30 days in advance of the effective date of the event. This applies only to plans which are underfunded by more than $50 million.

Post-event notices to the PBGC include situations such as the following: failure to make required contributions, active participant reduction, and inability to pay payments when due, and distribution to a substantial owner. This is not a complete list and exemptions exist. These must be filed within 30 days of when the plan sponsor knows or should know of the event. This filing identifies the plan, plan sponsor, event, and controlled group.

Self-Test Questions

Circle your responses:

T F 1. A defined benefit plan must provide to participants both an SAR and a funding notice on an annual basis.

T F 2. For plans with less than 100 participants, an ERISA §204(h) notice must be provided at least 15 days before the effective date of an amendment significantly reducing future accrual rates.

T F 3. When the plan's AFTAP is 75%, the participants must receive a notice that certain distributions are prohibited within 30 days after the AFTAP is known.

T F 4. A participant notice must be issued if a required quarterly contribution is 10 days late.

T F 5. The annual funding notice for a plan with 50 participants must be distributed no later than the time the Form 5500 is filed, if it was filed timely.

T F 6. A plan sponsored by a professional service corporation is always exempt from PBGC coverage.

T F 7. All plans covered by the PBGC are required to pay the variable rate premium.

T F 8. An alternate payee is considered a participant for PBGC premium purposes.

Sample Test Questions

1. All of the following statements regarding the ERISA §204(h) notice are **TRUE, EXCEPT:**

   A. Future benefits that would be accrued under the plan may be reduced prospectively if a 204(h) notice is timely provided.
   B. Accrued benefits may be reduced retroactively if a 204(h) notice is provided.
   C. A change in actuarial assumptions for funding does not require a 204(h) notice.
   D. An increase in the cash out dollar limit used by the plan does not require a 204(h) notice.
   E. An amendment to eliminate the lump-sum payout option to future accruals does not require a 204(h) notice.

2. All of the following statements regarding Restricted Distributions Notices are **TRUE, EXCEPT:**

   A. The Notice must be given within 30 days after the plan becomes restricted.
   B. If the plan's AFTAP is between 70% and 80%, no notice is required.
   C. The notice must be in writing.
   D. The notice may be required if benefit accruals are frozen.
   E. The notice may be required if a plan amendment is restricted.

Solutions to Self-Test Questions

1. False
2. True
3. True
4. False
5. True
6. False
7. False
8. False

Explanation of *False* questions:

1. A plan covered by the PBGC is required to distribute the annual funding notice in lieu of the SAR. The SAR is not required to be filed for plans covered by the PBGC.

4. A participant notice is only required if the contribution is more than 60 days late, not 10 days.

6. Plans of professional service corporations are only exempt from PBGC coverage if the plan has never had more than 25 active participants since the passage of ERISA.

7. Only plans with unfunded vested benefits are required to pay variable PBGC premiums.

8. An alternate payee under a QDRO is not considered a participant for PBGC premium purposes.

Solutions to Sample Test Questions

1. The correct answer is B.

   Accrued benefits currently accrued cannot be reduced since they are "protected benefits" under IRC §411(d)(6).

2. The correct answer is B.

   An AFTAP funding level of at least 80% is needed for benefit restrictions not to apply.

Cautions

- A notice of failure to meet minimum funding standards is required if the plan sponsor fails to make a required payment.

- An ERISA §204(h) notice must be provided to participants regarding a plan amendment that significantly reduces the rate of future benefit accruals.

- The details of what should appear on the Restricted Distributions Notices regarding prohibited payments has not yet been published; however, it must be in writing.

Review of Key Concepts

- When must the notice of failure to meet minimum funding standards be given?

- For employees active beyond NRA, what is the relationship between the suspension of benefits notice and the provision of actuarial increases in the accrued benefit?

- What range of AFTAP percentages require plan participant notification?

Chapter 12
Plan Assets

Key Terms

- Asset reconciliation
- Bond
- Cash
- Market value
- Plan assets
- Rate of return
- Smoothed value of assets
- Stock

Introduction

This chapter provides an overview of investment types, introduces the process of asset reconciliation, and discusses the differences between market value of assets and smoothed value of assets. Chapter 12 also deals with how asset reconciliation is used to determine rate of return, a measure required for both funding purposes and government forms.

Plan Sponsor Duties

A plan must have at least one fiduciary. The named fiduciary has control over the plan's operation and is a person or entity named explicitly in the plan or identified through a process described in the plan. The fiduciary can be identified by office, by name, or administrative committee. Alternatively, a plan may hire a corporate trustee, such as a bank, to act as plan sponsor.

Fiduciaries are subject to standards of conduct because they act on behalf of participants and their beneficiaries. They have certain responsibilities, which include:

- Acting solely in the interest of plan participants and their beneficiaries and with the exclusive purpose of providing benefits to them;
- Carrying out their duties prudently;
- Following the plan's document (unless inconsistent with ERISA);
- Diversifying plan investments; and
- Paying only reasonable plan expenses.

The plan sponsor may opt to pay plan expenses and deduct the expense, have the plan pay expenses, or some combination of the two methods. Only certain expenses may be paid from plan assets, however; these include investment management fees, actuarial fees, accounting fees, and other necessary plan administrative costs. Other expenses, such as business expenses unrelated to the pension plan, may not be paid from plan assets.

The plan sponsor is responsible for directing investment management, which usually involves an investment professional. An investment policy statement and funding strategy are documents that direct the management of plan assets. An investment policy statement is a document that covers topics such as asset allocation, liquidity, types of investments allowed or disallowed, monitoring frequency, and benchmarks used to compare performance. A funding strategy is a document that covers the objectives of the plan sponsor relative to contributions and may include some of the following items: maintaining a certain funding level, avoiding benefit distribution restrictions, and planning so that contribution amounts do not change drastically from year to year.

Plan Investments

A wide range of investments are allowed in defined benefit plans. These include stocks, bonds, and cash. Each of these may be held directly or through a mutual fund. Insurance companies often offer specialized investments such as a Guaranteed Insurance Contracts (GICs), which gives a competitive guaranteed interest rate and provides stable value. Cash may be held in a liquid form so that it can pay current benefit payments.

More exotic varieties of investment are also allowed; however, plan sponsors should exercise caution when considering irregular asset types such as commodities, real estate, collectibles, and derivatives.

The named trustee in the plan document is ultimately responsible for the management of the investments, delegating this responsibility, and the hiring and monitoring of investment service providers that assist in this regard. The trustee can choose to manage the investments directly or delegate the investment management to a third party. A fairly common asset allocation for a defined benefit plan is 60% stocks and 40% bonds. Ultimately the trustee will want an asset mix that will closely align with expected future benefit payments.

Questionable investments could include paintings, coin collections, baseball cards, and real estate, to name a few. These investments may not meet the requirement of the trustee to act in the sole and best interest of the participants for their benefit. Furthermore, it may be challenging for the trustee to prove they acted prudently in selecting such an investment. As these investments do not have a well established market value, do not trade on regulated exchanges, and are not liquid, there may be additional requirements for the trustee including appraisal by an independent third party. This can add cost and complexity to the administration of a plan with these investments.

Under a defined benefit plan, assuming all other factors are the same, if the assets produce better than expected returns, the plan sponsor's contribution will decrease because the earnings on investments are going to cover more plan liabilities. If the assets produce less than expected returns, the plan sponsor's contribution will increase because they must make up for the investment loss to cover plan liabilities. A common objective is to have an asset mix that will cover liabilities, provide a consistent return and limit risk in the form of increased contributions to the plan sponsor.

Asset Reconciliation

Asset reconciliation is an integral part of administration for a defined benefit plan. The process involves reconciling the transactions and asset values from one year to the next. In general, the market value is used and excludes contribution receivables.

Starting with the asset statements for the year, an accounting is prepared with each of the following elements: beginning of year balance, contributions, benefit payments, administrative expenses, investment return, and end of year balance.

There is often more than one account used to hold plan assets. For each account the assets must be reconciled from one year to the next. Each account reconciliation should be rolled up into a master reconciliation. An important factor to remember with multiple accounts is that all transfers should net to zero.

Most asset reconciliations are performed using the help of spreadsheet software. There are several different methods and layouts that can be used to accomplish the same result. The examples used in this section will use the following format:

Market value 1/1	$1,000
Contributions	50
Benefit Payments	(20)
Administrative Expenses	(10)
Investment Return	50
Market value 12/31	$1,070

The numbers must sum down and the ending balance should match the balance provided on the statement(s). An alternative method is to input all the numbers with the exception of the investment return, and then have the spreadsheet calculate the investment return. The investment return should then match the amount on the statement(s). While the above example is rather simplistic, most investment statements are transactional in nature and these transactions must be aggregated to determine the amounts under Contributions, Benefit Payments, Administrative Expenses, and even Investment Return.

The advantages of an asset reconciliation:

- Provides a summary of plan activity at a glance;
- Verifies the proper contributions, distributions, and expenses to the plan;
- Helps ensure proper compliance of the plan with relation to transactions that occured during the year;
- Identifies unusual transactions or errors; and
- Enables determination of the rate of return.

The asset reconciliation is a method by which administrative issues can be discovered and a recommendation can be made to the plan sponsor to correct it. Likewise, it is a method to verify if previous instructions to the plan sponsor were successfully completed and in the correct amounts.

Elements of Asset Reconciliation

The first element of any reconciliation is the beginning of year market value. This market value should correspond with the ending balance on the prior reconciliation and investment statement. This should be confirmed, since on occasion an asset statement may be revised after year end. This represents the total of the asset value of the plan as of the beginning of the year. Typically, the plan year is used rather than calendar year; however, a majority of plan years are based on the calendar year.

The second element of a reconciliation is the contributions. The contributions should include all amounts made to the plan during the year on a cash basis. Using the accrual

basis is also useful at times. In this case, contributions for the prior year received after the end of the plan year are included in asset value. For this course, we use cash basis as the default choice. Some plans require mandatory participant contributions. In this case it is advisable to split the contribution line into two: one for employer and one for participant. Through the reconciliation of the contributions, it can be determined whether the required funding has been remitted and received by the plan. The dates and amounts of contributions must also be disclosed on the Form 5500 Schedule SB.

The third element of a reconciliation is the benefit payments to participants. The benefit payment or distributions are the total amount made from the plan to participants during the year. These benefits can take the form of periodic monthly pension benefits or lump sums distributions. These distributions could be for retirement, death, disability, or termination. A common practice is to reconcile the benefit payments to individual participants. Each year, payments will cease to retirees due to death or continue onto a beneficiary. In addition, some plans provide for a cost of living adjustment (COLA) after retirement. Reconciling individual benefit payments insures that participants are paid the correct benefits and that the benefit commenced in a timely fashion.

As benefit payments have a direct impact on liability and thus funding, making sure amounts are correct ensures the plan sponsor is not overpaying or underpaying contributions to the plan. It is useful to split out the lump sums from the monthly pension benefits for the purposes above. In addition, splitting out these types of payments allows the determination of a more accurate rate of return for the year by reflecting the timing of cash flows more accurately.

The fourth major element of a reconciliation is the administrative expenses. It is important for single employer pension plans to properly identify administrative expenses as part of the investment reconciliation. Administration expenses are a component of the required minimum contribution under IRC §430. Administrative expenses include items such as PBGC premiums, audit fees, actuarial fees, and other expenses. Administrative and actuarial fees that can be paid by the plan include items such as compliance testing, government filings, and benefit payment calculations.

Only certain expenses may be paid from plan assets, so the reconciliation is an ideal way to verify the types of fees being paid from the plan assets. In general, any settlor expenses are not allowed to be paid from plan assets. These include Financial Accounting Standards necessary for the employer's financial statements, amendments to the plan, or a plan design study to determine if the plan should be terminated.

The fifth element of the reconciliation is the investment return which includes the interest, dividends, capital gain increases, etc. It may be considered to be the calculated value when you know all the other items in the reconciliation. It is not the administrator's duty to check individual transactions processed by the investment manager to determine if the correct selling or buying prices were used. By calculating the investment return, it can

then be compared to the investment statements which often provide a section for the gain\loss on the account. If the reconciliation has been completed correctly, the calculated amount will match the amount provided on the statement(s). If not, additional troubleshooting would be necessary. This method provides a check and balance to the reconciliation.

The sixth and final element is the asset value at the end of the year. It is a total from all accounts on a cash basis.

Market Value

The market value of assets is the total of all the different plan assets and accounts at a given point in time. The holder of the plan assets could be a bank, insurance company, mutual fund company, or an investment manager. Asset statements are prepared at least annually. These statements should comply with certain ERISA standards so that the Form 5500 reporting can be performed properly.

A wide range of asset statements are available. However, each asset listed should be shown at market value. This represents the expected value that the asset could be traded in the market between buyer and seller. The market value of stocks, bonds, and cash are usually easily ascertainable since they normally trade in liquid primary markets. The custodian should be careful when determining the value for assets that are less marketable, such as real estate and gold. In some instances, a third party appraisal is required.

There are different types of asset values that can be used in conjunction with defined benefit plans, including market value, smoothed value, and fair value. Fair value is used for purposes of employer financial accounting of the plan. Smoothed value will be discussed later in this chapter.

For this course, asset reconciliation will be based on a cash basis, not an accrual basis. It should be noted that some practitioners prefer to do their asset reconciliations using contribution receivables and certain accrual-type accounting principles. This does not change the basic procedure of preparing an asset reconciliation. Receivables should be noted so that the adjusted market value is correct.

EXAMPLE 12-1: Market Value.
Market value of assets on 12/31: $10,000

Employer contribution due for the year, but paid after 12/31: $2,000

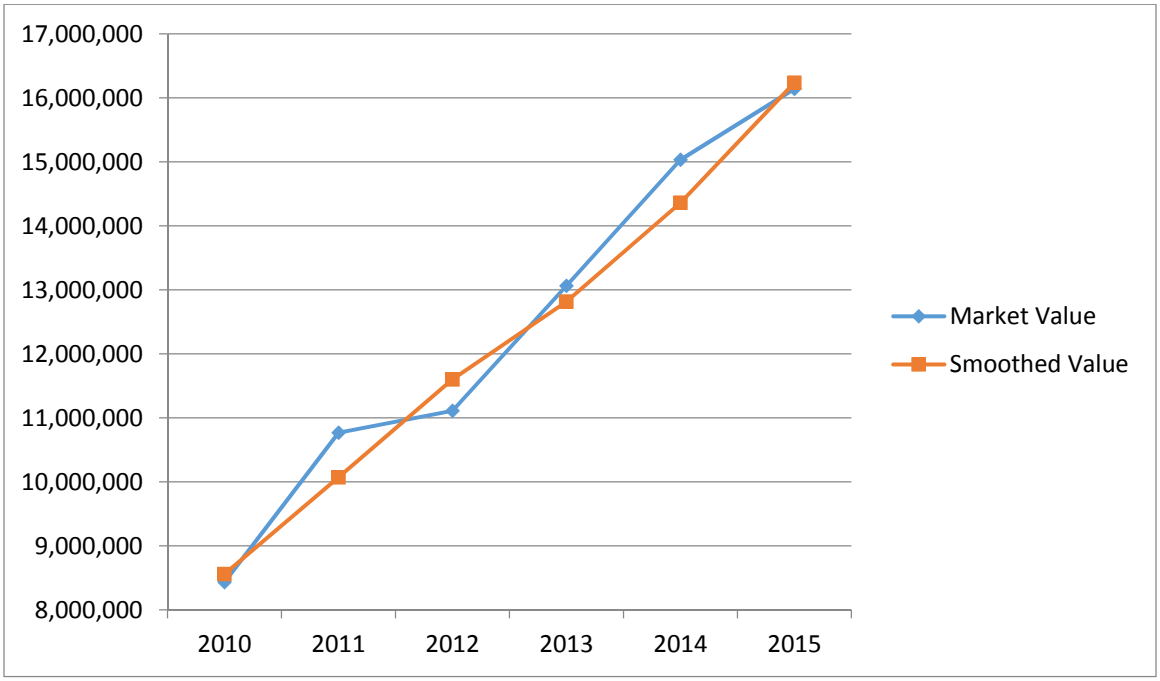
Market value with receivable is $10,000 + $2,000 = $12,000. In this case the receivable is not discounted, and the full value of the receivable is used.

Smoothed Value

In certain cases the IRS and Financial Accounting Standard Board (FASB) allow the plan sponsor to use an asset value based on "smoothing." Smoothing refers to a method of determining an asset value rather than a specific asset value.

Market value is a snapshot at a given point in time and could change quite a bit either just before or after the determination date and during the year. Since most plans are expected to be ongoing for many years, it makes sense to not put complete reliance on the spot market value. Wild swings in market values could lead to significantly higher or lower contributions as of the snapshot date when the plan's assets, on average, are performing on a consistent basis. Smoothing is a method of determining an asset value by using a combination of previous years' asset values and cash flows so as to smooth market volatility from year to year.

For example, if a plan has a poor year of asset returns, then using market value may understate the real potential of the future market value of the plan. If the plan had a return of -10% (decrease of 10%) in the most recent year and a return of 20% the year before, then that's about a 10% net return over the two years. Smoothing would allow the use of a 5% return per year for each of the two years. The assumed 5% per year return is used to replace the market value with an estimated value which takes into account prior historical investment experience. There are other methods of smoothing that could be used. It should be noted that smoothed value may be higher or lower than market value. Using smoothed value provides for a more continuous change in asset value which is still representative of the plan, without fully recognizing the valleys and mountain-tops of stock market performance. Note that when a smoothed value is used, the smoothed value cannot be more than 10% higher or lower than the actual market value.



Rate of Return

Rate of return is the percentage increase in the asset value as a result of investment performance. There are many ways to calculate a generic investment return; however, for this discussion, we refer to a specific method required by the IRS, which takes into account cash flow (including benefit payments, expenses, and contributions) through the year. Rate of return measures how well the assets increased as a result of investment activity and is determined for a one-year period.

Depending on the plan's asset allocation, the expected asset return will be higher or lower than the actual asset return. If assets are invested conservatively, then the actual rate of return should be stable, eliminating volatility that produces very high or low returns. In other words, investing conservatively should eliminate deviation and produce a relatively stable rate of return. On the other hand, if the assets are invested aggressively (*e.g.,* 100% in stocks), then the expected return will likely be more volatile and could produce larger swings in actual return or loss.

For example, if there is $1,000 in plan assets at the beginning of the year and $1,100 at the end of the year, then the rate of return is determined to be (1,100/1,000) – 1 = 10%. In this example there are no contributions, benefit payments, or expenses. For determining rate of return, it does not matter if the return was a result of interest, dividends, or appreciation. Only the market value of assets is considered.

The rate of return is needed so that the funded status of the plan can be explained from year to year. If asset returns are less than expected, then funding of the plan generally must be increased to make up for the low return. This means that additional employer contributions will be required to make up for the poor asset performance. The rate of return is also needed during the actuarial valuation for determining funding balance amounts. In addition, if the plan sponsor would like estimates of future funding levels, future rate of return estimates must be used.

The first step in determining rate of return is to perform a thorough asset reconciliation.

The rate of return is a time-weighted return which takes into account the actual date of the transactions that occur during the plan year. The formula for the rates of return is:

Rate of return = (I)/(A + C – B - E)

I is the investment return during the year, including an offset for investment expenses

A is the beginning of year market value

B is the weighted value of distributions

C is the weighted value of the contributions

E is the weighted value of the administrative expense

Each transaction must be weighted for the amount of time between the date the transaction occurred and the end of the year. Let's take a calendar year example: if the transaction occurred April 1st then the weighting would be ¾; July 1st, and the weighting would be ½; October 1st, and the weighting would be ¼. The amount of the transaction is then multiplied by the weighting to determine a weighted value.

In this example, we will assume that all transactions occur at the beginning of the 4th month of the plan year; each transaction (except the beginning balance) will have a weight of ¾. The rate of return based on the revised method determined as follows:

Transaction	Amount	Weight	Weighted Value
Market value on 1/1	10,000	1.0	10,000
Contributions	1,000	0.75	750
Benefit Payments	(400)	0.75	(300)
Administrative Expenses	(100)	0.75	(75)
Investment Return	800		
Market value on 12/31	11,300		

Rate of return = 800/(10,000 + 750 – 300 - 75) = 800/10,375 = 7.71%

It should also be noted that investment expenses are included in the investment return and that the beginning balance always receives full weight (*i.e.,* 1.0).

This calculation is a basic building block for doing the actuarial valuation and a good example of the importance of asset reconciliation.

Practical Examples of Concepts Learned

Problem #1

Determine the rate of return for the following asset reconciliation.

1/1 Market Value	500
10/1 Contribution	100
Investment Return	75
12/31 Market Value	675

Solution:

Weight for contribution is 0.25 since it is deposited 3 months prior to the end of the plan year (3/12 = 0.25)

Rate of return = 75 / (500 + (100 x 0.25)) = 75/525 = 14.29%

Problem #2

Determine the rate of return and contributions for the following asset reconciliation. All contributions were made on July 1st.

1/1 Market Value	500
4/1 Benefit payments	(20)
10/1 Admin. Expenses	(5)
Investment Return	75
12/31 Market Value	590

Solution:

Contribution may be determined by the following equation:

Contribution = 590 – 75 + 5 + 20 – 500 = 40

Rate of return=(I)/(A+C-B-I) = (75)/(500 + (40*.50) – (20*0.75)-(5*0.25)) =

75/503.75 = 14.9%

Self-Test Questions

Circle your responses:

T F 1. A pension plan's assets may be used for business expenses.

T F 2. All pension plans must have at least 50% in stocks.

T F 3. The smoothing method allows the use of previous years' asset values and cash flows.

T F 4. The asset reconciliation summarizes plan activity.

T F 5. A higher rate of return helps reduce future required contributions to the plan.

Sample Test Questions

1. All of the following factors are used in computing a rate of return, **EXCEPT:**

   A. Market value at the beginning of the year
   B. Market value at the end of the year
   C. Contributions made to the plan during the plan year
   D. Retirement age
   E. Administrative expenses made by the plan during the plan year

2. Based on the following information, determine the investment return during the year.

   Asset Information:

   - Market Value at the beginning of the year: $20,000
   - Market Value at the end of the year: $25,000
   - Contributions during the year: $1,000
   - Benefit payments and administrative expenses: $1,500

   A. $5,000
   B. $3,856
   C. $2,500
   D. $5,500
   E. $4,500

Solutions to Self-Test Questions

1. False
2. False
3. True
4. True
5. True

Explanation of *False* questions:

1. The pension assets may only be used for benefit distributions to plan participants and reasonable plan expenses, not for business purposes.

2. Asset allocation is at the discretion of the plan sponsor/investment manager. Some plans may have more or less than 50% stock and may change over time.

Solutions to Sample Test Questions

1. The correct answer is D.

   The asset rate of return does not depend on retirement age. All the other statements are true according to the asset reconciliation.

2. The correct answer is D.

   According to the asset reconciliation balance equation:

   20,000 + 1,000 – 1,500 + x = 25,000

   X represents investment return.

   Solving for x, x = 25,000 + 1,500 – 1,000 – 20,000 = 5,500

Cautions

- Reconciling assets from one year to the next provides an important summary of plan activity.

- Asset allocation between bonds, stock and cash is a plan sponsor's decision.

- Contribution receivables are used when doing accrual basis accounting but not for cash basis. Which way to go depends on what the asset reconciliation is being used for.

Review of Key Concepts

- Define asset reconciliation.
- Explain the elements of the asset reconciliation.
- What are the three main asset classes?
- What types of assets may be held by the plan?
- Explain how market value is determined.
- Explain how smoothed value is determined.

Chapter 13
Valuations

Key Terms

- Actuarial assumptions
- Actuarial valuation
- Census data
- Data reconciliation
- Financial statements
- Funding methods
- Plan provisions
- Projected unit credit
- Retirement rate
- Termination rate
- Traditional unit credit

Introduction

An annual pension valuation report for a defined benefit plan provides information regarding eligibility of participants, the minimum required and maximum allowable contribution for the year, and information that will be required for government filings, among other items. In addition, some plans require an additional valuation to report liability information on the plan sponsor's financial statements. These valuations typically use the same data; however, they use different assumptions and methods to value the plan. This section will review the various elements of the valuation process.

The plan sponsor and actuarial firm work together to perform the required work each year. The actuarial team relies on the plan sponsor to provide data and answer questions that might arise with regard to the data. The plan sponsor relies on the actuarial team to perform the calculations, administration, and compliance testing. The actuarial team will then consult with the plan sponsor on the results of the valuation. This chapter will clarify the responsibilities relative to the valuation process between the plan sponsor and actuarial firm.

Valuation Information

Annually, the plan sponsor and actuary as a team will take a snapshot of the plan's financial and liability situation which is commonly referred to as the valuation. It is a requirement under IRS and accounting rules. Most simply, the assets held by the plan are valued and the liabilities of the plan are costed. Calculations based on these results will determine the required, recommended, and maximum deductible contribution levels and other financial items such as income/expense. These calculations also could affect availability of distribution options for plan participants.

A plan document will specify the plan year as starting on a certain date, generally lasting for a 12-month period. Quite often the plan year is the calendar year; however, the plan year is chosen depending on the needs of the plan sponsor. Often the plan year will coincide the with company's fiscal year to be consistent with the preparation of the company's financial statements.

The valuation (or snapshot) date used to measure assets and liabilities may be the beginning or the end of the plan year. For plans with 100 or fewer participants, there is a choice of valuation dates. For plans with more than 100 participants, the valuation date must be the first day of the plan year. The examples in this chapter will use a beginning of year valuation date, although it should be understood that many small plans choose to use an end of year valuation. Note that the plan year, the calendar year, and the fiscal year may be all different for a particular plan. The examples in this chapter will assume that the calendar year is used for the plan year and the plan sponsor's fiscal year.

A valuation as of 1/1 will be based on census data and assets for the 12-month period ending on the prior 12/31. The valuation results apply to the plan year 1/1 through 12/31 of the current year. In other words, the valuation for the current year is based on historical census data through the end of the prior year.

Census data must be requested from the plan sponsor to perform the valuation. This is typically performed during the month prior to the plan year close or in the month just after the plan year closes. This information should contain a listing of all employees, not just participants, as the actuarial firm will want to verify eligibility for the plan. For each employee, there should be detailed information including name, social security number (or other identifier), date of birth, date of hire, plan compensation, hours worked,

employment status, and status date. This is a general listing and could be different depending on the type of plan or benefit formula provided as well as whether the plan is frozen (no benefits accruing). In addition, providers may request additional information on the company and a plan as a whole to help identify changes that may impact the plan. A census request contains private employee data; therefore, it is important to keep this information confidential including transmitting it via a secure method (secure website or e-mail). Census data should never be transmitted over regular e-mail as it is not a secure solution.

Asset statements can be requested from the plan sponsor with the census from the investment firm directly with the proper authorization or the actuarial firms can be setup to receive third party statements automatically from the investment firm. The last option saves all parties time in having to request and provide this information. These asset statements represent investment activity for the applicable year that relates to the valuation date. It will enable the actuarial firm to perform the asset reconciliation.

The actuarial firm then reviews the plan document to check if any plan changes were adopted or will become effective during the year of valuation. Special attention should be given to plan amendments and/or restatements of the plan document. It is good practice to confirm plan provision changes with the plan sponsor. Not all changes in plan provisions affect the valuation. If the benefit formula changed, then this is clearly a change warranting special attention. If, on the other hand, there was a minor clarifying amendment to the plan or other change such as adding a new trustee, then there may not be any impact to the valuation.

Under the Pension Protection Act of 2006 (PPA), there is a prescribed IRS funding method for single employer plans which must be used for the pension valuation. The plan sponsor does have flexibility in determining the value of the assets; the sponsor may use the market value as of the applicable date or may utilize the smoothing method. The method used for financial statement valuations (dictated by the Financial Accounting Standard Board (FASB) or Governmental Accounting Standards Board (GASB)) is generally different than what is used for the funding valuation.

Once the census data has been obtained, the asset information received, the most recent plan provisions reviewed, and market value or smooth value has been determined, then the actuarial assumptions must be chosen. Some assumptions may be prescribed by law and others selected by the actuary to estimate future experience. The plan sponsor should be consulted on recommended changes to plan assumptions as they could have an impact on the plan contribution levels, among other items. Assumptions should be reviewed periodically to compare the actual experience of the plan against what was expected under the current actuarial assumptions.

In most situations, the actuarial firm uses a valuation software system. This system will perform numerous calculations for each participant based upon the census data, plan provisions, actuarial assumptions and funding methods programmed into it. As with any software, the results are only as good as the input. The results must be reviewed and there are often several iterations before obtaining correct calculations. When a plan is a taken over from another actuarial firm, care must be taken to ensure that the valuation results from the prior year are matched with a tolerance of 5%. This is best accomplished by recreating the prior actuary's valuation on the new actuary's software system using matching assumptions and data and comparing results before proceeding with the current valuation.

Census Data

Typically, the actuarial firm will be responsible for requesting census data from the plan sponsor. Most firms have moved to an electronic file format that lists each participant's personal information including name, gender, date of birth, date of hire, pay history, work history (if there are breaks in service), number of hours worked, date of termination, accrued benefit, and benefit payment form. Each line in the file is referred to as a record and each data item is considered a field. A file with 600 records and 20 fields might contain the census data for a plan with 600 participants, with 20 pieces of information available for each person.

The format of census data and the methodology for collecting it can vary widely from firm to firm. Considerations for the census request include the process and preferences established by the actuarial firm, the design of the plan, and the data needed to properly administer the plan, along with the client's process and preferences. As part of an established procedure, each actuarial firm determines what data elements will be requested and reviewed by the plan sponsor to minimize secondary requests and ensure all the information is present to properly administer the plan.

For example, the actuarial firm could request data for participants only or for all the employees. Requesting data for all employees has the advantage of allowing the actuarial firm to validate newly eligible participants and make sure all eligible employees are included. Likewise, it can provide the proper data for coverage testing. Excluding employees that should be participants in the plan could have a material impact on the cost and create compliance issues for the plan. In addition, it might be simpler for the plan sponsor to send all the employee data since the payroll system would contain all employees, not just participants. However, requesting or providing only participant data is an acceptable method as long as both the plan sponsor and actuarial firm have that understanding.

In addition, the census request can be customized depending on the type and design of the plan. For example, if you have a frozen defined benefit plan that the client is preparing to terminate, the actuarial firm may exclude compensation from the request, as no new

benefits will be accruing under the plan. While there are some core elements, such as the participant's personal data, there are other elements that may be optional in a census, but good to have. For example, some actuarial firms may want to have the plan sponsor confirm the amount of accrued benefits and the form of payment for retired participants. This could be particularly helpful with a plan that provides cost of living adjustments (COLAs) for retired participants. However, other firms may use benefit calculation information on file and reconcile retiree payments with the trust statements. As a preference, actuarial firms may decide to request a census with historical census included for the plan sponsor's review. A firm may choose this methodology for a plan that provides a benefit based on career average compensation versus a high 3 or 5 year average compensation.

The data submitted could also depend on the status of the participant. For example, salary and hours worked information does not need to be provided for a participant who has terminated employment starting with the year after they terminate. A termination date would not be provided for an active participant since they are actively employed.

It is commonplace for the actuarial firm to compare certain data items to the prior year's census to validate the data being supplied. For example, if the pay for a certain individual has increased significantly in one year, then this might be an item that requires additional follow-up and explanation from the plan sponsor.

Once the completed census data is received from the plan sponsor, it is examined by the actuarial firm, reconciled, and questions are clarified through communication with the plan sponsor. To reduce input errors and create efficiencies, most actuarial firms have organized the data in format where it can be imported into the valuation software.

Active, Terminated Vested, and Retiree Groups

Census data may be broken up into different participant statuses. These are the active, terminated vested, and retiree groups. Sometimes there could be additional groups such as disabled, those on a leave of absence, and beneficiaries.

An active participant is an individual who is actively employed and who has satisfied the eligibility conditions under the plan to become a participant. This group is generally the only group actively accruing benefits under the plan as a result of additional years of service. Benefits continue to accrue for this group as a result of additional years of service and additional years of pay. Both of these items act to increase the accrued benefit from year to year. Service could be credited using the elapsed time method or using the 1000 hour rule and the valuation system coded so that it can calculate the accumulated service to date. In some instances, such as with a unit benefit formula that uses each year's salary rather than average salary, it might be more efficient for the accrued benefit to be rolled forward from year to year since all that is needed is the most current year of pay and service to add to the prior year's accrued benefit.

A terminated vested participant is a former employee who is still a participant in the plan but is no longer accruing service or pay under the terms of the plan. This group has not started to receive benefit distributions from the plan but is due a benefit at some time in the future. Their benefit is set based on their work history record. Typically, this includes the final accrued benefit which was determined using the date of termination and including all service and pay information.

A retiree is a former employee who no longer accrues service under the plan and is currently receiving benefit distributions. This type of participant has elected a form of benefit payment as part of their retiree distribution paperwork, and the form of benefit payment is included in the data. If the participant has chosen a joint and survivor annuity type of benefit payment, then the name and date of birth of the spouse/beneficiary is also given as part of the data.

Data Reconciliation

The data reconciliation is similar to the asset reconciliation that was discussed previously. This reconciliation is important because it ensures that you have accounted for the movement of all participants and are properly costing them under the plan. This report is considered to be a basic building-block of the valuation and compares each status group from one year to the next, including an explanation of status changes.

Example of Data Reconciliation

Description of Change	Active	Term Vested	Retiree	Total
Participants on 1/1	200	100	50	350
New Participants	15	-	-	15
Terminated vested	(5)	5	-	-
Terminated non-vested	(6)	-	-	(6)
Death with no beneficiary	(2)	(1)	(1)	(4)
Death with beneficiary	(1)	-	1	-
Retired	(6)	(2)	8	-
Participants on 12/31	195	102	58	355

At the beginning of the year there were 200 active participants. By the end of the year there were 195. The reduction in count was due to there being 15 new participants added, 5 vested participants terminating employment, 6 non-vested participants terminating employment, 3 participant deaths (one death with a beneficiary in payment status), and 6 active participants retiring during the year. Similar explanations can be done for the terminated vested and retiree group, by reading down from the beginning of the year to the end of the year. It should be noted that the 5 active participants who terminated become terminated vested participants, so there is a reduction from active status and an increase in terminated vested status of the same amount. A similar situation occurs in the

retiree section, whereby 6 active participants retired and 2 terminated vested participants retired, causing reductions in the active and terminated vested groups, with an equal increase of the combined amount of 8 in the retiree group.

Other participant groups, such as rehires, disabled and cash-outs, could be included and the changes in these groups described.

The data reconciliation should be reviewed carefully to ensure accuracy and thoroughness prior to running the valuation. This will help save time and provide more efficient processing. If there are data issues that were not well understood, then the valuation would need to be re-run. This could present an issue if the contribution and valuation results were already communicated to the plan sponsor using incorrect data.

Certain items are not included in a data reconciliation, such as the exact timing of terminations or the dates that lump sums were paid. Data reconciliation is a picture of the plan demographic activity that summarizes changes in status during the year. The distributions are usually cross referenced with the asset reconciliation to ensure accuracy of both reconciliations.

The advantages of a data reconciliation are:

- Reconciling participant data from one year to the next to explain changes in costs;
- Identifying inconsistencies in the data from current or prior years;
- Identifying data errors;
- Identifying gains or losses;
- Educating the plan sponsor on the changing participant experience;
- Identifying missing people (and cost); and
- Identifying people (and cost) counted twice.

The data reconciliation allows the actuarial firm to identify and catch problems in advance before they have an impact on the valuation and contribution and are communicated to the plan sponsor.

Plan Provisions

Plan provisions must be reflected in the valuation so the contributions and benefits are accurately determined under the plan. Certain provisions must be included in the valuation unless the plan has been frozen. This section will consider an ongoing plan with accruals. Some important plan provisions that are coded into the valuation software system include:

- Compensation definitions
- Benefit formula
- Benefit commencement date

- Vesting service
- Benefit service
- Vesting conditions
- Early retirement provisions
- Death benefits
- Termination benefits
- Retirement benefits

Other plan provisions occur less regularly but may have a material impact on the valuation results; these include disability benefits, temporary benefits, and special benefits for different groups of participants (for example salaried/hourly).

Once coded in the valuation system, it is useful to check that the system is calculating benefits properly. This is done using sample participant data and comparing the output of the valuation system with the result determined by another method (hand calculation). If the actuarial firm is taking over administration of the plan, it is common place to recreate the last valuation generated by the prior firm. This is a method whereby a new actuarial firm can confirm the interpretation of the plan document, the calculation methodology, and the assumptions used by the prior firm. This is yet another method to verify the output of the valuation system.

The plan sponsor may change plan provisions during the year; therefore, the plan document, including amendments, should be reviewed. Any changes should be updated in the valuation. For example, a plan might change the vesting from 5 year cliff to 3 year cliff. This change should be reflected in the valuation.

The benefit formula is coded so that data inputs of pay and service are used for each person. Therefore, each person's accrued benefit may be determined by the software. If the expected age at which benefits commence and the expected form of benefit payment are assumed, then plan costs can be determined by applying annuity factors to the benefits.

In some instances, changes in the law require changes in the valuation. Keeping current with law and regulatory changes will ensure that they are properly reflected in the valuation, if required. Some regulatory changes are not required; however, if used, they could provide an advantage to the plan sponsor. For example, PPA required cash balance plans to have a 3-year maximum vesting schedule. Therefore, a plan with a 5-year vesting schedule had to be recoded in the valuation system. This is an example of a law change requiring changes to plan provisions within the valuation system.

Despite the automation of many valuation systems, it is necessary to become quite involved in the reading and interpretation of plan provisions in order to properly code the valuation system. Incorrect coding can lead to the improper calculation of the cost of

the plan. Some plan provisions may be excluded if they are not material to the cost of the plan.

Funding Methods

The IRS prescribes the funding method to be used by single employer defined benefit plans for purposes of determining contribution requirements. It is referred to the Pension Protection Act of 2006 funding method or PPA funding method for short. There is no option to use a different method for single employer plans. In addition, there are prescribe interest and mortality assumptions. This method determines a cost based on the accrued benefits earned to date. That means that accrued benefits are calculated using service and compensation up to the valuation date. It does not reflect future salary increases after the end of the current plan year. The PPA funding method calculations will be discussed further in Chapter 14.

As discussed in Chapter 12, the IRS allows two different asset valuation methods. One method is to use market value, and the other method provides for a smoothing of market values over time. Market value includes contributions receivable from the prior year as long as they are discounted back to the valuation date at the effective interest rate. Smoothing allows for the use of an average using the current market value of assets and up to 24 months of asset history.

For the valuation under FASB rules, liabilities are determined using the Projected Unit Credit Method (PUC). This method requires the use of future salary to retirement age and service that is accrued to date. This method is different than the PPA funding method because projected salaries are used, not just salaries up to the valuation. In addition, FASB allows for different smoothing methods to determine asset values. For example, FASB rules allow up to a 5 year smoothing period compared to 2 years under the PPA funding method.

Actuarial Assumptions

In this section we describe actuarial assumptions, which are used on a plan-wide basis for the purposes of the annual valuation. In an earlier chapter we considered assumptions relating to individual-level calculations. The concepts are similar, however it is important to differentiate between plan-level and participant-level calculations. Interest rate and mortality were previously covered. The focus of this section will be on additional actuarial assumptions.

Other common actuarial assumptions used in the valuation include: salary scale, Social Security Taxable Wage Base, termination rates, retirement rates, retirement age, normal form of benefit payment, and percent married. This section mostly applies to active participant groups. For Retirees, the final benefit amount and forms of payment are already known, so there is no need to apply these types of assumptions when costing this group.

Salary scale is used to project salary increases from one year to the next. A typical assumption is 4%. This means that the salary for each subsequent year is expected to be 4% greater for each participant. This assumption is usually set by the actuary with input from the plan sponsor. It is a long range assumption and therefore shouldn't be changed year to year even though salary experience might not be closely consistent with the assumption. A higher salary scale means a higher present value cost. For single employer plans, however, the funding calculations only consider the impact of one year of salary increases.

Social Security Taxable Wage Base is an economic assumption closely related to the salary scale. It should be less than the salary scale in most instances. Usually wage growth outpaces the taxable wage base, which is why it is usually set to be 0.5% or 1% less than the salary scale. This assumption is needed in plans whose benefit formula is integrated with Social Security. The assumption would increase the taxable wage base in the future at the assumed rate so that the covered compensation level may be determined in the future. A higher taxable wage based means a lower present value, because the excess benefit is being provided at a higher compensation level which reduces the amount of benefit. In other words, less of the participant's compensation will be eligible for the excess benefit.

Termination rates are probabilities that an active plan participant will terminate employment in a given year. The cause is not important, it only matters if the person is there or not. Often the rates are based on age and/or service. In general, older employees with longer service are less likely to terminate in a given year than a younger employee with shorter service. Therefore, the termination rates typically decrease as the employee ages and they accrue more service with the plan sponsor. For example, the chance of a participant terminating at age 25 might by 25%. At age 45 the same participant might have a 5% chance of terminating. The higher the termination rates, the less likely the participant will become vested and therefore the less chance of earning future benefits. The valuation software will use the applicable termination rates to financially discount participant benefits, reducing the cost in the valuation as they may not ultimately be paid. For small plans, the typical assumption is to consider no termination at all. This is conservative and usually a reasonable assumption. The higher the termination rate, the lower the present value.

Retirement rates are used as no one knows for sure when a participant will retire until the participant completes the paperwork, retires, and commences their benefit payment(s). If the plan only provides for a normal retirement age at 65, this simplifies the assumption as you could assume all participants retire at age 65. Retirement rates become more complex if the plan specifies an early retirement and/or enriched early retirement benefits, often called subsidized early retirement. Normally, early retirement benefits are reduced compared to normal retirement, however some plans offer subsidized early retirement to

reduce workforce cost. In this case, there might be graded rates between age 55 and 65. For example, it could be assumed that there is a 2% chance of retirement at each age between 55 and 61, then a 25% chance at age 62, then a 30% chance for ages 63 and 64, with everyone remaining assumed to retire at age 65. In small plans, standard practice is to keep assumptions as simple as possible provided it is reasonable. Many small plans wouldn't bother with graded rates, and might instead pick one assumed retirement age instead. For example, if the plan provides for early retirement at age 55 and normal retirement at age 65, the actuary may assume all participants retire at age 62.

The form of benefit payment assumed in the valuation is typically the normal form of benefit payment for a single participant. In some instances, a form of payment could be subsidized; in that case, a benefit option other than the normal form could be assumed.

Percent married is used when death benefits are payable in the form of a Qualified Pre-Retirement Survivor Annuity (QPSA) to married participants. In this case, the actuary may want to include an assumption that a certain percentage of plan participants are married and will receive the QPSA and reflect the added cost of this option. In addition, there will be an assumed age difference between a married participant and the spouse. For example, the plan may assume that 85% of participants are married with the spouse being three years younger than the participant. This may not be a material assumption for a plan because there is typically only a small cost associated with death benefits.

Keep in mind that most of the assumptions mentioned here are only used for active participants. The terminated vested participants are typically valued as receiving deferred annuities at the normal retirement date. An earlier age can be assumed, if experience has shown that terminated vested participants are retiring early with a subsidized benefit. Actuaries will consider the size, experience and plan design in considering which assumptions to use for a valuation.

Practical Examples of Concepts Learned

Problem #1

Outline the various pieces of information required to perform an actuarial valuation for a defined benefit pension plan.

Problem #2

Explain how a data reconciliation is completed and identify the raw source of information.

Solutions

Problem #1

The valuation is completed annually and requires the following items:

- Census data
- Plan provisions
- Actuarial assumptions
- Funding methods

Problem #2

The completed census is received from the plan sponsor as the raw data to complete the data reconciliation. The reconciliation is completed annually and rolls forward participant counts of each group from one year to the next. The groups are active, terminated vested, and retiree. Each row of the reconciliation describes a standard reason for change from one group to another. For example, an active participant may have retired during the year resulting in a change in their status from active to retired.

Self-Test Questions

Circle your responses:

T F 1. An IRS funding valuation is the only kind of annual valuation that is performed.

T F 2. For a single employer plan, the IRS allows for any reasonable funding method to be used.

T F 3. The actuarial firm relies on the plan sponsor to provide accurate and complete census data.

T F 4. If an employee is not yet a participant in the plan, then they can be excluded from the valuation.

T F 5. A beginning of year valuation does not use current year compensation to determine liabilities.

Sample Test Questions

1. Based on the following data reconciliation determine the number of active participants that died during the year.

Active count as of 1/1	150
Terminated vested	(5)
Terminated not vested	(10)
New participant	30
Deaths	unknown
Active count as of 12/31	155

A. 0
B. 5
C. 25
D. 10
E. 20

2. All of the following plan provisions are generally costed in a valuation, **EXCEPT**:

A. Death benefits
B. Termination benefits
C. Rollover rules
D. Vesting schedule
E. Benefit formula

3. Which of the following statements regarding actuarial assumptions is/are **TRUE**?

I. Small plans generally use simplified assumptions.
II. Higher termination rates leads to lower liabilities.
III. Some plans use a graded retirement age assumption, rather than one specific age.

A. I only
B. III only
C. I and II only
D. II and III only
E. I, II, and III

Solutions to Self-Test Questions

1. False
2. False
3. True
4. True
5. True

Explanation of *False* questions:

1. There are Financial Accounting Standard Board (FASB) valuations that can be required for a plan.

2. IRS mandates the use of the PPA funding method for single employer defined benefit plans.

Solutions to Sample Test Questions

1. The correct answer is D.

   You must find the number that makes the column add down. If x represents the missing number, then, 150 – 5 – 10 + 30 + x = 155. Solving for x is -10, and that represents 10 deaths. The minus sign stands for that deaths reduce the population.

2. The correct answer is C.

   Rollover rules don't impact liabilities. All the other ones do.

3. The correct answer is E.

   Each statement is true. Small plans don't have enough experience to form a valid termination assumption. Higher turnover means less people receiving benefits later, therefore lower costs. If the plan contains an early retirement subsidy and it is found from experience that people retire early, then a graded table for all ages between ages 55 and 65 might be reasonable.

Cautions

- In a data reconciliation make sure to include the offset if a participant leaves one status and goes to another so that it nets to zero.
- Accrued benefits are used for IRS funding valuations.
- Make sure to include all benefits in the valuation; including death, termination and retirement.
- If a plan is closed to new participants, make sure the data reconciliation doesn't have new participants.
- A plan that is frozen should not credit future service or pay to the frozen benefit.

Review of Key Concepts

- Define data reconciliation.
- Compare the various participant status groups.
- Compare assumptions commonly used for a small plan versus a larger plan.
- Which plan provisions are important to include in the valuation?
- Why is the salary scale assumption usually higher than the taxable wage base assumption?
- Which types of benefit formula require use of salary scale?

Chapter 14
Funding/Accounting Reports

Key Terms

- ASC 960 report
- ASC 715 report
- Assets
- Credit balances
- Employer financial statements
- Funding report
- Funding target
- Liabilities
- Plan financial statements
- Target normal cost
- Valuation

Introduction

Professional reports are completed by the actuarial firm and document the completion of the valuation. An annual valuation is the process used to determine assets and liabilities. The Internal Revenue Code (IRC) and the Financial Accounting Standards Board (FASB) regulate how private employer pension plans determine assets and liabilities for funding and financial statements respectively. Both of these measurements are calculated differently depending on the purpose for which they are used and a valuation is run for each purpose. Small organizations not requiring an audit, may not require a financial statement valuation. Often a summary or report targeted to upper management will be prepared to aid in providing a general overview to the company.

We will discuss three common reports and then provide details for calculating a simple case of funding contribution requirements. We will also provide details of the reconciliation of plan accounting and employer accounting.

Funding Report

The U.S. Treasury department has authority to write pension law as specified in the IRC and regulations. This federal law applies uniformly across the country in every state. There are some minor instances where state law differs from federal law, but this mainly relates to individual taxation and is beyond the scope of this course. The IRC provides the manner for determining the minimum required contribution and the maximum tax-deductible contribution for private pension plans.

For the annual valuation, assets and liabilities are determined using rules applicable for funding, including special interest rates, mortality tables, and funding method. The interest rates established by the IRS are prescribed segment rates or yield curve for the month of valuation date or lookback month elected. The actuarial firm will prepare an annual report to the plan sponsor, which documents the results of the valuation in a user friendly format. This is called the funding valuation report. The results of the valuation are also reported to the government on the annual Form 5500 and Schedule SB or Schedule MB.

In funding, liabilities are determined based on the accrued benefit and the normal cost which may include a one-year salary scale. For determining the maximum tax-deductible contribution, liabilities include the effect of future salary increases beyond the current year.

Normal cost represents the cost of benefits accruing in the current year. It is referred to as the Target Normal Cost in funding calculations and includes plan expenses.

The Funding Target liability includes all accrued benefits to date, while the Target Normal Cost includes only the current year accrual.

In many cases, a consolidated report will be prepared when visiting a client to communicate the annual valuation results. This might show preliminary results and offer the plan sponsor certain funding options. Once the plan sponsor makes decisions, the final results and reports will follow. This report is often customized to meet the individual needs of the specific plan sponsor. There could be as many as three different funding reports to be prepared each year – client meeting results, valuation report, and Schedule SB.

A typical funding valuation report includes the following items:

- Assets – reconciliation, market value, smoothed value (if applicable)
- Liabilities – Funding Target, Target Normal Cost, and Maximum Funding Target
- Participant census data – snapshot, reconciliation, average statistics such as

average age and service
- Plan provisions – a summary of plan provisions used in the valuation
- Actuarial assumptions – a listing of the assumptions used, such as the interest rate, mortality table, salary scale, retirement age, and termination rates
- Funding methods – both for assets and liabilities
- Minimum required contribution – including quarterly contributions
- Maximum tax-deductible contribution
- "At-risk" liabilities (if applicable)
- Credit balance calculations
- Various funding level measurements
    - Funding Target Attainment Percentage (FTAP)
    - Adjusted Funding Target Attainment Percentage (AFTAP)
- Certification of the report by the actuary

Form 5500 Schedule SB

This is an IRS form that documents the annual funding valuation results for single employer defined benefit plans. It is filed annually as part of the Form 5500. Most of the information needed to complete the Schedule is typically found in the valuation report. The government wants proof that the pension plan made contributions in accordance with minimum funding requirements.

In some instances, the Schedule SB does not have to be filed with the Form 5500. This applies to one-participant plans in conjunction with filing the Form 5500-EZ. The Schedule SB must still be completed, signed by the actuary and retained in plan sponsor's plan records.

Some information contained in the Schedule SB may not be found in the standard valuation report including:

- Contribution date/amounts for the plan year
- Present value of these contributions
- Reporting of funding waivers
- Reporting of funding deficiencies from current or prior years

A certification is signed by the plan actuary attesting that professional standards have been met and providing assurance that all rules and regulations were followed. In most cases an analyst prepares the Schedule SB for the actuary's review. A set of attachments must be provided according to the Form's instructions to detail certain aspects of the funding and determination. Note that the maximum tax-deductible contribution is not shown. Also, the form does not show any FASB related numbers.

It is suggested that the analyst become familiar with the instructions to the Form 5500 and Schedule SB. Each year the analyst should read the forms completely and become well

versed with its contents. It is good practice to discuss your findings with other professionals in the office and compare notes. You may be surprised to find different opinions and different ways of doing things which can make your job easier and more satisfying.

Plan Accounting Report ASC 960

The plan accounting report (ASC 960) prepared by the actuary is a much simpler report than the funding valuation report. It relates to the plan and not the employer. The rules governing liability determinations and asset values are given by FASB ASC 960 (formerly FAS35). In summary, the actuarial firm prepares the ASC 960 report and delivers it to the plan sponsor who then delivers it to the plan accountant/auditor so that it may be included in the plan accounting report which is attached to the Form 5500 filing, as needed. It contains information from the actuary relating to plan assets and liabilities.

In most cases the actuarial firm will include this information with the annual funding valuation report. In other cases, a separate report is prepared if the timing of the Form 5500 filing allows. Some plan sponsors file the Form 5500 by the initial deadline and others file with an extension. It is recommended to initiate a conversation with the plan sponsor to reach an agreement and set expectations for the timing of the annual accounting audit. The annual audit occurs when the plan accountant prepares the accounting report included in the Form 5500. Please note the plan accountant may be different from the auditor of the employer's financial statements.

Rules governing the ASC 960 report are specified in the FASB statement, which may be purchased directly. It is recommended to have it available as an internal resource and become familiar with the examples given along with the general rules required to be used to determine assets and liabilities.

Based on the annual valuation, liabilities and assets are determined using applicable rules, including interest rates, mortality tables, and funding method. These interest rates are generally different from those used for other purposes, including funding. The interest rate selected is a long-term rate of return expected for plan assets (for example, 8%). The mortality table is often different although it does not have to be. Most of the actuarial assumptions other than interest rate and mortality table will be the same as used in the funding valuation.

Asset values for this purpose cannot be the smoothed value that may have been used for funding. The value generally used is the fair value of assets which is often the same as market value of assets. The details of the differences are beyond the scope of this course, so it will be assumed that fair value and market value are the same. Contributions receivable are included in the asset value, similar to funding; however, the contribution is not discounted back to the valuation date but merely added into the asset value.

Liabilities are determined based on the accrued benefit but with no salary scale assumption for the year of the valuation as used in funding.

Census data used for this valuation is generally the same that is used for other purposes. In most cases the same software system setup is used as in funding except there is a different interest rate and mortality table assumption used and no salary scale. Plan provisions used might be different from funding depending on timing of recent plan amendments. Most of the time the plan provisions are the same.

Generally speaking, the technical part of the report includes two pages, one showing the asset reconciliation and one showing the liability reconciliation from one year to the next. Supporting information similar to the funding report is included (such as certification page, participant summary, plan provisions, actuarial assumptions, and funding methods).

The liability for this report is called Present Value of Accumulated Plan Benefits (PVAB). The PVAB is split between vested and non-vested amounts, since some plan participants included in the valuation will not be vested until after the valuation date.

Following is an example of the liability reconciliation, similar to the FASB statement.

EXAMPLE: Auditor's Information and ASC 960 Reconciliation

Reporting Date	January 1
Present Value of Accumulated Plan Benefits	
For Participants Receiving Benefits	$200,000
For Terminated Vested Participants	100,000
For Other Vested Participants	400,000
Present Value of Vested Accumulated Plan Benefits	700,000
Present Value of Nonvested Accumulated Plan Benefits	110,400
Present Value of Accumulated Plan Benefits	810,400

Present Value of Accumulated Plan Benefits as of January 1, previous year	$680,000
Increase Due to Benefit Accruals	100,000
Decrease Due to Disbursements	(50,000)
Increase Due to Passage of Time	60,400
Other	20,000
Present Value of Accumulated Plan Benefits as of January 1, current year	810,400
Effect of Interest Rate Change	0
Effect of Assumption Change	0
Effect of Plan Change	0
Present Value of Accumulated Plan Benefits after Changes	810,400

Fair Market Value of Assets	800,000
Interest Rate Used	8%

Asset reconciliations have been previously discussed. Contributions for the prior plan year made after the end of the year are included and counted in the asset value at face value. If the report is issued before all contributions for the prior year are finalized, a note is included in the report. The note makes the reader aware that the asset value could change as a result of a contribution for the prior year that will be made after the date the report is prepared.

The liability reconciliation is similar to the asset reconciliation. It begins with last year's PVAB, which is rolled forward to the current year. Each element in the reconciliation is added down from one year to the next. The cost of benefit accruals is the normal cost as of the beginning of the prior year. Disbursements include actual benefit payments (both lump sums or periodic payments) and excludes investment or administrative expenses. Passage of time is the interest rate multiplied by the beginning of year PVAB and normal cost and adjusted for assumed mid-year benefit payment. The final item is the balancing item commonly referred to as "other", which represents liability gains/losses as of the beginning of the year. Liability gains/losses will not be explained here in detail. The gain/loss is the difference between what the liability was expected to be based on the prior year versus what it actually ended up being.

The following is the development of the passage of time numbers found in the liability reconciliation above.

$$\text{Passage of time} = [(\$680{,}000 + \$100{,}000) \times .08] - (\$50{,}000 \times .08/2) = \$60{,}400$$

Employer Accounting Report ASC 715

This report is prepared by the actuary and relates to the employer and not the plan. The rules governing liability determinations and asset values are given by FASB ASC 715. In summary, the plan actuary prepares the ASC 715 report and delivers it to the plan sponsor who then delivers it to the employer's accountant/auditor to include in corporate financial statements. It should be noted that the income statement portion was formerly called the FAS 87 report for many years. The balance sheet part is provided under FAS 158. The ASC code is the more recent naming convention of these already existing FASB statements.

The financial statement of the pension plan is included in the appropriate section of the employer's financial statements. A determination date of the company's fiscal year is used instead of the plan year that was used in the funding valuation report and the plan accounting. For purposes of this course, it will be assumed that the fiscal year is the calendar year.

Based on a beginning of the year measurement, expense is determined using rules governed by FAS 87. Liability and asset measurements are required just like funding and plan accounting. The liability is called the Projected Benefit Obligation (PBO), the normal cost is called Service Cost and assets are determined using either fair value or a smoothed value called Market-Related Value of Assets. An example of the income statement is as follows:

Service Cost	$100,000
Interest Cost	29,100
Expected Return on Assets	(30,000)
Amortization of Transition Obligation	0
Amortization of Prior Service Cost	0
Amortization of (Gain)/Loss	2,000
Total Net Periodic Benefit Cost	101,100

In some cases, the TPA will include the income statement with the annual funding valuation report. In other cases, it is a separate report. In still other cases, it is included in the year-end disclosure report. The method chosen depends on required timing of the employer. It is recommended to check with the plan sponsor to ensure delivery timing meets expectations around expense budgeting and reporting. For purposes of this course, it will be assumed that the income statement and balance sheet are prepared after the end of the fiscal year and included in a report usually called the year-end disclosure report. This is not standard practice, because in most situations the expense for the year is the single most important number needed from the actuary and a preliminary report is prepared at the beginning of the year.

Rules governing this report are specified in the FASB statement, which may be purchased directly from the Financial Accounting Standards Board. It is recommended to have the publication available as an internal resource. An additional publication, "Questions and Answers," contains answers to a large number of questions that frequently arise in practice. Although it is beyond the scope of this course, in practice it is recommended to become familiar with the examples given and the general rules required to be used to determine the assets and liabilities.

Based on the annual valuation, liabilities and assets are determined using applicable rules, including discount rates, mortality tables, and funding method. These discount rates are generally different than those used for other purposes, including funding. The discount rate selected is an interest rate chosen by the plan sponsor. It is based on the end of year yield curve reflecting highly rated corporate bonds of long duration. Standard practice is to use the plan's expected benefit payments to come up with a reasonable discount rate based on the Citigroup Pension Discount Curve published by the Society of Actuaries after the end of each month. The mortality table is also generally different from that used for funding. Most of the actuarial assumptions other than discount rate and mortality

table will be the same as used in the funding valuation. In this report, the term "discount rate" is used rather than the term "interest rate", however, they both refer to the same thing.

Asset values for this purpose may be smoothed value or fair value of assets. In many cases fair value is the same as market value, and it will be assumed for this course that fair value, market value, and market-related value are the same. Contributions receivable are not included in the asset value, which is different from the funding rules.

Liabilities are determined based on the accrued benefit but with projected salary increases using the salary scale assumption. This liability is similar to the liability used in determining the maximum tax-deductible contribution on the funding side.

Census data used for this valuation is generally the same that is used for other purposes. In most cases the same software system setup is used as in funding except there is a different interest rate and mortality table assumption used. Plan provisions used might be different than funding depending on the timing of recent plan amendments, but they are generally the same.

Generally speaking, the technical part of the report includes the asset reconciliation and the liability reconciliation from one year to the next. Pension Expense is shown as discussed earlier. Additional exhibits show Other Comprehensive Income and the Prior Service Cost Bases, if any. Supporting information similar to the funding report is included such as the certification page, participant summary, plan provisions, actuarial assumptions, and funding methods.

As mentioned, the liability for this report is called Projected Benefit Obligation (PBO). We will refer to the normal cost as the Service Cost. The PBO is not split between vested and non-vested amounts.

Following is an example of the technical part of the report under the FASB statement. Only the one reconciliation is shown for simplicity. The asset reconciliation is similar to what has been shown before.

At December 31

Change in Benefit Obligation	
Benefit Obligation at beginning of the year	$500,000
Service Cost	100,000
Interest Cost	29,100
Amendment	0
Assumption Changes	0
Actuarial (gain)/loss	(20,000)
Benefits Paid	(30,000)

Benefit Obligation at end of year	579,100
Discount Rate	6%

This asset reconciliation is done on a cash basis, not an accrued basis.

The liability reconciliation is similar to the PVAB reconciliation described in a previous section. It begins with last year's PBO and rolls this forward to the current year. The service cost represents the cost of the year's benefit accruals adjusted by interest to the end of the year, the actual benefit payments and excludes investment or administrative expenses. The interest cost is the interest rate multiplied by the beginning of year PBO and adjusted for an assumed mid-year benefit payment. The final item is the balancing item commonly referred to as gains/losses, which represents liability gains/losses as of the beginning of the year. Note that service cost and interest cost may be taken directly from the corresponding beginning of year expense calculation.

A development of the numbers found in the displayed liability reconciliation is not part of this course. All the same assumptions are needed for the liability reconciliation that are used for the funding valuation. An additional assumption is needed for the income statement which is the Long Term Rate of Return Assumption. This is used to determine the Expected Return on Assets and the range is generally from 6% to 8%. The Long Term Rate of Return Assumption is chosen by the plan sponsor in conjunction with their investment manager since it represents the expected return over the long run taking into account asset allocation.

In summary, the year-end disclosure statement includes the income statement and the balance sheet. The income statement is determined at the beginning of the year and the balance sheet is determined at the end of the year. In most cases the report is delivered to the plan sponsor by the TPA after the end of the fiscal year to meet the employer's financial statement preparation schedule.

Below reflects a summary of the characteristics of each type of report:

	Funding Valuation	**Plan Accounting ASC 960**	**Employer Accounting ASC 715**
Source of Guidance	IRC	FASB ASC 960	FASB ASC 715
Report Prepared By	Actuary	Actuary	Actuary
12-Month Computation Period	Plan Year	Plan Year	Fiscal Year
Report Filed With	Form 5500 Schedule SB or Schedule MB	Form 5500 Audit Report	Employer's Financial Statements
Basis for Asset Valuation	Fair Market Value or Smoothed Value of Assets + Contribution Receivable	Fair Value of Assets (*i.e.,* Market value) + Contribution Receivable + Contribution for Prior Year Made After End of Year	Fair Market Value or Smoothed Value of Assets (Market Related Value of Assets). Exclude Contribution Receivable.
Basis for Liability Valuation	Accrued Benefits	Accrued Benefit Without Projected Salary. PVAB Report.	Accrued Benefit with Projected Salary Using Salary Scale. Projected Benefit Obligations (PBO) Report.
Interest Rate Assumption	IRS prescribed segment rates or yield curve for the month of valuation date or lookback month elected	Long-Term Rate of Return Expected for Plan Assets	Yield Curve Reflecting Highly Rated Corporate Bonds of Long Duration Based on Citigroup Pension Discount Curve
Statements Included In Report	Participant Summary Plan Provisions Actuarial Assumptions Funding Method Certification Page Assets Liabilities Funding Balances Minimum Required Contribution Maximum Tax-Deductible Contribution Funding Level Measurement	Participant Summary Plan Provisions Actuarial Assumptions Funding Method Certification Page Asset Reconciliation Liability Reconciliation	Participant Summary Plan Provisions Actuarial Assumptions Funding Method Certification Page Asset Reconciliation Liability Reconciliation Income Statement Balance Sheet Pension Expense Income Comparison Prior Service Cost Basis

Funding Calculations

The remainder of this chapter looks at certain basic funding calculations. Certain valuation results will be given below and used for each calculation (unless stated otherwise).

The following sample valuation results are determined as of the valuation date at the beginning of the year:

Funding Target Liability using no projected salary increases (FT)	$100,000
Target Normal Cost (excluding assumed expenses)	5,000
Plan Expenses expected for the upcoming year	1,000
"Maximum Tax" Liability using projected salary increases	125,000
Assets	85,000
Carryover Balance	2,000
Prefunding Balance	1,000

Assets in this case represent the market value at the beginning of the year and there are no contributions receivable, and asset smoothing is not used.

Minimum Required Contribution

The minimum required contribution (MRC) is defined to be the Target Normal Cost plus the amortization of the funding shortfall. Target Normal Cost is the normal cost plus the expected plan expense for the upcoming year.

Target Normal Cost = Normal Cost + Expected Plan Expense

= $5,000 + $1,000 = $6,000

A shortfall amortization base is required to be created if the plan is not exempt. The plan is exempt if assets are greater than or equal to the Funding Target, assuming the prefunding balance is not used to pay for any part of the current year minimum required contribution. If the employer elects to use any of the prefunding balance to pay for the minimum required contributions, then the assets are reduced by the prefunding balance before comparison with the Funding Target.

In the sample valuation results shown above, the plan is not exempt from creating a shortfall amortization base since the Funding Target is greater than the assets ($100,000 is larger than $85,000); therefore, the plan must create a base to amortize the shortfall. The amount of the shortfall is equal to the excess of the Funding Target over the assets, with the assets reduced by both the carryover and prefunding balances.

Shortfall Amount = Funding Target – (Plan Assets – Carryover Bal. – Prefunding Bal.)

= $100,000 - ($85,000 - $2,000 - $1,000) = $18,000

This shortfall is amortized over a 7-year period using funding interest rates. If it is assumed that the amortization factor is 5.92, then the amortization amount is the shortfall divided by the amortization factor.

Shortfall Amortization = Shortfall Amount / Amortization Factor

= $18,000 / 5.92 = $3,041

With these amounts determined, the Minimum Required Contribution (MRC) can be calculated.

Minimum Required Contribution (MRC) = target normal cost + shortfall amortization

= $6,000 + $3,041 = $9,041.

The Internal Revenue Code requires that the plan sponsor generally pay off the funding shortfall over a 7-year period, making equal annual payments. However, under the funding relief rules there are options for the 2008 through 2011 years to extend the amortization period to either 9 or 15 years. The rules with regard to these extensions are beyond the scope of this course.

There is one other situation that might occur. If the plan has a surplus (the assets offset by the funding balances is larger than the liability), then this surplus is used to offset the target normal cost to obtain a reduction in the MRC. In that case, there would be no funding shortfall to amortize, and the MRC consists only of the reduced target normal cost. For example, if the assets were $105,000 (instead of $85,000 given above), the surplus of the assets reduced by both the carryover and prefunding balances over the Funding Target (*i.e.,* ($105,000 - $2,000 - $1,000) - $100,000) would be $2,000. This $2,000 would be subtracted from the Target Normal Cost to result in a MRC of $4,000 (*i.e.,* $6,000 - $2,000).

The Funding Target is the name given to the liability determined from the funding valuation. It is based on accrued benefits and no future salary increases. The Target Normal Cost is the name given to the usual normal cost but with the addition of administrative expenses. This normal cost, though, includes 1 year of assumed salary increases. This is special terminology used only for IRS funding rules.

Funding balances are the carryover balance and the prefunding balance. The rules associated with these funding balances are many. The development and maintenance of

the funding balances is beyond the scope of this course. For most purposes, the funding balances are subtracted from the asset value, and in limited situations they are not.

Maximum Tax-Deductible Contribution

For a stand-alone defined benefit plan, the maximum deductible contribution is equal to 150% of the Funding Target plus the increase in liabilities due to salary scale plus Target Normal Cost less assets with no credit balance offset.

Using the sample results shown earlier:

Maximum Deductible Contribution =

(150% × Funding Target) + Increase due to Salary Scale + Target Normal Cost – Asset)

= (1.5 × $100,000) + (125,000-100,000) + 5,000 + 1,000 - 85,000 = $96,000

The maximum is always at least as large as the Minimum Required Contribution. The maximum deductible contribution for an "at-risk" plan will be ignored for this course. Note that for plans that are frozen, the Target Normal Cost consists of expenses only, and there is a zero increase in liability as a result of salary scale.

Adjusted Funding Target Attainment Percentage (AFTAP)

The AFTAP is equal to assets/FT given as a percentage, as long as this is at least 100%. If it is less than 100%, then the funding balances are subtracted from the plan assets. For this course it is assumed that annuities purchased for NHCE's within the last two years is zero. If it was not, then those amounts would be added to both the numerator and denominator of the fraction.

In the above example:

Preliminary AFTAP = $85,000/$100,000 = 85%

Since this is less than 100%, the funding balances must be subtracted from the assets.

Actual AFTAP = ($85,000 - $2,000 - $1,000)/$100,000 = 82%

AFTAP values greater than 80% allow for unrestricted participant benefit distributions, while those between 60% and 80% require lump sums to be restricted to an amount generally equal to 50% of the otherwise payable lump sum. If the AFTAP is under 60% then accelerated distributions (such as lump sums) may not be paid.

If the AFTAP is less than either the 60% or 80% threshold, the plan sponsor can make a contribution that, when included in the plan assets, will bring the AFTAP up to the

threshold and allow the plan to avoid the restriction that the AFTAP would otherwise impose upon the plan. Let's assume in the previous example that the asset value had been $70,000 (rather than $85,000). In that case, the AFTAP would have been:

AFTAP = ($70,000 - $2,000 - $1,000)/$100,000 = 67%

In order to bring the AFTAP up to 80%, the employer could make a contribution of $13,000, which is then included in the numerator of the ratio:

AFTAP = ($70,000 + $13,000 - $2,000 - $1,000)/$100,000 = 80%

The $13,000 contribution could be classified in one of two ways. It could be deemed a contribution for the prior year (used to satisfy the prior year minimum required contribution requirement), or it could be deemed a contribution for the current year that is made specifically to avoid the restrictions related to the AFTAP being below 80% (referred to as an IRC 436 contribution). How it is classified has an impact on the value of the contribution.

If the $13,000 contribution is to be used to satisfy the minimum contribution requirement for the prior year, and it is contributed after the first day of the current year, then it must be discounted back to the first day of the year using the prior year's plan effective rate. For example, suppose that the $13,000 is contributed on 9/15 of the current year (8½ months after the plan year end, which is the minimum funding due date) and the plan effective rate for the prior year is 6%. In that case, in order for the contribution made to have a present value of $13,000 as of the first day of the year, the actual contribution would need to be large enough so as to have a present value of $13,000. This contribution would be determined by increasing the $13,000 with interest at 6% per year to 9/15 of the current year:

$13,000 × $1.06^{(8.5/12)}$ = $13,548

The contribution (deposited on 9/15) needed to avoid the restrictions on benefits and to be used as a contribution for the prior year is $13,548.

If, instead, the contribution was designated as an IRC 436 contribution for the current year, it is discounted using the current year plan effective rate. In addition, contributions designated as IRC 436 contributions cannot be used to satisfy minimum funding for any year – they are simply additional contributions. They can be deducted as long as they don't exceed the deductible limit for the year. The reason that an employer may elect to designate a contribution as an IRC 436 contribution, rather than using it for minimum funding, is that the minimum funding due date for the prior year may have passed, or possibly the employer does not need to make additional contributions for the prior year. Suppose that the employer elects to avoid the benefit restrictions in the previous example

by making an IRC 436 contribution on 9/30. Again, it must be discounted with interest to the first day of the year (when added to the numerator of the AFTAP), but since it is now a current year contribution, it must be discounted using the current year plan effective rate. Suppose that the current year plan effective rate is 5.5%. Then the contribution would need to be:

$\$13{,}000 \times 1.06^{(9/12)} = \$13{,}581$

AFTAP certification is required no later than 9/30 for a calendar year plan. Otherwise, the AFTAP is deemed to be below 60% until the end of the year, regardless of what the actual AFTAP is once it is certified. The actuary needs to have enough information to do a valuation in order to certify the AFTAP, so there is a timing issue that requires the valuation to be completed in advance of 9/30 so as to be able to provide the plan sponsor funding options in order to reach the desirable AFTAP thresholds. Also, the plan sponsor needs advance notice to manage the contribution amount through business cash flow or a business loan.

In summary, the employer must satisfy the minimum contribution requirement, may not exceed the maximum tax deductible amount, and must be concerned about reaching the appropriate AFTAP thresholds. Sometimes an additional contribution is needed above the minimum in order to hit the desired AFTAP threshold, and this is an area where the administrator can help the actuary communicate to the plan sponsor by providing funding alternatives and the ramifications of the options.

Practical Examples of Concepts Learned

Problem #1

Determine the minimum required contribution using the following valuation results:

- Target normal cost: $10,000
- Funding target: $200,000
- Assets: $152,000
- Funding balances: None
- Shortfall amortization factor: 6.00
- Previous amortization bases: None

Problem #2

Determine whether the plan is required to create a new shortfall amortization base using the following valuation results:

- Funding target: $180,000
- Assets: $190,000
- Funding balances: None

Solutions

Problem #1

The minimum required contribution is equal to the target normal cost plus amortization of the funding shortfall, if any. The plan is not exempt from creating a new amortization base since the funding target is larger than assets. The minimum required contribution is:

MRC = Target normal cost + Funding shortfall/6
= $10,000 + ($200,000 - $152,000)/6.00 = $18,000

Problem #2

A new shortfall amortization base is generally needed if a funding shortfall exists. The funding shortfall is defined to be equal to the excess of the funding target over the assets which are reduced by the funding balances.

In this case, the funding balances are zero. A shortfall amortization base is not required because the assets are larger than the funding target.

Solutions

Problem #1: $18,000
Problem #2: No new base is needed

Self-Test Questions

Circle your responses:

T F 1. The funding valuation is governed by FASB.

T F 2. Present Value of Accumulated Plan Benefits is contained in the ASC 960 report.

T F 3. The Projected Benefit Obligation is contained in the ASC 715 report.

T F 4. A Schedule SB does not have to be completed if the plan satisfies the funding obligation.

T F 5. Funding balances are used in IRS funding calculations.

Sample Test Questions

1. Based on the following information determine the minimum required contribution.

Funding target	$225,000
Assets	203,000
Target normal cost	15,000
Carryover balance	2,000
Prefunding balance	0
Amortization factor	6.00

A. $0
B. $15,000
C. $18,333
D. $18,667
E. $19,000

2. All of the following items are used to determine the minimum required contribution, **EXCEPT**:

A. Target Normal Cost
B. Funding Target
C. Plan Expenses
D. Projected Benefit Obligation
E. Assets

3. Which of the following statements regarding the determination of the maximum tax-deductible contribution is/are **TRUE**?

I. It may be less than the minimum required contribution.
II. Target Normal Cost is not included.
III. It is determined without reflecting the amount of funding balances.

A. I only
B. III only
C. I and II only
D. II and III only
E. I, II, and III

Solutions to Self-Test Questions

1. False
2. True
3. True
4. False
5. True

Explanation of *False* questions:

1. The funding valuation is governed by IRS rules, not FASB. The plan and employer accounting valuation is governed by FASB under ASC 715 and ASC 960.

4. The Form 5500, Schedule SB is completed annually and generally filed with the IRS. This documents the plan's actual contributions against the minimum requirements for the plan year.

Solutions to Sample Test Questions

1. The correct answer is E.

   The minimum required contribution is determined as follows:

   $$\$15{,}000 + (\$225{,}000 - (\$203{,}000 - \$2{,}000)) / 6 = \$19{,}000$$

   Note that the funding balance (in this case the carryover balance) must be subtracted from the assets in determining the shortfall base to be amortized.

2. The correct answer is D.

   Projected Benefit Obligation (PBO) is used in the employer's financial statements ASC 715, not in the funding calculations. It should be noted that plan expenses are included in Target Normal Cost.

3. The correct answer is B.

   For purposes of determining the maximum tax-deductible contribution, funding balances are not used. This is in contrast to the minimum contribution in which funding balances offset asset value for many purposes. The maximum cannot be less than the minimum. Target Normal Cost is included in the calculation of the maximum.

Cautions

- Understand the differences between the PBO, PVAB and funding target.
- Understand the differences between the target normal cost, normal cost and service cost.
- Funding balances are sometimes subtracted from assets and sometimes not.
- The AFTAP affects plan operations on an individual basis and should be carefully determined.

Review of Key Concepts

- Compare the various valuation reports.
- Which items are included in the various valuation reports?
- Which items are common between the various valuations?
- Compare calculations used in the various valuations.
- How is AFTAP determined?
- How is the maximum tax-deductible contribution determined?
- How is the minimum required contribution determined?
- What are the elements of expense in the employer's ASC 715 report?

Chapter 15
ASPPA Code of Professional Conduct

Introduction

ASPPA members are bound by the ASPPA Code of Professional Conduct (which is reproduced below). Additionally, an enrolled actuary is subject to another code of conduct.

The public, the business community, and pension plan participants rely upon the quality of advice and services provided by benefit professionals. This reliance imposes upon these professionals a duty to maintain the highest level of technical competence and integrity. An ASPPA member shall maintain independence of thought and action, shall observe the highest standards of practice, and shall uphold the dignity and honor of the profession.

The Code of Professional Conduct identifies the professional and ethical standards by which all benefit professionals must abide and thereby serve the public interest.

Completion of this chapter will enable you to demonstrate awareness of the ASPPA Code of Professional Conduct and identify ways the code applies specifically to DB administration and funding.

Code of Professional Conduct

Preamble

The purpose of this Code of Professional Conduct ("Code") is to identify the professional and ethical standards with which a Member must comply, in order to fulfill the Member's responsibility to American Retirement Association and its affiliate organizations, other Members, and the public. Members are required to adhere to the high standards of conduct, practice, and qualification set forth in this Code.

1. **Definitions**
   Actuary: an individual who is a Member of the American Retirement Association and holds an MSPA or FSPA from the ASPPA College of Pension Actuaries or an actuarial credential from another organization that is a member of the

International Actuarial Association (IAA) or is an enrolled actuary in good standing with the Joint Board for the Enrollment of Actuaries.

Advertising: all communications by whatever medium, including oral communications, which may directly or indirectly influence any person or organization to decide whether there is a need for Professional Services or to select a specific person or firm to perform such services.

Confidential Information: information not in the public domain of which the Member becomes aware during the course of rendering Professional Services to a Principal. It may include information of a proprietary nature, information which is legally restricted from circulation, or information which the Member has reason to believe that the Principal would not wish to be divulged.

Credential: a membership designation (e.g., Certified Pension Consultant; Member, Society of Pension Actuaries; or Associated Professional Member) conferred by American Retirement Association.

Law: statutes, regulations, judicial decisions, and other statements having legally binding authority.

Member: An individual who is a Member of American Retirement Association or any affiliate organization of American Retirement Association.

Principal: any present or prospective client of a Member or the employer of a Member where the Member provides retirement plan services for their employer's plan.

Professional Communication: a written, electronic or oral communication issued by a Member with respect to Professional Services.

Professional Services: services provided to a Principal by a Member, including the rendering of advice, recommendations, findings, or opinions related to a retirement or other employee benefit plan.

Titles: leadership positions, volunteer experience, awards, and other honors conferred by American Retirement Association.

2. Advertising

Member shall not engage in any Advertising with respect to Professional Services that the Member knows or is reasonably expected to know are false.

3. Communications

A Member who issues a Professional Communication shall take appropriate steps to ensure that the Professional Communication is appropriate to the circumstances and its intended audience.

4. Compliance

A Member shall be knowledgeable about this Code, keep current with Code revisions and abide by its provisions. Laws may impose binding obligations on a Member. This Code is not intended to supplant, contradict or supersede Law (e.g., Circular 230) or other Codes of Conduct that establish professional standards for Members in the rendition of Professional Services and that have been sanctioned by the federal or a state government. Where the requirements of Law or such governmentally-sanctioned Codes conflict with this Code, the requirements of Law or such governmentally-sanctioned Codes take precedence.

5. Confidentiality

A Member shall not disclose to another party any Confidential Information obtained in rendering Professional Services for a Principal unless authorized to do so by the Principal or required to do so by Law.

6. Conflicts of Interest

A Member shall not perform Professional Services involving an actual conflict of interest unless: The Member's ability to act fairly is unimpaired; and There has been full disclosure of the conflict to the Principal(s); and All Principals have expressly agreed to the performance of the services by the Member. If the Member is aware of any significant conflict between the interests of a Principal and the interests of another party, the Member should advise the Principal of the conflict and include appropriate qualifications or disclosures in any related communication.

7. Control of Work Product

A Member shall not perform Professional Services when the Member has reason to believe that they may be altered in a material way or may be used to violate or evade the Law. The Member should recognize the risk that materials prepared by the Member could be misquoted, misinterpreted or otherwise misused by another party to influence the actions of a third party and should take reasonable steps to ensure that the material is presented fairly and that the sources of the material are identified.

8. Courtesy and Cooperation

A. A Member shall perform Professional Services with courtesy and shall cooperate with others in the Principal's interest. A Principal has an indisputable right to choose a professional advisor. A Member may provide service to any Principal who requests it even though such Principal is being or has been served by another professional in the same manner.

B. When a Principal has given consent for a new or additional professional to consult with a Member with respect to a matter for which the Member is providing or has provided Professional Services, the Member shall cooperate in assembling and transmitting pertinent data and documents, subject to receiving reasonable compensation for the work required to do so. In accordance with Circular 230, the Member shall promptly, at the request of the Principal, return any and all records of the Principal that are necessary for the Principal to comply with federal tax Law, even if the Member is not subject to Circular 230. The existence of a fee dispute generally does not relieve the Member of this responsibility except to the extent permitted by applicable state Law. The Member need not provide any items of a proprietary nature or work product for which the Member has not been compensated.

9. Disclosure

A Member shall make full and timely disclosure to a present or prospective Principal of all sources of direct or indirect material compensation or other material consideration that the Member or the Member's firm has received or may receive in relation to an assignment for such Principal. The disclosure of sources of material compensation or consideration that the Member's firm has received, or may receive, is limited to those sources known to, or reasonably ascertainable by, the Member.

10. Professional Integrity

A Member shall perform Professional Services, and shall take reasonable steps to ensure that Professional Services rendered under the Member's supervision are performed, with honesty, integrity, skill, and care. A Member has an obligation to observe standards of professional conduct in the course of providing advice, recommendations, and other services performed for a Principal. A Member who pleads guilty to or is found guilty of any misdemeanor related to financial matters or any felony shall be presumed to have contravened this Code and shall be subject to American Retirement Association's counseling and disciplinary procedures.

11. Qualification Standards

A Member shall render opinions or advice, or perform Professional Services, only when qualified to do so based on education, training, and experience.

12. Titles and Credentials

A Member shall make truthful use of the membership Titles and Credentials of American Retirement Association to which the Member is entitled, and only where that use conforms to the practices authorized by American Retirement Association. A Member who is not an Actuary as defined in section 1 of this Code shall not professionally represent to the public to be an actuary or knowingly allow such misrepresentation by others.

13. Additional Obligations

A Member whose professional conduct is regulated by another membership organization shall abide by the professional Code of Conduct (or similar rules) of such organization. For example, a Member who is an Actuary shall also abide by the Code of Professional Conduct for actuaries.

A Member shall respond promptly in writing to any communication received from a person duly authorized by American Retirement Association to obtain information or assistance regarding a Member's possible violation of this Code. The Member's responsibility to respond shall be subject to Section 5 of this Code, "Confidentiality," and any other confidentiality requirements imposed by Law. In the absence of a full and timely response, American Retirement Association may resolve such possible violations based on available information.

Self-Test Questions

Circle your responses:

T F 1. An ASPPA member may perform professional services only upon completion of the appropriate ASPPA designation.

T F 2. An ASPPA member does not need to be concerned about the use of his work after completion of an assignment.

T F 3. An ASPPA member shall not engage in any advertising that is misleading.

T F 4. An ASPPA member shall not disclose any confidential information obtained during an assignment without permission from a principal, even if required to do so by law.

T F 5. An actuary who is a member of ASPPA shall also abide by the Code of Professional Conduct for Actuaries.

Sample Test Questions

1. You, as an ASPPA member, are preparing a benefit calculation for an executive. The HR contact asked that you add three years of extra service when determining the retirement benefit. You have the census data and disagree with the service amount. All of the following responses are considered to be consistent with the Code of Conduct, **EXCEPT**:

   A. Ask the HR director why the service should be added.
   B. Prepare the benefit calculation as the HR contact instructed even though you have reason to believe the census data is incorrect.
   C. Discuss the issue with a colleague for their opinion.
   D. Notify the HR contact that the new information is inconsistent with existing information.
   E. You review the census data on file to check accuracy of the newly instructed service amounts.

2. You, as an ASPPA member, are golfing one day with your friend. You casually mention that the company for whom you are providing professional services is going bankrupt after being told so by the VP of Finance. Which of the following provisions of the Code of Conduct are violated?

   I. Professional Integrity
   II. Confidentiality
   III. Titles and Credentials

   A. I only
   B. III only
   C. I and II only
   D. II and III only
   E. I, II, and III

3. In the preparation of a benefit calculation for an executive of Company A, the benefit administrator at Company A requested that you, a member of ASPPA, use higher early retirement factors than the plan document states. According to the ASPPA Code of Professional Conduct, you should:

   A. Perform the benefit calculation
   B. Perform the calculation using the higher factor requested by Company A's benefit administrator
   C. Perform the calculation according to the terms of the plan document
   D. Request an audit from the IRS and DOL
   E. Instead of using higher factors, change the form of payment from the normal form of benefit payment to a more valuable form, while keeping the benefit amount unchanged

Solutions to Self-Test Questions

1. False
2. False
3. True
4. False
5. True

Explanation of *False* questions:

1. An ASPPA member shall perform professional services only when qualified to do so based on education, training or experience.

2. An ASPPA member shall not perform professional services when the member has reason to believe that they may be used to mislead or to violate or evade the law.

4. An ASPPA member shall not disclose any confidential information unless authorized by the principal **or** required to do so by law.

Solutions to Sample Test Questions

1. The correct answer is B.

   An ASPPA member shall act with integrity and honesty. If the member believes there is something wrong, then they should explore further. Doing what the plan sponsor instructs in this case could be considered favoring one participant over another and not applying the plan provisions properly.

2. The correct answer is C.

   Statement III is incorrect; there is no mention of credentials in the question. Private information such as the impending bankruptcy is not considered to be public information and the confidentiality should not be breached.

3. The correct answer is C.

   A member of ASPPA should perform work in conformance with applicable laws. Calculations should be performed in accordance with the most current plan document and amendments. It would be discriminatory to give any participant a higher benefit than what the plan document states. The other optional answers give special treatment to the participant. The employer is exercising undue discretion over payments to the plan at the potential expense of the other participants.

Cautions

- If laws or regulations conflict with any part of the ASPPA Code of Professional Conduct, the laws or regulations take precedence.

- ASPPA members may perform a professional service only if qualified by education, training, or experience.

- Before performing any professional service, ASPPA members must disclose to all principals any actual or possible conflict of interest.

- A certain action could violate more than one provision of the Code.

Review of Key Concepts

- What constitutes an actual or possible conflict of interest?

- Under what circumstances may ASPPA members disclose confidential information?

- In what ways should ASPPA members be ready to show courtesy and cooperation to other professionals?

Appendix

Dx Table

Mortality: None

AGE	8.00%	7.00%	6.00%	5.00%
40	460309	667802	972224	1420460
41	426212	624114	917192	1352819
42	394641	583284	865276	1288399
43	365408	545125	816298	1227047
44	338341	509463	770092	1168616
45	313279	476133	726502	1112968
46	290073	444984	685380	1059970
47	268586	415873	646585	1009495
48	248691	388667	609986	961424
49	230,269	363240	575458	915642
50	213212	339476	542885	872040
51	197419	317268	512156	830514
52	182795	296512	483166	790966
53	169255	277114	455817	753301
54	156717	258985	430016	717429
55	145109	242042	405675	683266
56	134360	226207	382713	650730
57	124407	211409	361050	619743
58	115192	197578	340613	590231
59	106659	184653	321333	562125
60	98758	172572	303144	535357
61	91443	161283	285985	509864
62	84669	150731	269797	485585
63	78398	140871	254526	462462
64	72590	131655	240119	440440
65	67213	123042	226527	419466
66	62235	114992	213705	399492
67	57625	107469	201608	380468
68	53356	100439	190197	362351
69	49404	93868	179431	345096
70	45744	87727	169274	328663

Dx Table

Mortality: IAM'83

AGE	8.00%	7.00%	6.00%	5.00%
40	450492	653559	951488	1390164
41	416563	609984	896427	1322191
42	385131	569228	844424	1257350
43	356006	531098	795294	1195473
44	329013	495417	748862	1136399
45	303993	462021	704969	1079980
46	280800	430760	663470	1026085
47	259300	401495	624230	974593
48	239370	374100	587124	925391
49	220898	348457	552039	878378
50	203780	324458	518868	833460
51	187919	302001	487512	790551
52	173228	280994	457879	749570
53	159625	261347	429883	710441
54	147032	242980	403442	673094
55	135380	225815	378477	637458
56	124601	209777	354914	603464
57	114631	194796	332679	571044
58	105414	180808	311701	540132
59	96894	167747	291914	510661
60	89019	155553	273248	482559
61	81738	144165	255632	455748
62	75003	133523	238995	430147
63	68771	123572	223271	405674
64	63000	114261	208394	382249
65	57653	105540	194305	359800
66	52696	97368	180951	338263
67	48100	89706	168285	317581
68	43837	82520	156264	297705
69	39883	75778	144852	278591
70	36216	69454	134016	260205

Dx Table

Mortality: UP'84

AGE	8.00%	7.00%	6.00%	5.00%
40	445430	646215	940796	1374543
41	411558	602656	885658	1306307
42	380186	561919	833582	1241207
43	351124	523816	784388	1179080
44	324199	488168	737903	1119769
45	299255	454820	693981	1063146
46	276143	423615	652466	1009068
47	254724	394410	613214	957395
48	234870	367067	576086	907993
49	216464	341463	540958	860748
50	199407	317496	507734	815576
51	183599	295059	476304	772377
52	168946	274047	446560	731040
53	155359	254364	418396	691457
54	142766	235930	391735	653563
55	131097	218670	366503	617289
56	120289	202518	342634	582583
57	110279	187400	320048	549362
58	101006	173247	298667	517544
59	92415	159992	278418	487052
60	84461	147588	259257	457851
61	77097	135980	241118	429874
62	70279	125113	223942	403054
63	63966	114939	207673	377331
64	58121	105412	192257	352649
65	52712	96495	177653	328965
66	47706	88148	163816	306231
67	43075	80334	150703	284402
68	38798	73034	138301	263483
69	34859	66233	126607	243500
70	31242	59915	115609	224467

Monthly Life Annuity Purchase Rates

Mortality: IAM'83

AGE	8.00%	7.00%	6.00%	5.00%
55	128.12	139.76	153.45	169.71
60	119.94	129.85	141.34	154.76
65	109.60	117.68	126.91	137.52
70	97.50	103.78	110.85	118.85
75	84.26	88.91	94.07	99.80

Mortality: UP'84

AGE	8.00%	7.00%	6.00%	5.00%
55	119.46	129.39	140.93	154.43
60	109.60	117.78	127.15	137.95
65	98.35	104.83	112.14	120.44
70	86.31	91.23	96.69	102.80
75	73.47	77.00	80.87	85.13

Mortality: GAM'83

AGE	8.00%	7.00%	6.00%	5.00%
55	129.80	141.67	155.63	172.2
60	121.17	131.21	142.85	156.44
65	110.35	118.48	127.76	138.41
70	97.69	103.95	110.98	118.93
75	83.78	88.35	93.41	99.03

Mortality : 2012 Applicable Mortality Table

AGE	8.00%	7.00%	6.00%	5.00%
55	133.26	145.84	160.70	178.42
60	124.81	135.52	148.00	162.62
65	114.48	123.25	133.30	144.88
70	102.46	109.30	117.01	125.73
75	88.30	93.29	98.81	104.96

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