

# RET DAU Model Solutions

## Spring 2016

### 1. Learning Objectives:

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.

### Learning Outcomes:

- (8c) Demonstrate how the retirement plan's cash inflows and outflows can affect the plan sponsor.
- (8d) Advise retirement plan sponsors on funding costs including tax deductibility, required contributions and other alternatives to meet the sponsor's goals, consistent with government regulation.
- (8e) Advise plan sponsors on accounting costs and disclosures for their retirement plans.

### Sources:

DA-147-13: Intricately Linked: Pensions and Corporate Financial Performance

### Commentary on Question:

*The purpose of this question was to test candidates' understanding of how the use of surplus affects the employer and employees with respect to funding, accounting, human resources, and plan investments.*

*Candidates were able to identify the funding, accounting, and HR issues from the employer perspective, but to achieve full marks, candidates also needed to identify the employee perspective*

### Solution:

- (a) Funding

### Commentary on Question:

*Most candidates understood that the funded status would decrease as a result of the contribution holiday. Some candidates discussed legal trust issues and surplus entitlements – topics which were not in the scope of the question since they are not implications of using surplus to fund a plan's normal cost.*

## 1. Continued

### **Employer Perspective**

- Not contributing in the current year will erode the funded status by the amount of benefit accrual.
- Barring favorable experience, this may result in sudden and large contribution requirements in the future when no surplus assets exist.
- Contributions to the plan are tax deductible up to certain limits, not contributing eliminates this deduction

### **Employee Perspective**

- If the funded status falls below a specific threshold restrictions on distribution may be imposed.
- If the funded status falls below a specific threshold, benefit levels or accruals may decrease for certain types of plans.

#### (b) Accounting

### **Commentary on Question:**

*Most candidates understood that expense would increase for the employer. Candidates were also required to address the employee perspective to achieve full marks.*

### **Employer Perspective**

- Not contributing will increase expense due to the lower expected return on assets component.
- Not having a level contribution policy will increase the volatility of expense and funded status.
- If fund the benefit accrual, the higher asset value will immediately be reflected in the funded status on the company's balance sheet.
- Potential Reduction in shareholder equity, however company can spend cash elsewhere

### **Employee Perspective:**

- Reduction in shareholder equity affects any applicable employee company stock options or defined contribution investments

#### (c) Human Resources

### **Commentary on Question:**

*Candidates generally understood the attraction, retention, and morale issues.*

## 1. Continued

### **Employee perspective**

- Affects perceived level of benefit security.

### **Employer Perspective**

- Need to balance company cost, attraction and retention of employees, interest of plan participants, and the ability to save for retirement.
- Employee morale may be affected and HR may receive additional questions when employees see plan funding history and funded status

### (d) Plan Investments

#### **Commentary on Question:**

*Candidates appear to have found part (d) the most challenging, for both the employer and employee perspectives.*

### **Employer perspective**

- Level and volatility of contributions affects the investment strategy.
- Changes in contributions can affect the allocation of funds among asset classes.
- Changes in contributions can affect the duration of assets invested in bonds.
- Changes in contributions can affect the use of leverage, swaps and other hedges and the amount of active management.

### **Employee perspective**

- Employee may care more about how plan is invested if the company is going to rely on surplus assets as a means to fund

## **2. Learning Objectives:**

3. Candidate will be able to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.
8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.

### **Learning Outcomes:**

- (3a) Identify risks face by retirees and the elderly.
- (3d) Propose ways in which retirement plans and retiree health plans can manage the range of risks faced by plan participants and retirees.
- (8a) Perform valuations for special purposes, including:
  - (i) Plant termination/windup
  - (ii) Accounting valuations
  - (iii) Open group valuations
  - (iv) Plan mergers, acquisitions and spinoffs
- (8c) Demonstrate how the retirement plan's cash inflows and outflows can affect the plan sponsor.
- (8e) Advise plan sponsors on accounting costs and disclosures for their retirement plans.
- (8f) Demonstrate the sensitivity of financial measures to given changes in plan design.

### **Sources:**

Retirement Survey Report Key Findings and Issues: Understanding and Managing the Risks of Retirement

Managing Post-Retirement Risks, A Guide to Retirement Planning

DA-143-13: Comp of IAS 19, Rev. 2011 with FASB ASC 715 Summary of Provisions Affecting Accounting for Postretirement

DA-157-15: PWC IFRS Manual of Accounting (paragraphs 11.1 – 11.10 (Intro), 11.53-11.63 (termination benefits), 11.63-11.261 (Post-employment benefits (exclude paragraphs and notes that start with "UK"))

DA-611-13: Introduction (A58), IFRS1, paragraphs 1-40, Appendix A, Appendix D, D10 and D11 only, IAS19, IFRIC14

DA-804-13: FASB Accounting Standards Codification Topic 715

## 2. Continued

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a) Describe four risks participants would face if they take the lump sum offer.

#### Commentary on Question:

*In order to receive full credit for part (a), candidates needed to identify four risks and to provide an explanation for each risk in the context of the one-time lump sum offer. Other relevant risks and explanations not mentioned below were also accepted.*

Four risks participants would face if they take the lump sum offer include:

- (a) Longevity risk: Participants electing the lump sum may outlive their retirement savings.
  - (b) Inflation risk: Participants may not invest the lump sum in assets that keep pace with or out-pace inflation.
  - (c) Interest rate risk: The value of the lump sum received today may result in a low annuity payout at retirement.
  - (d) Stock market risk: If the lump sum is invested in stocks, the market may fluctuate significantly in the future, potentially resulting in losses prior to retirement (eroding retirement savings).
- (b) Describe strategies participants could employ to mitigate the risks identified in part (a).

#### Commentary on Question:

*In order to receive full credit for part (b), candidates needed to identify strategies to mitigate the risks mentioned in part (a) and link each strategy to the appropriate risk(s).*

The following are strategies participants could employ to mitigate the above-mentioned risks:

- (a) For longevity risk: Use the lump sum to purchase a deferred annuity.
- (b) For inflation risk: Use the lump sum to invest in inflation-indexed securities (examples include Treasury bonds, inflation-indexed annuities, etc.)
- (c) For interest rate risk: Invest the lump sum in long-term bonds, mortgages, or dividend-paying stocks.
- (d) For stock market risk: Invest the lump sum in diversified assets, mutual funds, hedge funds, etc.

## 2. Continued

- (c) Describe the accounting implications for Company ABC under U.S. Accounting Standard ASC 715 and International Accounting Standard 19.

**Commentary on Question:**

*In order to receive full credit for part (c), candidates needed to identify the impact of the one-time lump sum offer on Company ABC's financial statements and accounting process for the fiscal year under ASC 715 and IAS 19. While it was important for candidates to recognize that a settlement might be triggered as a result of this event, the question was looking for candidates to describe the implications of the settlement on the plan's balance sheet, income statement, Statement of Other Comprehensive Income, etc., along with explaining how accounting results may need to be remeasured due to the event and what settlement recognition entails.*

The following is a description of the similarities and differences in the accounting implications of the lump sum offer under ASC 715 and IAS 19.

1. With respect to the plan's funded status and balance sheet:
  - a. Impact would be similar under ASC 715 and IAS 19.
  - b. Deterioration may result if benefit obligation assumptions and lump sum assumptions differ.
2. With respect to the Profit & Loss (P&L)/Income Statement:
  - a. ASC 715: Gain/loss recognition and settlement cost impacts P&L.
  - b. IAS 19: Gain/loss recognition does not affect P&L (handled through OCI), Settlement cost is recognized on the P&L as a "past service cost."
3. With respect to Other Comprehensive Income (OCI)/Accumulated Other Comprehensive Income (AOCI):
  - a. ASC 715: Gains/losses are generally deferred through AOCI with a portion of unrecognized gain/loss (UGL) amortized each year and recognized through the P&L; additional portion of UGL recognized (through the P&L) as a settlement expense if settlement threshold triggered.
  - b. IAS 19: Gains/losses recognized immediately through OCI. Settlement gain/loss also recognized immediately through P&L in operating cost.
4. With respect to accounting remeasurements:
  - a. Remeasurement of benefit obligation and expense upon settlement trigger under both ASC 715 and IAS 19 (unless the settlement is deemed immaterial to the company's P&L).
  - b. ASC 715: PBO and expense remeasurement for remainder of fiscal year (or until next event) based on assumptions as of remeasurement date.

## 2. Continued

- c. IAS 19: Expense remeasurement for remainder of fiscal year (or until next event) based on assumptions as of beginning of year; however, need to measure DBO using assumptions as of remeasurement date for settlement gain/loss.
- 5. With respect to settlement threshold and recognition:
  - a. ASC 715: Settlement threshold is based on Service Cost plus Interest Cost. If lump sums paid exceed settlement threshold, recognition of UGL and remeasurement of PBO and expense required.
  - b. IAS 19: No settlement threshold. Need to recognize settlement gain/loss once the lump sums have been paid.
  - c. ASC 715: Settlement recognition considers all lump sums paid—both routine lump sums that ABC’s pension plan may pay as well as non-routine lump sums paid through this one-time window.
  - d. IAS 19: Settlement recognition considers only non-routine lump sums.

### 3. Learning Objectives:

4. The candidate will be able to evaluate plan design risks faced by sponsors of retirement plans and retiree health plans.

#### Learning Outcomes:

- (4a) Identify how plan features, temporary or permanent, can adversely affect the plans sponsor.
- (4b) Assess the risk from options offered, including:
  - (i) Phased retirement
  - (ii) Postponed retirement
  - (iii) Early Retirement
  - (iv) Option factors
  - (v) Embedded options
  - (vi) Portability options
- (4c) Recommend ways to mitigate the risks identified with a particular plan feature

#### Sources:

DA-154-15: Implementing Early Retirement Incentive Programs: A Step-by-Step Guide  
Fundamentals of Private Pensions, McGill, 9<sup>th</sup> Edition, Ch. 5

#### Commentary on Question:

*The question was testing candidates understanding of the steps involved in implementing an early retirement incentive program. To receive full credit, candidates were required to explain each step. Advantages and disadvantages in part (b) were to be from the perspective of the Company, rather than the employees.*

*ERIP means early retirement incentive program.*

#### Solution:

- a) Describe the steps involved in implementing an early retirement incentive program.

#### Commentary on Question:

*To receive full marks, candidate was required to identify and provide an explanation of each step.*

- 1) Determine the eligible group
  - first, determine the business objectives and goal of the ERIP, then determine the demographic you are trying to target
  - make sure you comply with any legal or anti-discrimination requirements
- 2) Determine the retirement effective date
  - usually it is the last day of work



### 3. Continued

- 3) determine the length of the retirement incentive window
- the window is the period of time an employee has to decide to accept the offer (example: 45 days)
  - consider the timing of the window, will it conflict with other business initiatives

- 4) Determine the program offerings
- incentives should be attractive to participants but not cost prohibitive to the organization
  - Could offer enhancements to the pension plan such as an age credit, service credit or better early retirement factors (ERFs)
  - Could extend health insurance coverage
  - Could provide a termination incentive bonus or other lump sum payment

- 5) Analyze program costs
- calculate the cost of the expected payments outside of the pension plan, other termination benefits or incentives and compare to the savings you expect
  - do a few years of projections, look at both on a cash basis and accounting basis
  - consider the cost of new hires or replacement employees

- 6) Prepare the release waivers
- waiver is to limit the employee's ability to take legal action
  - should be reviewed by a lawyer

- 7) Prepare the announcement/communication
- ensure the communication is clear
- Include the following statements:
- that the company has no plans to offer other programs in the future but reserves the right to
  - continued employment is never guaranteed

- 8) Make the announcement
- consistent message to all employees
  - also consider how to support employees and answer questions once the announcement is made

- (b) Describe the advantages and disadvantages of implementing an early retirement incentive program from Company XYZ's perspective.

**Commentary on Question:**

*Advantages and disadvantages were from the company's perspective. No points were awarded for listing advantages/disadvantages solely to the employees. Candidates had to list both advantages and disadvantages to receive full marks.*

### 3. Continued

#### Advantages:

- Can reduce payroll and, therefore, reduce costs if higher salaried employees are replaced with lower salaried employees.
- May reduce or eliminate the need to do involuntary reductions which can be worse for employee morale
- Can target specific eligibility group or groups of employees
- Supports business initiatives and the reason for doing the reduction
- Cooperative way for the company to meet their objectives while also supporting employees who want to move into retirement by giving them an incentive and a choice
- Reduces risk of legal action because the waivers can protect against litigation
- Provides incentives to encourage employees to retire earlier than they might have otherwise. These employees might now be able to afford to retire early but they can now with the ERIP

#### Disadvantages:

- Cannot pick/choose who takes the incentive, so individuals that you wanted to leave will stay; individuals you wanted to stay will leave
- Loss of key talent or skills, may reduce productivity and efficiency
- If not enough people choose the ERIP, then involuntary reductions may still be needed
- The process to develop a ERIP takes time and requires a lot of administration
- Depending on the incentives offered, the ERIP could increase the costs or liabilities of other programs. For example, healthcare costs if health coverage is offered as an incentive
- The effectiveness of the program and final costs will depend on how many employees take the ERIP vs. the number you expected

#### **4. Learning Objectives:**

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.
6. The candidate will be able to analyze, synthesize and evaluate plans designed for executives or the highly paid.
8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.
9. The candidate will be able to apply the standards of practice and guides to professional conduct.

#### **Learning Outcomes:**

- (1) Describe the structure of the following plans:
  - (a) Traditional defined benefit plans
  - (b) Defined contribution and savings plans
  - (c) Hybrid Plans
  - (d) Retiree Health plans
- (6a) Given a specific context, synthesize, evaluate and apply principles and features of executive deferred compensation retirement plans.
- (6b) Given a specific context, apply principles and features of supplemental retirement plans.
- (6c) Integrate a plan for executives with the basic benefit plan.
- (8a) Perform valuations for special purposes, including:
  - (i) Plant termination/windup
  - (ii) Accounting valuations
  - (iii) Open group valuations
  - (iv) Plan mergers, acquisitions and spinoffs
- (8c) Demonstrate how the retirement plan's cash inflows and outflows can affect the plan sponsor.
- (8e) Advise plan sponsors on accounting costs and disclosures for their retirement plans.
- (9a) Apply the standards related to communications to plan sponsors and others with an interest in an actuary's results (i.e., participants, auditors etc.).
- (9c) Explain and apply relevant qualification standards.

## 4. Continued

- (9d) Demonstrate compliance with requirements regarding the actuary's responsibilities to the participants, plan sponsors, etc.

### **Sources:**

DA 156-15: Moving from a DB Executive Retirement Plan to a DC Executive Retirement Plan

DA 154-15: Implementing Early Retirement Incentive Programs: a Step by Step Guide

DA 151-14: The Real Deal 2012 Retirement Income Adequacy at Large Companies Highlights

DA-102-13: OECD Paper, Evaluating the Design of Private Pension Plans: Costs and Benefits of Risk Sharing

DA 142-15: ASOP 4, Measuring Pension Obligations

DA 809-13: ASOP 41, Actuarial Communications

### **Commentary on Question:**

*Commentary listed underneath question component.*

### **Solution:**

- (a) Approximate the increase or decrease resulting from these events on the following:
- (i) 2016 net periodic benefit cost for all of NOC's pension arrangements
  - (ii) 2016 net periodic benefit cost for the retiree health and welfare program
  - (iii) 2016 salary and other benefit costs

### **Commentary on Question:**

*The calculations included in this model solution illustrate ways to arrive at the results; more than one approach was accepted as long as it was clearly described. Credit was given for any reasonable way to approximate given information in case study. As this question pertains to the Case Study, successful candidates referred to the case study in estimating the impact. Due to the complexity of the question, points were given for stating the impact in words as well as for valid (but not exact) calculations.*

## 4. Continued

- (i) 2016 defined benefit cost for all of NOC's pension arrangements  
(in \$000's)

Change in cost for the NOC SRP

Prior to termination, the displaced executives were in NOC Salaried Pension Plan and SRP

Change in cost for the NOC SRP:

Change in cost:

- Entire 2016 pension cost is eliminated: (7,937)
- Cost of additional 3 years of service paid as lump sum (assume = 3 x service cost): 5,703
- Immediately recognize curtailment gain (difference between PBO and ABO): (47,520)
- Offsets existing unrecognized gain/loss (since terminating/settling the plan): 20,714
- Total change in SRP cost for year: (29,040)

Change in cost for the NOC Pension Plan:

Change in cost:

- Portion of SC is eliminated due to 50 employees (prorating based on employee count):  $50 / 3280 * 64,067 = (977)$
  - Cost of additional 3 years of service paid as lump sum (assume = 3 x service cost): 2,930
  - No curtailment or settlement impact
  - No settlement because payout is less than sum of SC + IC
  - Assume no PBO/ABO impact since participants most likely capped at maximum benefit (*points also given if a PBO impact was calculated*)
  - Change in IC based on change in liability - minimal so not calculated (*points also given if interest cost impact calculated*)
  - No impact on PSC or EROA, Gain/Loss calculated
  - Total change in QP cost for year: 1,953
- Total SRP plus Salaried Pension Plan impact: (27,087)

## 4. Continued

- (ii) 2016 defined benefit cost for retiree health & welfare plan (in \$000's)

Change in cost:

- Total number of actives = Hourly + Salaried: 9,210
- Portion of SC is eliminated, prorated based on number of employees: -  
(50/9,210) x 108,792 = (591)
- Decrease in employee future service is not enough to trigger curtailment
- Will be change in IC based on change in liability - minimal so not calculated
- Unrecognized Gain/Loss calculation
  - Immediate loss due to early retirement
  - Assume = 5 x \$18,000 claims cost x 50 # of employees (to account for number of years retiring early) / 1,000 (in 000s) = 4,500
  - Amortization of loss in 2016: 453
  - over average future service to retirement = 9.94  
(other method to estimate or state would be small impact on 2016 cost)
- Total change in retiree health & welfare plan cost for year: (138)

- (iii) 2016 salary and other benefit costs

Change in cost:

- Salaries being eliminated (\$450k x 50) = (22,500,000)
- Cost of benefits being eliminated (30% of above number) = (6,750,000)
  
- New salary for replacements (\$200k x 50) = 10,000,000
- New benefits for replacements (30% of above number) = 3,000,000
  
- New retirement DC benefit: 1,500,000
  
- Total new cost: (14,750,000)

- (b) Describe the appropriate U.S. Actuarial Standards of Practice requirements necessary to document your estimate.

**Commentary on Question:**

*Credit was given for referring to existing actuarial opinion, accepted actuarial practice, plan provisions and source of data.*

- Specific circumstances: due to nature of urgent request, must caveat limitations of estimates provided
- Uncertainty or risk associated with using rough approximations

## **4. Continued**

- Reliance on Case Study information
- Detail all assumptions and methods used not documented in case study
- Information date of the report
- Identification of responsible actuary
- Identification of the actuarial document
- Intended users of the actuarial report
- Scope of the assignment
- Acknowledgement of qualification
- Any conflict of interest

## 5. Learning Objectives:

5. The candidate will be able to evaluate sponsor's goals for the retirement plan, evaluate alternative plan types and features, and recommend a plan design appropriate for the sponsor's goals.
8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.

### Learning Outcomes:

- (5b) Assess the tradeoffs between different goals.
- (5e) Identify the ways that regulation impacts the sponsor's plan design goals.
- (8a) Perform valuations for special purposes, including:
  - (i) Plant termination/windup
  - (ii) Accounting valuations
  - (iii) Open group valuations
  - (iv) Plan mergers, acquisitions and spinoffs
- (8e) Advise plan sponsors on accounting costs and disclosures for their retirement plans.

### Sources:

DA-148-13: Mergers and Acquisitions: Due Diligence of Retirement Plans

DA-145-13: Acquiring a U.S. Operation—A Primer

DA-161-16: Pension Issues in Mergers & Acquisitions

DA-814-16: Accounting for Plan Splits & Plan Mergers under U.S. GAAP

### Commentary on Question:

*The purpose of this question is to test candidates' knowledge regarding the process/procedure and the accounting impact that relates to pension plan activities in the event of an acquisition and merger.*

*Part (a) of this question requires candidates to retrieve the list of items required to be collected when a company acquires another company which has an existing defined benefit pension plan.*

*Parts (b) of this question requires candidates to analyze the financial impact (i.e. accounting cost and disclosures) of Company A as a result of its acquisition of another company with an existing pension plan.*



## 5. Continued

*Part (c) of this question requires candidates to utilize their knowledge of merging two pension plans following an acquisition and identify the advantages and disadvantages of such action.*

*Part (d) of this question requires candidates to apply accounting principles related to merging the two pension plans.*

*Successful candidates described the accounting impact that relate to acquiring a company with a pension plan under (b) and separately described the accounting impact for the merging of the two plans in part (d), demonstrating an understanding of each separate event.*

### **Solution:**

- (a) List items that Company A should collect regarding Company B's DB pension plan as part of the due diligence process.

### **Commentary on Question:**

*It was not necessary to list all of the items below to receive full points for this part of the question. Candidates received full points if they identified at least 8 items.*

### **List of items that Company A should collect regarding Company B's DB pension plan:**

- Plan document, all amendments and board resolutions
- Current Summary of Plan Description (SPD). Prior SPDs used within the last 5 years
- Two most recent Form 5500s
- Two most recent PBGC filings
- Any PBGC notices during the past 5 full calendar years relating to the plan or from the plan sponsor with respect to any plan it sponsors
- Trust agreement and any amendments. Trustee's most recent financial statements
- Most recent IRS determination letter with respect to the plan
- Any pending determination letter request or other IRS issues with respect to the plan
- All investment manager agreements and agreements with other service providers
- All election forms and notices used with respect to the plan, and administrative procedure
- Most recent nondiscrimination testing prepared for the plan
- Financial statement disclosures

## 5. Continued

- Copy of QDRO procedure, forms and description of record keeping systems. List each DRO presently under review
- Extracts from any collective/union agreements that impact company-provided benefits or require the company to guarantee a level of benefit
- Investment, funding and governance policies

(b) Describe the pension accounting impact of the acquisition for Company A.

### **Commentary on Question:**

*Successful candidates identified at least three items below.*

### **Accounting Impact**

- In accounting for an acquisition, the acquirer records the funded status of the plans it is taking on, no unamortized amounts are carried over in acquisition accounting.
- Pension Benefit Obligation (PBO) of the acquired entity's plans is measured at the acquisition date using the acquirer's assumptions, and as such may differ from the seller's measurement of PBO.
- When taking on plan assets and liabilities in an acquisition, the PBO and Fair Value of Asset (FVA) to be received may need to be estimated pending (1) collection of data and programming to enable the new plan sponsor to value the plan using updated assumptions and (2) if the plan is being spun-out of a plan of the seller, the completion of the ERISA 4044 asset allocation, which can be a lengthy process.
- As a result of the above, adjustments may be needed when final information is received, which may require revision of prior period financial statements, if material, or may be treated as a change in accounting estimate and accounted for in the period the amounts are re-determined.
- ASC 715 requires a reconciliation of changes in the PBO and FVA from the preceding year end balance sheet date to the current year balance sheet date.
- There is no requirement to re-measure the acquirer's plan.

(c) Describe the advantages and disadvantages of merging the pension plans.

### **Commentary on Question:**

*Candidates received full points if both the advantages and disadvantages were listed. Since Company A sponsors an open defined benefit (DB) pension plan, Company B employees will enter Company A's DB plan and therefore employees from A and B will have the same future accruals. Credit was not given if a candidate's response contradicted this logic.*

## 5. Continued

### **Advantages of merging the plans:**

- Merging plans can reduce plan administration costs and streamline regulatory compliance obligations (i.e. one actuarial valuation, one quarterly contribution requirement instead of 2, one plan document and SPD to maintain, one 1099R, one funding notice mailing, etc.)
- By transferring the pension funds into a master trust arrangement for investment purposes, this ensures that all funds have consistent financial reporting and consistent investment management.
- Mergers are very attractive when one of the plans is underfunded and the other has excess funding. In certain situations, plan sponsors may be able to use the surplus in one plan to offset contributions to the other
- To the extent any participants are possibly covered by both plans, the participant would only need to be counted once for PBGC flat-rate premium purposes
- The variable rate premium of the combined plan may be lower than the individual variable rate premiums if one of the plans is limited by the per participant maximum or if the overfunding of one plan offsets the underfunding of the other
- Company A may be in the process of designing a uniform retirement package tailored to their new workforce that is consistent or similar across all employee groups (i.e. provide benefit accruals for employees in Company B under Company A's formula; modify the existing benefit formula for the ongoing pension plan to apply to all employees, etc.)

### **Disadvantages of merging the plans:**

- Disposition of surplus – if one of the plans is overfunded while the other plan is poorly funded, participants in the overfunded plan may be upset that “their surplus” is being shared with a poorly funded plan.
- Non-discrimination issues - the plan may experience different non-discrimination test results since employees from Company B may have different demographics than Company A.
- Employee sentiment issues – this may occur because prior company B employees may not understand the new Company A plan nor understand that their frozen Company B benefit is payable out of Company A's assets. This in turn can result in reduced productivity among those workers.
- Recent regulations have cast doubt over whether plan mergers described above continue to be legally permissible. Recent changes to Pension Protection Act (US) place new restrictions on asset transfers, including the requirement that any transfer involving an underfunded plan satisfy additional requirements to be prescribed.

## 5. Continued

- (d) Describe the accounting impact of merging the pension plans mid-year, including options for when the accounting impact may be measured.

### **Commentary on Question:**

*Successful candidates received full points only if they thoroughly discussed both the details of the accounting impact and timing options of when to reflect the post-merger plan.*

### **Accounting Impact**

- The following elements would be combined for the plans:
  - Fair value of assets
  - PBO
  - Unamortized gains/losses in AOCI
- Unamortized PSC would not be combined but would continue to be amortized over the same periods as before the combination.
- The minimum amortization of the aggregate net gain or loss included in AOCI shall reflect the average remaining service period of the combined employee group.
- In the event one plan uses a smoothed asset value as its market-related value of plan assets (MRVA), and the other uses fair value or a different smoothed value, auditors are likely to require that the more preferable of the two methods be used for the combined plan. For examples:
  - Plan A used a smoothed value and Plan B used FVA, the preferred method would be used (i.e. FVA would be used for the combined plan)
  - Plan A and B both used the same MRVA method, the MRVA layers would be combined.
  - Plan A and Plan B used different MRVA methods, the shorter smoothing period would control. In this case, the plans should be measured as though the shorter smoothing period had always been used for both plans.
  - Accounting literature does not discuss these situations, and auditors may take a more lenient view, such as permitting the new method to be applied prospectively (but not retrospectively).
- Other
  - If gains and losses were being amortized for both existing plans over AFWL, the AFWL of the combined plan will be a composite of the AFWL previously used.
  - The same will occur if both plans had been amortizing over the AFL of inactive participants.
  - Because plan sponsors are required to have consistent accounting policies across their plans with respect to the definition of an “inactive participant”, and the threshold at which “all or almost all” participants are inactive, there should be no need to address which plan’s accounting policies survive with respect to these policies.

## 5. Continued

- However, the plan combination can clearly affect whether “all or almost all” participants are inactive, and the change can be in either direction. Beginning for the next fiscal year or an earlier re-measurement, a harmonization to either AFL or AFWL should occur.
- ASC 715 requires a reconciliation of changes in the PBO and FVA from the preceding year end balance sheet date to the current year balance sheet date. The beginning and end of year values would include both plans, and none of the lines would reflect a transfer.

### Timing

- A plan merger is not an event that triggers an interim re-measurement because there is no change in benefits provided, the benefit obligation or the fair value of plan assets as the result of the merger.
- A re-measurement may be triggered by other changes, like benefit changes to harmonize benefits.
- Employers are not precluded from performing an interim re-measurement in the case of a plan merger, but if they do so, they must do so for all plan mergers.
- Absent a re-measurement, the plans would continue to be treated as separate until the end of the fiscal year.
  - The combination has no immediate P&L or balance sheet impact
  - Net periodic benefit cost is measured on a single plan basis only from the date the plans are combined for financial accounting purposes

## 6. Learning Objectives:

9. The candidate will be able to apply the standards of practice and guides to professional conduct.

### Learning Outcomes:

- (9a) Apply the standards related to communications to plan sponsors and others with an interest in an actuary's results (i.e., participants, auditors etc.).
- (9b) Explain and apply the Guides to Professional Conduct.
- (9c) Explain and apply relevant qualification standards.
- (9d) Demonstrate compliance with requirements regarding the actuary's responsibilities to the participants, plan sponsors, etc.
- (9e) Explain and apply all of the applicable standards of practice related to valuing retirement obligations.
- (9f) Recognize situations and actions that violate or compromise Standards or the Guides to Professional Conduct.

### Sources:

DA-139-15: ASOP 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

DA-806-13: ASOP 21 - Responding to or Assisting Auditors or Examiners in Connection with Financial Statements

AAA Code of Professional Conduct

### Commentary on Question:

*The purpose of the question was to test whether candidates could apply the ASOPs to determine how an actuary violated the Code of Professional Conduct under a specific situation. The candidate was asked to use the ASOPs to determine the appropriate actions that the actuary should have followed in order to remain in compliance with the ASOPs.*

*In part (a), successful candidates were able to connect the actuary's violation with each particular Precept. Candidates did not receive full points if they merely stated that, "the actuary violated Precept ##." The candidate was responsible for connecting the description of the Precept to the actuary's violations.*

*In part (b), successful candidates listed responsibilities that were related to ASOP 21, summarizing the signing actuary's appropriate responsibility to the auditor.*

## 6. Continued

*In part (c), candidates were expected to provide a list of disclosure requirements pertaining to demographic assumptions in an actuarial report, rather than simply providing a list of demographic assumptions that would appear in a report. Successful candidates provided a complete description of the disclosure requirements as they related to demographic assumptions.*

### **Solution:**

- (a) Explain the way(s) in which the signing actuary violated the American Academy of Actuaries Code of Professional Conduct.
- Potential Precept 1 violation as the actuary can be seen as not operating with integrity and competence by declining to respond to Company LMN’s auditor.
  - Precept 3 violation:
    - ASOP 21 violated due to lack of cooperation with auditor. The actuary should have responded to the auditor’s request.
    - Potential ASOP 41 (Actuarial Communications) violation due to incomplete disclosures included in the actuarial report (section 4 of ASOP 41)
  - Potential Precept 4 violation (Communications and Disclosure):
    - “An Actuary who issues an Actuarial Communication shall take appropriate steps to ensure that the Actuarial Communication is clear and appropriate to the circumstances and its intended audience, and satisfies applicable standards of practice.” This precept could be perceived as being violated since the disclosures were deemed to be incomplete.
  - Precept 10 violation (Courtesy and Cooperation):
    - An Actuary shall perform Actuarial Services with courtesy and professional respect and shall cooperate with others in the Principal’s interest (in this particular case, Company LMN is the Principal)
    - The Actuary cannot refuse to consult or cooperate with the new actuary based upon unresolved compensation issues with the Principal unless such refusal is in accordance with a pre-existing agreement with the Principal (Annotation 10-5)
- (b) Summarize the signing actuary’s responsibility as the Responding Actuary under Actuarial Standard of Practice No. 21.

## 6. Continued

- Request for Information – the actuary should be appropriately responsive to the auditor’s reasonable requests.
- Data, Assumptions and Methods – the actuary should be prepared to discuss with the auditor the following items based on existing documents:
  - Data used
  - The source of prescribed assumptions, if any
  - The method used
  - The basis for assumptions that are not prescribed assumptions
- Environmental Considerations – the actuary should be ready to discuss with the auditor known circumstances that, in the actuary’s professional judgment, had a significant effect on the preparation of those elements of the financial statement for which the actuary is the responding actuary. Examples may include:
  - Change in operating environment
  - Trend in experience
  - Plan changes and changes in product or demographics mix
  - Changes in the entity’s method, policies, or procedures, or in statutory valuation bases, and
  - Compliance with relevant new or revised accounting rules, laws and regulations, or other government promulgations.

(c) Describe the disclosures required in an actuarial report under applicable Actuarial Standards of Practice with respect to demographic assumptions.

- This refers to ASOP 35 - Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

Describe assumptions used in the report:

- Describe each **significant** demographic assumption
- Whether the assumption represents an estimate of future experience, the actuary's observation of the estimates inherent in market data, or a combination thereof.
- Any explicit adjustment made for adverse deviation or for valuing plan provisions that are difficult to measure.

Rationale for Assumptions – actuary should disclose the information and analysis used in selecting each demographic assumption that has a significant effect on the measurement.



## **6. Continued**

Changes in Assumptions:

- Changes in the significant demographic assumptions
- General effects in words or numerical data (qualitatively or quantitatively)

Changes in Circumstances after the measurement date that affect demographic assumptions selected as of the measurement date.

List and state the source of any prescribed assumptions or methods.

Additional Disclosures, only to be included if applicable:

- Reliance on other sources (and thereby disclaims responsibility)
- Material deviations from ASOP 35

## **7. Learning Objectives:**

6. The candidate will be able to analyze, synthesize and evaluate plans designed for executives or the highly paid.
7. The candidate will be able to analyze/synthesize the factors that go into selection of actuarial assumptions.

### **Learning Outcomes:**

- (6a) Given a specific context, synthesize, evaluate and apply principles and features of executive deferred compensation retirement plans.
- (6b) Given a specific context, apply principles and features of supplemental retirement plans.
- (7a) Evaluate appropriateness of current assumptions.
- (7e) Select demographic and economic assumptions appropriate for a projection valuation.

### **Sources:**

DA-156-15: Moving from a DB Executive Retirement Plan

Allen Chapter 14 11th Edition

DA-135-13: Towers Perrin, The Handbook of Executive Benefits, Chapter 15 (Golden Parachutes) pp. 238-244 only

DA-155-15: TW Executive Retirement Benefits 2013: Recent Action and Design Considerations

DA-802-13: Internal Revenue Code 409A and Nonqualified Plan Design Considerations

DA-803-13: Evaluating Financing Options for Nonqualified Benefit Plans

DA-139-15: ASOP 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

DA-140-15: ASOP 27, Selection of Economic Assumptions for Measuring Pension Obligations

## 7. Continued

### **Commentary on Question:**

*Commentary listed underneath question component.*

### **Solution:**

- (a) Describe issues your client should consider when designing and implementing the SRP.

### **Commentary on Question:**

*Part (a) of this question requires candidates to describe issues a client needs to consider. Successful candidates were able to demonstrate their understanding of issues related to SRPs from multiple different perspectives – including plan provisions, accounting, HR impact.*

- It is essential to first determine the company's and the plan's overall objectives in order to craft the most effective and value-driven benefit.
- Accounting considerations – will need to measure DB SERP accounting under GAAP
- Is company able to take on volatility of DB SERP liability? Liability will be subject to discount rates that change annually
- For public companies, how will expense impact earnings per share? How will SERP impact proxy disclosure?
- Review employment agreement to see if additional SERP benefit if change in control (that is, if company taken over and executive is terminated)
- Tax considerations: Need to consider deductibility of employer contributions and the taxation of contributions and benefits to executive at the time of retirement
- Coordination with broad-based plans – The company already has a broad based plan. How should the SERP coordinate with the broad-based plan? Will it replace limited compensation using the same formula as the qualified formula? Or will the gross SERP target a specific percentage of final average earnings and then be reduced with the qualified plan formula and any other company provided benefits (ie, employer provided DC benefit)?
- HR considerations: What do competitors provide for their executive? Will the SERP attract and retain a mid-career executive? What is desired replacement ratio? What will perception be from lay employees?

## 7. Continued

- Detailed plan provisions:
    - Eligibility (Is SRP for named, specific individuals or all individuals over compensation limit?)
    - Compensation definition – same as broad based plan? Include or exclude particular pay codes, such as bonus?
    - How will service be credited – from date of hire with company or from date promoted to specific executive level? Long service employees may view the plan as inequitable, especially if past service is not fully granted. Will service be capped at a specific amount?
    - Retirement age – apply golden handcuffs?
    - Vesting – apply longer vesting period since not subject to qualified plan rules –delay vesting until retirement eligible? Should vesting be accelerated if death or disability?
    - Form of benefit – allow same options as broad based plan or limit optional forms? Offer a lump sum provision? Consider 409A rules (US)
  - Funding considerations:
    - How will the plan be funded or financed: formally fund with irrevocable trust versus finance versus terminal funding, pay as you go.
    - Funding decision is affected by tax status of company
    - Affects benefit security for executive resulting in greater perceived value – need to consider if that is a desired goal for the company
    - If there is no pre-funding, company is choosing to push the responsibility for paying for today's benefits to future shareholders
- (b) Your client has asked you to perform a SRP liability forecast based on the assumptions used in the accounting valuation for the qualified pension plan.

Critique the proposed method of selecting assumptions.

No calculations required.

### **Commentary on Question:**

*Part (b) of the question requires candidates to critique the use of accounting valuation assumptions for the general plan in a liability forecast for the supplemental plan. Successful candidates were able to identify the difference in demographics between the two plans which drive different applicable assumptions and also identify different assumptions used for an accounting valuation versus a liability forecast.*

## 7. Continued

Assumptions for an executive group might very well differ from those used for rank-and-file employees:

- Future salary growth – higher salary increase for executives might be expected. Consider whether bonus is part of SERP plan compensation and whether to have a salary scale for the base salary and a separate bonus assumption.
- Turnover – executive less likely to terminate due to golden handcuffs
- Retirement– SERP likely has a different unreduced retirement age than qualified plan and SERP assumption should reflect SERP provisions.
- ASOP 35: Retirement/termination assumption should take into account the following, which are different between executives and the general staff population: occupation (i.e., if company a blue collar industry, would want to use White Collar table for executives), plan design/provisions (eligibility, vesting, early retirement)
- ASOP 27: Economic assumptions – (Salary scale as described above). Discount rate for SERP should reflect SERP benefit payments, rather than developed based based on qualified plan's benefit payments
- Depending on the plan provisions, the assumptions required might not be exactly the same. For example, if the basic plan does not provide dual normal form but SERP does, proportion married and spousal age difference will be needed for a SERP valuation

While using accounting assumptions may provide a quick ball park for a forecast, assumptions should be trued up to be more realistic to forecast a more accurate cost for accounting impact. In addition, a separate forecast for the impact on company cash flow when executive retires should also be considered. It should also be noted that using qualified plan's assumptions method to measure SERP liability forecast is used often for small plans without enough experience to justify other assumptions and when the executive population is similar to the rank & file demographics.

## 8. Learning Objectives:

2. The candidate will understand the impact of the regulatory environment on plan design.

### Learning Outcomes:

- (2a) Explain and apply restrictions on plan design features to a proposed plan design.

### Sources:

DA-160-16: OECD Pensions Outlook 2014

DA-114-13: Risk Management and Public Plan Retirement Systems

### Commentary on Question:

*This question tested candidates' understanding of the differences between Pay-as-you-go and Funded private pension systems, and how risks associated with population aging, poor financial market returns and low interest rates impact the two pension systems.*

*Successful candidates explained how each condition impacts each pension system, demonstrated an understanding of the differences between Pay-as-you-go public pension systems and Funded private pension systems and provided/described policy actions to help improve financial sustainability of public benefit pension systems.*

### Solution:

- (a) Explain how each of these conditions impact:
  - (i) Pay-as-you-go public pension systems
  - (ii) Funded private pension systems

#### **Population aging:**

Population aging happens through both increased longevity rates and lower fertility rates.

- (i) Pay-as-you-go public pension systems:
  - Pay-as-you-go public pension systems are funded through resources generated by the working population. Lower fertility and thus a shrinking workforce will result in fewer workers per retired person to fund the benefits paid by these plans.
  - Increased longevity (higher life expectancy) means that retirees collect benefits for longer periods of time which results in increasing the cost of the plan.
  - Increased life expectancy increases the cost of indexing provisions that are common in public pension systems.

## 8. Continued

- As benefits under public pension systems are generous with their indexation, their large retirement benefits to compensate for the lower pay and lack of other compensation, and the fact that many public employees are not covered by Social Security, the cost associated with longevity risk is much more significant for pay-as-you-go public pension systems.

(ii) Funded private pension systems:

- As opposed to Pay-as-you-go public pension systems, funded private pension systems are not as impacted by lower fertility rates. If the plan is properly funded, the decrease in the workforce should not directly have an impact on the plan.
- Increased longevity (higher life expectancy) means that retirees collect benefits for longer periods of time which results in increasing the cost of the plan.
- Financial instruments are needed to facilitate the management of longevity risk which funded private pension systems are exposed to.
- Increased life expectancy increases the cost of indexing provisions that can be offered in funded private pension systems.
- Increased longevity also increases calculated liabilities for funded DB plans as new mortality tables are published, which impacts the cash cost of the plan

**Poor financial market returns**

(i) Pay-as-you-go public pension systems:

- As the plans are not pre-funded and hence, there are no assets invested as part of the plans, poor financial market returns should not really impact pay-as-you-go public pension systems.
- At times of financial stress, government tax revenues are reduced, which directly impacts these plans as taxes are their main source of funding.

(ii) Funded private pension systems:

- Poor financial market returns affect pre-funded plans by reducing asset returns and thus deteriorating the funded position of the plan. In addition, for privately sponsored plans, it affects the employer's ability to make contributions.

## 8. Continued

### Low interest rates

- (i) Pay-as-you-go public pension systems:
    - Traditional pay-as-you-go pension plans' liabilities are valued with expected long term returns. As a result, low interest rates have no direct impact on the liabilities. However, low interest rates result in higher lump sum values paid to plan members (if that payment option is offered).
  - (ii) Funded private pension systems:
    - Low interest rates generally increase funded defined benefit plans' liabilities. In addition, it will also increase the lump sum values paid to plan members (if that payment option is offered).
- (b) Describe possible policy actions to help improve financial sustainability of public defined benefit pension systems.
- Nominal benefit cuts
  - Increase taxes on pension income
  - Increase contributions to public systems
  - Reduce or defer indexation of retirement benefits
  - Increase the retirement ages and/or index future retirement ages to increase longevity
  - Curb administration costs of the systems
  - Incentivize working longer
  - Use de-risking strategies such as annuity purchase, LDI, etc.



## 9. Learning Objectives:

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.
2. The candidate will understand the impact of the regulatory environment on plan design.

### Learning Outcomes:

- (1a) Describe the structure of the following plans:
  - (a) Traditional defined benefit plans
  - (b) Defined contribution and savings plans
  - (c) Hybrid Plans
  - (d) Retiree Health plans
- (2a) Explain and apply restrictions on plan design features to a proposed plan design.
- (2e) Understand conflicts between regulation and design objectives and recommend alternatives.

### Sources:

Retirement plans – 401(k)s, IRAs and Other Deferred Compensation Approaches, Allen, 11th Edition; chapters 6 and 8

### Commentary on Question:

*This question was testing candidate's ability to determine an acceptable plan design for defined contribution and savings plans by balancing regulatory requirements along with features desired by a Company's employees and Board of Directors. Candidates were also tested on their ability to apply various IRS rules associated with 401(k) and Profit Sharing Plans (PSP).*

### Solution:

- (a) Recommend changes to the features proposed by the Board of Directors and employees, taking into account IRS rules with respect to:
  - (i) Contribution requirements for PSPs
  - (ii) Coverage requirements for PSPs
  - (iii) Elective deferral limitations for 401(k) plans
  - (iv) Withdrawal provisions for 401(k) plans

Justify your response.

## 9. Continued

### **Commentary on Question:**

*Candidates received full credit for recommending changes that took into account all four of the considerations listed in the question. Partial credit was granted to candidates who recommended a change but did not connect it to an IRS rule or who recommended changes to one of the four considerations listed in the question. Candidates should recognize that a PSP can follow 3 different approaches (current, deferred or combined) and each approach could serve as an attractive plan design to satisfy one of the features suggested by the employees.*

- (i) Company ABC needs to demonstrate that the PSP has been established for the exclusive benefit of their employees and beneficiaries.

The contribution allocation methodology will need to take into account the following features:

- Plan cannot discriminate in favor of highly compensated employees (coverage requirements of IRC Section 410(b) must be met)
- Maximum participation requirement allowed by the IRS is 21&1
- The IRS does not require a plan to include a definite contribution formula, but a definite allocation formula needs to be established. Hence, Company ABC has some flexibility with regards to the level and frequency of contributions, however, the allocation methodology needs to be ‘set in stone.’

### Recommended Change:

- A definite allocation methodology can be established for the PSP that is different for hourly vs. salaried employees, and also weighted based on age and service. However, the allocation methodology cannot discriminate in favor of HCEs and should be established such that coverage requirements associated with IRC section 410(b) will not be difficult to pass.
  - Company ABC should also consider designing a formula that will be easier to administer.
- (ii) If Company ABC chooses not to include a definite predetermined contribution formula, regulations require that substantial and recurring contributions are made if the requirement of plan permanency is to be met.

## 9. Continued

### Recommended Change:

- In comparing the minimum profit margin (6%) to expected profit margins in the future (3% - 7%), ABC may have difficulty being able to justify that contributions will be substantial and recurring. Contributions may not be deemed substantial and recurring if the minimum profit margin level is too high. Recommend setting a lower minimum profit margin such that contributions will be considered substantial and recurring based on historical experience and future expectations.

(iii)

- All CODAs qualified under IRC Section 401(k) are subject to an elective employee deferral limit that is indexed each year based on changes in the CPI. Therefore, the group of employees wishing to defer a large percentage of their earnings cannot defer an amount larger than the employee deferral limit for that particular year.
- Catch up contributions exist for over age 50 participants.

### Recommended Change:

- PSPs can follow 3 different approaches (current, deferred or combined). The current approach may favor those employees who indicated they wished to withdraw a portion of their 401(k) account while actively employed. The deferred approach will favor those participants wanting to defer a larger percentage of their earnings.

(iv)

Unlike PSPs that permit employees to withdraw a portion of their vested account balance while employed, in-service withdrawals are very limited under a CODA.

- Elective distributions may only be distributable upon death, disability, separation from service, plan termination, or certain sales of business by the employer.
- Distributions are not permitted until the employee has attained age 59 ½.
- Distributions are only permitted before age 59 ½ in the case of hardship.
- The amount available for hardship withdrawals is limited to the amount of the elective contributions, and investment income can only be included to the extent it was earned prior to December 31, 1988 (for calendar year plans).
- Safe harbor contributions are also subject to the withdrawal restrictions described in the bullet point above.

## 9. Continued

- If employer contributions have been included in the ADP test, then these contributions, as well as any investment income earned on these contributions, are available for hardship withdrawals only to the extent that they were made or earned before the end of the last plan year ending before July 1, 1989.

### Recommended Change:

- Since PSPs have much more lenient withdrawal provisions compared to the 401(k) plan, the PSP can include a provision to permit participants to withdraw a portion of their benefit while employed.
  - This provision will provide employees with greater flexibility in terms of being able to withdraw from their PSP without having to satisfy the stringent withdrawal provisions associated with 401(k) plans (i.e. – demonstrating financial hardship, disability, separation from service, etc.).
  - PSPs can follow 3 different approaches (current, deferred or combined). The current approach may favor those employees who indicated they wished to withdraw a portion of their 401(k) account while actively employed.
- (b) Recommend four plan design features to help Company ABC pass the Actual Contribution Percentage (ACP) test.

Justify your response.

### Commentary on Question:

*To receive full credit, candidates were required to identify plan design features associated with changing the allocation of PSP contributions and 401(k) employer-matching contributions and to justify how each feature would help the company pass the ACP test. Candidates who did not provide justification received partial credit. Points were awarded for describing the ACP test and the requirements that need to be satisfied in order to pass the test.*

1. Design the plan such that Company ABC has the option of making additional qualified matching contributions (QMACs) or qualified non-elective contributions (QNECs) at the end of the plan year such that the plan will be in automatic compliance (i.e. – make additional QNECs to NHCE's to increase the NHCE actual deferral percentage).
2. Include plan design features that maximize NHCE participation, such as higher employer-matching contributions for lower pay levels.

## 9. Continued

3. Impose maximum deferral amounts to limit deferral amounts (particularly from HCEs) and improve ABC's chances of passing the ACP test
  4. Impose a mandatory minimum deferral percentage from all participating employees.
  5. Introduce an automatic enrollment requirement (since the ACP for a non-participating but eligible employee is 0%).
  6. Include a provision allowing Company ABC to adjust prospective deferrals if the plan is in danger of failing to pass the test.
  7. Determine contribution amounts in advance prior to the beginning of the plan year such that the test will be satisfied, and once established, provide contribution flexibility only to the extent that the test will continue to be satisfied (i.e. – providing NHCEs with the option of increasing their employee deferral amounts).
- (c) Explain how each of the four features from part (b) conflict with the features proposed by the Board of Directors and employees.

### **Commentary on Question:**

*Candidates who received the most points on this part of the question were able to determine how the plan design features listed in part b) conflicted with several of the features desired by both the employees and Board of Directors.*

1. Additional QNECs or QMACs may violate the employer's contribution allocation methodology. For example, a higher employer matching contribution may be required to be made to hourly employees or low-service employees.
2. In addition to violating the employer's contribution allocation methodology, Company ABC may run into employee sentiment issues if higher employer-matching contributions are being made towards lower paid employees.
3. The older group of employees wishing to defer a large percentage of their earnings will be further limited by Company ABC's maximum deferral amount (in addition to IRC Section 401(k)'s maximum deferral amount).

## 9. Continued

4. Employees wishing to withdraw a portion of their 401(k) account while employed are more likely to defer a lower percentage of their earnings. Imposing minimum deferral percentages may discourage these employees from participating in the 401(k) account, making it more difficult for Company ABC to pass the ACP test (since the deferral percentage for a non-participating but eligible employee is 0%).
5. If an automatic enrollment requirement is implemented, employees who otherwise likely would not have participated in the plan are more likely to take withdrawals from their 401(k) account. A large number of employees falling into this situation can create an administrative burden on the plan, which can significantly increase administration costs associated with the 401(k) plan.
6. In addition to violating the employer's contribution allocation methodology, employee sentiment issues will likely arise, particularly from HCEs, if prospective deferral amounts are adjusted downward.
7. Employees may not be satisfied with contribution amounts being pre-determined prior to the beginning of the plan year, especially for those employees wishing to defer a large percentage of their earnings. Employees who wish to withdraw a portion of their 401(k) account while employed may be currently under financial hardship and are unable to defer the pre-determined contribution amounts, which can reduce NHCE participation and increase the likelihood of failing the ACP test.

## 10. Learning Objectives:

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.
3. Candidate will be able to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

### Learning Outcomes:

Given a plan type, explain the relevance, risks and range of plan features including the following:

- (a) Plan eligibility requirements
  - (b) Benefit eligibility requirements, accrual, vesting
  - (c) Benefit/contribution formula, including the methods of integration with government-provided benefits
  - (d) Payment options and associated adjustments to the amount of benefit
  - (e) Ancillary benefits
  - (f) Benefit subsidies and their value, vest or non-vested
  - (g) Participant investment options
  - (h) Required and optional employee contributions
  - (i) Phased retirement and DROP plans
- (3a) Identify risks face by retirees and the elderly.
- (3c) Evaluate benefit adequacy and measure replacement income for members of a particular plan given other sources of retirement income.
- (3d) Propose ways in which retirement plans and retiree health plans can manage the range of risks faced by plan participants and retirees.

### Sources:

DA-123-13: Replacement Ratio Study – A Measurement Tool for Retirement Planning

DA-151-14: The Real Deal: 2012 Retirement Income Adequacy at Large Companies, Highlights

The Next Evolution in Defined Contribution Retirement Plan Design

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a) Describe the risks that impact an employee's ability to generate adequate retirement income through a defined contribution plan.

## 10. Continued

### **Commentary on Question:**

*Successful candidates listed and described the risks. Other applicable responses not shown below were awarded points.*

- Longevity Risk - risk that retiree will live longer than expected
- Inflation risk – risk that future inflation may increase individual’s cost of living
- Market risk - risk that investment income from assets is lower than expected
- Health risk – risk that participant might have higher health expenses during retirement than budgeted for
- Property risk – risk that retiree has property expenses during retirement (e.g., expensive house repairs)
- Investment risk – risk that participants make poor investment decisions
- Interest rate risk – risk that interest rates are low upon retiring causing the cost of annuitizing to be high annuity
- Fraud risk – risk that participant may obtain misguided advice

- (b) Describe actions an employer can take to improve post-retirement income adequacy in a defined contribution plan.

### **Commentary on Question:**

*Successful candidates listed an action and justified the action by describing how it would increase improve post-retirement income adequacy. Other applicable responses not shown below were awarded points.*

- Adding automatic enrollment - ensures employees are saving for retirement
- Adding automatic escalation – helps employees save more than they otherwise might save
- Perform a back-sweep of eligible non-participants – captures employees that may not be saving
- Offer access to online investment advice – helps employees increase their financial knowledge, which in turns helps them make better investment decisions
- Offer a managed account option – helps prevent employees from making poor investment decisions
- Offer pre-mixed investment alternatives (such as target date funds) – helps prevent employees from making poor investment decisions
- Offer lifetime income options – helps mitigate longevity risk
- Match x% of employee contributions up to y% of pay – encourages employees to save more to get the company match; also increases the amount being contributed to employees’ accounts balances



## 11. Learning Objectives:

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.

### Learning Outcomes:

- (8e) Advise plan sponsors on accounting costs and disclosures for their retirement plans.
- (8f) Demonstrate the sensitivity of financial measures to given changes in plan design.

### Sources:

DA-804-13: FASB Accounting Standards Codification Topic 715

DA-143-13: Comparison of IAS 19, Rev. 2011 with FASB ASC 715

Duration and Convexity for Pension Liabilities, Pension Section News Issue #81  
September 2013

### Commentary on Question:

*Candidates who performed well on part (a) of this question considered several factors of each accounting standard not just points of difference.*

*Part (b) was testing the knowledge and understanding of curtailments. Successful candidates correctly identified the date the curtailment should be reflected and provided supporting reasoning. Successful candidates also recognized that the liability needed to be calculated at the time of the remeasurement, utilizing duration a way to calculation the change in discount rate. Credit was given for reasonable approaches with a complete description, showing all work of the detailed calculations.*

### Solution:

- (a) Describe the accounting treatment of this event under International Accounting Standard 19 and U.S. Accounting Standard ASC 715.

No calculations required.

Event type

- Event is a curtailment under both standards
- Under ASC 715 – curtailment defined as event that significantly reduces employees' expected years of future service or eliminates future accrual of future defined benefits for a significant number of employees, whereas under IAS 19 a curtailment is defined as a significant reduction in the number of employees

## 11. Continued

### Timing

- Recognized on 9/30/2016 under both standards
- Reason for timing under ASC 715 is due do curtailment gain recognition when employees terminate or plan amended. Reason for timing under IAS 19 is recognition at earlier of curtailment date or termination benefits recognized
- If curtailment was a loss, ASC 715 would recognize at 3/31/2016 and IAS 19 would recognize at 9/30/2016

### Interim remeasurement

- Under ASC 715, liability remeasured as of 9/30/2016 using updated discount rate
- Under IAS 19, beginning of year discount rate used for interim remeasurements

### Gain/Loss

- Gain/loss amortization only under ASC 715
- Amortize using 10% corridor
- No amortization under IAS19

### Curtailment

- Under IAS 19, full change in liability is recognized in expense as a part of past service cost, but ASC 715 has several steps.
- Under ASC 715:
  - i. Decrease in liability used to offset unrecognized loss of the plan.
  - ii. Pro rata portion of unrecognized prior service cost recognized in expense
  - iii. Curtailment charge shown as separate line item, not a part of service cost

- (b) Calculate the revised 2016 Net Periodic Benefit Cost under ASC 715.

Show all work.

Since, as a result of closure, the remaining future service of active participants was reduced by 35%, there will be a curtailment.

The reduction in Accumulated Postretirement Benefit Obligation (APBO) is \$1,000,000 which is significantly greater than the current loss of the plan and the current prior service cost of the plan, so the effect of the closure will be a curtailment gain.

If the curtailment event is a gain, it shall be recognized in the earnings when the event occurs (when the related employees were terminated).

## 11. Continued

The curtailment event should be recognized on September 30, 2016.

APBO rollforward to 9/30/2016 – (all components needed for the rollforward are from the case study)

APBO as of 1/1/2016 = 3,128,517

$\frac{3}{4}$  of 2016 Service Cost = 81,594

$\frac{3}{4}$  of 2016 Interest Cost = 90,206

$\frac{3}{4}$  of 2016 Expected Benefit Payments = 45,000

9/30/2016 Rollforward APBO = 3,128,517+81,594+90,206-45,000 = 3,255,317

Prior Service rollforward to 9/30/2016 – (all components needed for the rollforward are from the case study)

Prior Service Cost as of 1/1/2016 = 6,590

$\frac{3}{4}$  of 2016 Prior Service Cost Amortization = 2,012

9/30/2016 Rollforward Prior Service Cost = 6,590-2,012 = 4,578

(Gain)/Loss rollforward to 9/30/2016 – (all components needed for the rollforward are from the case study)

(Gain)/Loss as of 1/1/2016 = 782,724

$\frac{3}{4}$  of 2016 (Gain)/Loss Amortization = 35,444

9/30/2016 Rollforward (Gain)/Loss = 782,724-35,444 = 747,280

The APBO should be remeasured as of 9/30/2016 to reflect a discount rate of 4.25%.

The plan's duration can be used to calculate the change in APBO due to a change in the discount rate.

Duration of the plan = 13

9/30/2016 Rollforward APBO = 3,255,317

Discount Change from 3.75% to 4.25% = Increase of 0.50%

APBO Adjustment based on Duration = 13% \* 3,255,317 \* (-0.5) = (211,596)

9/30/2016 Remeasured APBO at 4.25% = 3,255,317+(211,596) = 3,043,721

9/30/2016 (Gain)/Loss adjusted as a result of the remeasurement due to change in discount rate.

9/30/2016 Rollforward (Gain)/Loss = 747,280

APBO Adjustment based on Duration = (211,596)

9/30/2016 Remeasured (Gain)/Loss at 4.25% = 747,280+(211,596) = 535,684

No change in 9/30/2016 Prior Service Cost as a result of the remeasurement.

## 11. Continued

The prior service cost associated with years of service no longer expected to be rendered as a result of curtailment should be recognized immediately.

9/30/2016 Prior Service Cost = 4,578

% Reduction in remaining service to full eligibility = 35%

Portion of prior service cost recognized immediately in expense =  $4,578 * 35\% = 1,602$

The APBO gain of \$1,000,000 will reduce the existing loss of \$535,684.

	9/30/2016 Remeasurement	Effect of Curtail	9/30/2016 After Curtail
APBO	(3,043,721)	1,000,000	(2,043,721)
Assets	0	0	-
Funded Status	(3,043,721)	1,000,000	(2,043,721)
Prior Service Cost/(Credit)	4,578	(1,602)	2,976
(Gain)/Loss	535,684	(535,684)	-
A/(P)	(2,503,459)	462,714	(2,040,745)

Service cost for the remainder of the year following the curtailment  
 $= 25,000 * ((1+.0425)/4) = 25,266$

Interest cost for the remainder of the year following the curtailment  
 $= (2,043,721 - 15,000/2) * .0425 * .25 = 21,635$   
 (15,000 is 1/4 of 2016 expected benefit payment from case study)

Amortization of Prior Service Cost for the remainder of the year following the curtailment

1/1/2016 Prior Service Cost = 6,590 (from case study)

2016 Amortization of Prior Service Cost = 2,682 (from case study)

Amortization of Prior Service Cost for the remainder of the year =  
 $2,976 / [(6,590/2,682) - 0.75] = 436$  (or  $\$2,682 * (1 - 35\%) * .25$ )

## 11. Continued

	2016 Expense	Jan – Sept	Oct - Dec	Revised 2016 expense
Service Cost	108,792	81,594	25,266	106,860
Interest Cost	120,274	90,206	21,635	111,841
Expected Return on Assets	-	-	-	-
Amortization of PSC	2,682	2,012	436	2,448
Amortization (G)/L	47,259	35,444	-	35,444
Total	279,007	209,256	47,337	256,593
Curtailment Charge/(Income)			(462,714)	(462,714)
Total Expense/(Income)			(415,377)	(206,121)

## **12. Learning Objectives:**

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.
4. The candidate will be able to evaluate plan design risks faced by sponsors of retirement plans and retiree health plans.
9. The candidate will be able to apply the standards of practice and guides to professional conduct.

### **Learning Outcomes:**

- (1b) Given a plan type, explain the relevance, risks and range of plan features including the following:
  - (a) Plan eligibility requirements
  - (b) Benefit eligibility requirements, accrual, vesting
  - (c) Benefit/contribution formula, including the methods of integration with government-provided benefits
  - (d) Payment options and associated adjustments to the amount of benefit
  - (e) Ancillary benefits
  - (f) Benefit subsidies and their value, vest or non-vested
  - (g) Participant investment options
  - (h) Required and optional employee contributions
  - (i) Phased retirement and DROP plans
- (4a) Identify how plan features, temporary or permanent, can adversely affect the plans sponsor.
- (4b) Assess the risk from options offered, including:
  - (i) Phased retirement
  - (ii) Postponed retirement
  - (iii) Early Retirement
  - (iv) Option factors
  - (v) Embedded options
  - (vi) Portability options
- (9b) Explain and apply the Guides to Professional Conduct.
- (9c) Explain and apply relevant qualification standards.
- (9e) Explain and apply all of the applicable standards of practice related to valuing retirement obligations.

## 12. Continued

### Sources:

Embedded Options and Pension Plans, SOA Pension Section

DA-142-15: ASOP 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions

### Commentary on Question:

*Commentary underneath question component.*

### Solution:

- (a) Describe the considerations under Actuarial Standard of Practice No. 4 when measuring plan provisions that are difficult to measure.

#### Commentary on Question:

*In addition to identifying alternative valuation procedures such as stochastic modeling, candidates were required to identify plan provisions that are difficult to value and to describe the use of professional judgment and requirement for appropriate disclosures.*

- There are a number of plan provisions that are difficult to value using traditional techniques, such as the following: gain sharing provisions, floor-offset provisions, indexed provisions subject to a floor or ceiling, low frequency/high magnitude events like plant shutdown benefits
  - The actuary should consider using alternative valuation procedures (i.e., other than traditional single-point best estimate procedures)
  - The alternative valuation procedures include stochastic modeling, option pricing techniques or deterministic procedures with adjusted assumptions to account for valuation experience
  - The actuary should use professional judgment based on purpose of the measurement
  - The actuary should disclose the approach with any of the plan provisions that are difficult to value
- (b) Describe the risks faced by the plan sponsor and plan participants under each option.

#### Commentary on Question:

*Successful candidates were able to describe the risks faced by both the plan sponsor and plan participants.*

## 12. Continued

### ***Plan Sponsor Perspective:***

- Lump sum option exposes sponsor to anti-selection risk, because participants taking lump sums when in ill health or when interest rates are low
- Lump sum option exposes sponsor to liquidity risk. The plan sponsor must have liquid assets to pay lump sums when elected and this could impact other cash flow needs.
- Lump sum option protects sponsor from longevity risk to the extent utilized
- COL increases exacerbate the plans longevity risk by extending the tail of the benefit payment distribution
  - COL increases change the risk reward proposition related to taking investment risk as gains must be shared with the participant
- Floor offset plans expose the plan sponsor to investment risk in that when DC plan investments do not perform the DB floor will kick-in – in addition to the traditional investment risk of pre-funding the DB benefit
- Floor offset plans may limit the plan sponsors exposure to longevity risk by moving some of the retirement benefit to a DC plan

### ***Plan Participant Perspective:***

- As the lump sum is optional it is hard to argue this exposes the participant to additional risks
- The participants intended retirement date may coincide with a time of high interest rates and low lump sum values
- If the participant takes a lump sum they will need to invest it throughout their retirement exposing them to investment risk and longevity risk
- A COL increase provides some inflation protection that is not present in an otherwise additional pension benefit, although the COLA is not tied to CPI so is not a pure inflation hedge
- The DB floor provides some protection against catastrophic investment outcomes
- Additional investment risk is present with the DC portion of the benefit

- (c) Recommend a methodology to value Option 2.

Justify your response.

### **Commentary on Question:**

*The solution below describes the methodology to value Option 2 as a call option. Other valid methodologies were also accepted. Candidates were granted partial marks for recommending a valid methodology to value Option 2, and full marks for justifying their choice of methodology.*



## 12. Continued

The following answer is just a sample answer, but any valid method is acceptable.

- This plan provision can be valued like a call option.
- Call options “pay off” only when the actual return exceeds a hurdle rate (strike price).
- There are closed-form option-pricing formulas that may be used to value call options.
- The formula requires assumptions about the risk-free rate of return, the volatility of the underlying investment, among others
- The riskier the underlying investments the more value will be placed on the call option.