

RET FRC Model Solutions

Spring 2014

1. Learning Objectives:

1. The candidate will understand how to analyze data for quality and appropriateness.
5. The candidate will understand how to evaluate and apply regulatory policies and restrictions for registered retirement plans.
7. The candidate will understand how to apply the standards of practice and guides to professional conduct.

Learning Outcomes:

- (1a) Identify data needed.
- (1b) Assess data quality.
- (1c) Make and/or recommend appropriate assumptions where data cannot be provided.
- (1d) Comply with regulatory and professional standards pertaining to data quality
- (5d) The candidate will be able to describe and apply regulation pertaining to plan termination/wind-up.
- (7e) Explain and apply all of the applicable standards of practice related to valuing pension benefits.

Sources:

R-D130-09: ASOP 23 Data Quality, Only - Freeze and SN All ASOPS

R-C607-07: Filing Requirements and Procedure on Full or partial Wind up of a pension Plan, Ontario Guideline (LO d)

R-D613-12: CIA CSOP 1000-1800, February 2011 (LO e)

R-D614-11: CIA Consolidated Standards of Practice - Practice Specific Standards for Pension Plans 3100-3500 December 2010

Commentary on Question:

Commentary listed underneath question component.

1. Continued

Solution:

- (a) Describe the considerations to ensure the appropriateness of data for wind-up purposes.

Commentary on Question:

The candidates were asked to describe considerations to ensure the appropriateness of data for wind-up purposes. Many candidates focused on elements applicable to ensure the appropriateness of data for a regular actuarial valuation and did not cover details specific to a wind-up such as the importance of having more precise data and the standard of materiality for data being more rigorous in a wind-up.

- The finality of wind up calls for the actuary to obtain precise membership data
 - The standard of materiality for data is more rigorous for calculating an individual benefit (such as in a pension plan wind-up) than for a valuation of a group benefits plan
 - Identify questionable data values
 - The data's internal consistency
 - The data's consistency with comparable prior period data
 - Example: comparison, for active members, of average age, average pensionable service and average eligibility service to the prior valuation data for reasonableness
 - The data's consistency with external comparable data
 - Example: comparison for retired members and beneficiaries of pension amounts provided in the data with information on trustee pensioner log
 - The data's consistency with the governing plan documents and policy forms
 - Example: comparison for terminated vested members of pension amounts provided in the data with actual calculation of pension amounts based on plan documents
 - The data's availability of independent confirmation
 - Make checks of reasonableness
- (b) Summarize the disclosure requirements for the March 31, 2014 wind-up actuarial report, as it relates to the membership data.

Commentary on Question:

The candidates were asked to summarize the disclosure requirements as it relates to the membership data in a wind-up actuarial report. Most candidates focused on disclosure requirements applicable for a regular actuarial valuation and did not cover details specific to a wind-up such as including contingency reserves in the wind-up valuation with respect to missing members, including a listing which details the amounts and term of payment of each member's benefits and including the commuted values used in the valuation whether or not the plan administrator was the calculator thereof.

1. Continued

- The report should include a reconciliation of plan membership from the valuation date of the last filed actuarial report to the effective date of the wind up
- A statement of opinion regarding membership data, which should usually be, “In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation”
- The actuary may, if the circumstances dictate, include contingency reserves in the wind-up valuation with respect to missing members if the actuary believes that additional members still have benefit entitlements under the pension plan but their membership information is missing.
- The reported membership data would include details of the amounts and term of payment of each member’s benefits
- Specifically including the commuted values used in the valuation whether or not the plan administrator was the calculator thereof
- Describe the tests applied to determine the sufficiency and reliability of the membership data for purposes of the work
- Describe the sources of membership data and the dates at which they were compiled
- Describe the membership data, including any assumptions made about missing membership data and including the detailed individual membership data
- The report should be detailed enough to enable another actuary to examine the reasonableness of the valuation

2. Learning Objectives:

2. The candidate will understand how to analyze/synthesize the factors that go into selection of actuarial assumptions for funding purposes.
7. The candidate will understand how to apply the standards of practice and guides to professional conduct.

Learning Outcomes:

- (2a) Describe and apply the techniques used in the development of economic assumptions for funding purposes.
- (2b) Evaluate and recommend appropriate assumptions for funding purposes.
- (2c) Evaluate actual experience, including comparisons to assumptions.
- (7e) Explain and apply all of the applicable standards of practice related to valuing pension benefits.
- (7f) Recognize situations and actions that violate or compromise Standards or the Guides to Professional Conduct.

Sources:

R-D117 -07, R-D112-10, R-D126-09

Commentary on Question:

The question tests the candidate's ability to prescribe valuation assumptions – an integral part of pension consulting practice. It also looks into challenges candidates may encounter in this process.

Solution:

- (a) Compare and contrast the considerations in setting the following assumptions for the going concern and hypothetical wind-up valuations:
 - (i) discount rate;
 - (ii) salary increase;
 - (iii) retirement scale; and
 - (iv) plan expenses.

Commentary on Question:

The key for this part of the question:

1. *Going concern assumptions are long-term, reflecting the on-going status of the plan*

2. Continued

2. *Hypothetical windup discount rates are prescribed cannot be changed by the clients*
3. *Hypothetical windup valuation assumes the plan terminates on the valuation date, and assumptions such as salary scale and retirement scale reflect this. Most candidates understood the implications of (1) and (2). A few people overlooked (3) and said instead the assumptions for hypothetical windup would be similar to going concern.*

Discount rate – Going Concern:

Generally represents long term conservative expectation of future fund rate of return, composed of:

- The **long term** expected investment return, obtained by using the real return of each major asset class, weighted by the plan's target asset allocation
- Expected Inflation

It may reflect a provision for expenses.

It may also incorporate a margin for adverse deviation.

It takes into consideration diversification and portfolio rebalancing effect.

If the funds or part of the funds are actively managed, the discount rate may reflect a provision for added value from active management, up to the addition investment management fees over a similar passively managed fund. It can also be constructed using other methods such as cashflow-matching or stochastic modelling

Discount rate – Hypothetical Windup:

Discount rates used for Hypothetical wind-up are prescribed by the CIA actuarial standards and provincial legislation. In a hypothetical plan windup, those that will be settled through annuity purchase will be valued using an interest rate that reflects the annuity purchase guidance in effect at the valuation date – CANSIM series V39062 plus an appropriate proxy at the valuation date as per the guidance's stipulation. Those that will be settled through commuted value will be valued using an interest rate in accordance with the Commuted Value standards as per the CIA – the CANSIM series with one month lag after the valuation date.

There will be select and ultimate rate.

The annuity Purchase guidance is based on quotes issued by insurance companies, coupled with data on group annuity pricing from actuarial consulting firms.

Candidates can also talk about the annuity purchase guidance that has the annuity spread to vary in relation to plan's duration or any other adjustment that may be in effect at the date of the exam.

Salary Scale – Going Concern:

It generally reflects the long term expectation and consists of the following three components – Inflation, economic growth and merit/promotion.

May use a single rate, or the following:

- Select and ultimate rates

2. Continued

- Separate scales for different employee groups
- Separate scales for different compensation elements

Consider current compensation practice and any anticipated changes in this practice.

Historical compensation increase and practices of the plan sponsor and other plan sponsors in the same industry or geographic area.

Salary Scale – Hypothetical Windup:

The increase for future years is not relevant, since hypothetical windup valuation assesses the plan's financial position as if it is going to be wind up as of the valuation date.

Retirement Scale – Going Concern:

- Applicable plan provisions that will affect timing and value of benefit payments eg. early retirement subsidies.
- Characteristics of the covered group
- Contingencies that give rise to the benefits
- Past experience study
- Any relevant factors that will alter future experience materially
- A set of decrements that vary with age/service, vs a single decrement
- Commencement dates of social programs or availability of other employer-provided benefits
- Level of materiality on liability and current service cost

Retirement Scale – Hypothetical Windup:

- Based on provincial legislation and CIA standards of practice.
- Generally age that maximized the value of the benefits

Plan Expenses – Going Concern:

- Reflects expectation of future ongoing expenses
- Whether the employer covers all or part of the expenses
- Whether to include implicitly in the discount rate or as a \$ amount in the current service cost
- Takes into account factors that affect expenses, such as number of members, plan complexity, etc.

Plan Expenses – Hypothetical Windup:

Allowance must generally be made for normal administrative, actuarial, legal and other costs which would be incurred if the plan were to be wound up. Excludes costs relating to the resolution of surplus or deficit issues

The amount may vary depending on: if the employer continues to operate after the wind up, and if part of the expense will be paid directly by the employer.

Takes into account factors that affect expenses, such as number of members, plan complexity, etc.

2. Continued

- (b) Critique the proposed changes in assumptions, taking into consideration professional standards of practice.

Commentary on Question:

Most candidates are able to identify that going concern assumptions are long-term in nature and cannot be adjusted based on data for one single year. However, few went on to analyze possible factors that could lead this short-term scenario to persist into the long-run, as well as implications from a disclosure perspective.

In general:

- The assumptions should be appropriate in aggregate and also independently reasonable unless the selection of assumptions that are not independently reasonable can be justified
- A reasonable assumption would reflect current conditions as of the calculation date but would not necessarily have to reflect current conditions persisting into the future.
- If the actuary does not take responsibility for an assumption, the actuary should so report. If the actuary considers it practical, useful and appropriate under the terms of the engagement to do so, the actuary should report the result of an alternative assumption.

The following are also acceptable:

- Objectivity: Professional services should be done without regard to another party that might impair the member's professional judgment or objectivity
- Actuaries must provide advice in accordance with the Standards of practice
- Must justify material departures from the standard of practice.
- If the actuary feels the selected assumption significantly conflicts with what he/she would consider reasonable then the actuary should disclose the conflict.
- Impact of past data
- Consider expected future experience vs. past experience
- Effect of anti – selection
- How related assumptions are calibrated.
- Existence of an acceptable range

Changing the discount rate to 7%

- Approaches for selecting discount rate according to the standard: The actuary may either
 - take into account the expected investment return on the assets of the pension plan at the calculation date and the expected investment policy after that date, or

2. Continued

- reflect the yields on fixed income investments, considering the expected future benefit payments of the pension plan and the circumstances of the work
- The going concern discount rate is based on the long term expected return of each of the asset class. Data for a single year is not sufficient to justify long term trend. Discount rate must be determined taking into account considerations discussed in part a)
- May need to consider the cause of such over-performance
 - If active management was employed and the additional expense associated with that
 - If there is a material change in the asset allocation
- If there is sufficient data to justify the additional return will be consistently and reliably earned over the long term, the actuary need to disclose that in the report

Changing the salary scale to 2%

- The data used to develop salary scale should include the following
 - Current comp practice and anticipated changes in comp practice
 - Historical comp increases of sponsor, industry, and sponsors in same area
 - Historical wage and productivity increase
- A salary freeze/0% salary increase in a single year does not generally warrant a change in the long term scale as it is not sufficient to justify that the same will apply to future years.
- Client may however have grounds to want to change the assumption if the freeze is expected to re-occur on a regular basis in the future or is expected to be followed by years of lower salary increases.
- May need to consider the following factors when changing the salary scale assumption:
 - Sponsor's compensation practice
 - Competitive factors – if the same salary freeze is adopted by the entire industry
 - If the freeze is due to collective bargaining and how long the freeze is imposed
 - Historical compensation volatility and if the current freeze is part of the volatile pattern
 - If this is a sign for potential expected plan freeze/plan termination

3. Learning Objectives:

5. The candidate will understand how to evaluate and apply regulatory policies and restrictions for registered retirement plans.
6. The candidate will understand how to apply the regulatory framework in the context of plan funding.

Learning Outcomes:

- (5a) The candidate will be able to describe and apply regulation pertaining to plan design.
- (6b) Evaluate funding restrictions imposed by regulations.

Sources:

Reference – Towers Watson 6, 7, 14, 16

Chapter 12 Morneau

Commentary on Question:

Candidates generally performed well on this question.

One area in which candidates could have improved is to discuss the Pension Adjustment rules in more detail, especially in regards to the DC Plan. In addition, some candidates did not explain that any contributions to a Group RRSP or TFSA are actually salary provided to the member that is directed towards the retirement vehicle in his or her behalf.

Solution:

Describe the tax implications of each of the three proposed new plan designs from both an employer and employee perspective.

DC Plan (EE Perspective)

- EE conts are tax-deductible
- Investment income is not taxed
- A PA is calculated
- The PA reduces the member's RRSP room in the following year
- $PA = ER \text{ conts} + EE \text{ conts}$
- $PA = \text{Non-vested forfeitures that are reallocated} + \text{Amount of surplus allocated (on conversion from DB to DC)}$
- Money can be transferred to another tax-deferred vehicle (e.g. RRSP, DPSP, RPP)

DC Plan (ER Perspective)

- ER Contributes 3% of base pay + match of employee contributions, all of which are tax deductible

DC Plan (Both)

- Max contribution (EE + ER) is the PA limit for the year

3. Continued

Group RRSP (EE Perspective)

- EE conts are tax-deductible
- Investment income is not taxed
- Cont limit is $A + B + C + D$
 - A = Unused cont room at end of previous year
 - B = lesser of 18% of earnings and PA for preceding year
 - C = PAR for the year
 - D = Net PSPA for the year
- Money can be transferred to another RRSP or RRIF (award points for mentioning that money can be transferred to any other tax-deferred vehicle)
- Withdrawals are allowed and taxed as income

Group RRSP (ER Perspective)

- “ER conts” are actually salary to the employee, which is then deposited into RRSP. Also, ER conts attract payroll taxes (CPP, EI, etc.)
- If the EE makes more than the max. earnings for payroll taxes (the YMPE), any additional “salary” that goes into the RRSP wouldn’t attract additional taxes

TFSA (EE Perspective)

- EE conts are not tax-deductible
- Investment income is not taxed
- Withdrawals are allowed and are not subject to tax
- Max contribution is \$5,000 per year, indexed (\$5,500 in 2013)
- TFSA withdrawals do not count as income for means-tested benefits
- Add'l - cont room accumulates

TFSA (ER Perspective)

- “ER conts” are actually salary to the employee, which is then deposited into TFSA

4. Learning Objectives:

3. The candidate will understand how to apply/synthesize the methods used to value pension benefits for various purposes.

Learning Outcomes:

- 3b) Perform periodic valuations of ongoing plans, calculating normal cost and actuarial liability, using a variety of cost methods

Sources:

Pension Mathematics for Actuaries, Anderson, Third Edition, 2006

Commentary on Question:

In general this question was answered very well. There was an error in the question for part B. Because there was no mortality, the deferred annuity factor to age 65 could be calculated by discounting the immediate age 65 factor. However, the deferred annuity factor provided did not match the calculation. Therefore, full points were awarded for students whether they used the annuity factor provided or calculated it themselves. Students that didn't do well were those that were not familiar with the entry age cost method.

Solution:

- (a) Calculate the accrued liability and normal cost as at January 1, 2013.

$w =$ age at plan entry

$j = 1.05/1.03 - 1$

$$\begin{aligned} PVFB &= 2.0\% \times \text{svc at 65} \times a_{65}^{(12)} \times 1.03^{(64-w)} \times 1.05^{-(65-w)} \\ &= 2.0\% \times 30 \times 12 \times 1.03^{(64-35)} \times 1.05^{-(65-35)} \\ &= 3.926 \end{aligned}$$

$$\begin{aligned} PVFS &= a_{30|j} \\ &= \frac{(1 - (1+j)^{-30}) \times (1+j)}{j} \\ &= 23.015 \end{aligned}$$

$$\frac{PVFB}{PVFS} = 3.926/23.015$$

$$\begin{aligned} PVFS & \\ &= 17.058\% \end{aligned}$$

$$\begin{aligned} NC &= 17.058\% \times 2013 \text{ Salary} \\ &= 17.058\% \times \$85,000 \\ &= 14,500 \end{aligned}$$

4. Continued

$$\begin{aligned}AL &= \text{Accumulated normal costs} \\ &= NC \times S_{10|j} \\ &= 14,500 \times 11.13265544 \\ &= 161,418\end{aligned}$$

- (b) Calculate the accrued liability as at January 1, 2014.

Commentary on Question:

Same as before regarding the age 65 annuity factor.

$$\begin{aligned}AL_{puc} &= AL = 2.0\% \times 90,000 \times 1.03^{(64-46)} \times 11 \times {}_{19}a_{46} \\ &= 2.0\% \times 90,000 \times 1.03^{(64-46)} \times 11 \times 4.6 \\ &= 155,058\end{aligned}$$

- (c) Calculate the change in liability by source during 2013.

Show all work.

Commentary on Question:

Writers could either calculate the salary gain loss first or the cost method change gain loss first. Although the answers differ, either method was awarded full points. The most common mistake was not calculating the expected liability correctly.

$$\begin{aligned}ExpAL_{at\ 1/1/2014} &= (AL + NC) \times (1+i) \\ &= (161,418 + 14,500) \times (1.05) \\ &= 184,714\end{aligned}$$

$$\begin{aligned}NC &= \frac{PVFB \times 2014\ Salary}{PVFS} \\ &= \frac{2.0\% \times svc\ at\ 65 \times a_{65}^{(12)} \times 1.03^{(64-w)} \times 1.05^{-(65-w)} \times 2014\ Salary}{a_{30|j}} \\ &= \frac{2.0\% \times 30 \times 12 \times 1.03^{(64-35)} \times 1.05^{-(65-35)} \times 90,000}{23.01527} \\ &= 15,353\end{aligned}$$

4. Continued

$$\begin{aligned}AL &= \text{Accumulated value of } NC \\ &= NC \times S_{11|j} \\ &= 15,353 \times 12.36824098 \\ &= 189,890\end{aligned}$$

$$\begin{aligned}\text{Salary Loss} &= 189,890 - 184,714 \\ &= 5,176\end{aligned}$$

$$\begin{aligned}\text{Cost method change Gain} &= 189,890 - 155,058 \\ &= 34,832\end{aligned}$$

5. Learning Objectives:

2. The candidate will understand how to analyze/synthesize the factors that go into selection of actuarial assumptions for funding purposes.
5. The candidate will understand how to evaluate and apply regulatory policies and restrictions for registered retirement plans.

Learning Outcomes:

- (2a) Describe and apply the techniques used in the development of economic assumptions for funding purposes.
- (5f) The candidate will be able to describe and apply regulation pertaining to plan merger or spin-off.

Sources:

R-D126-09 Actuarial Standard of Practice No. 27 – Selection of Economic Assumptions for Measuring Pension Obligations

R-C605-12: Asset Transfer Resulting from Sale of business

Commentary on Question:

In this question, candidates were asked to demonstrate their knowledge of:

- *the selection of assumptions to measure the pension obligations that are appropriate for the purpose of the valuation, and*
- *the amount of assets that can be transferred, as set out in the policy on asset transfer resulting from the sale of a business published by the Financial Services Commission of Ontario.*

A good answer includes (1) a critique of the proposed assumptions that are appropriate for a solvency valuation or for negotiation purposes, (2) calculating the asset transfer amount permitted by the policy on Asset Transfer Resulting from Sale of Business, and (3) a description of the financial impact on the various parties after the permitted asset transfer had occurred.

Points were given if a candidate stated that XYZ's proposed assumptions were conservative thereby resulting in higher liabilities and for the calculation of each input required to derive the asset transfer value as defined in FSCO's asset transfer policy. Points were also given if a candidate correctly assesses the financial impact of the asset transfer on each party giving consideration to the benefit security of the participants.

This question was poorly answered. Some candidates unnecessarily compared XYZ's proposed assumptions with the assumptions in NOC's recent valuations. Most candidates did not perform the calculations on the asset transfer amount and erroneously assumed that the amount proposed by XYZ would be transferred. Consequently, the financial impact of the companies and participants were based on this higher amount. Some candidates managed to arrive at the correct asset transfer value but did not follow through with this amount in describing the financial impact on the companies and participants.

5. Continued

Solution:

Critique XYZ's proposal including the related legislative restrictions and financial consequences for NOC, XYZ and the plan participants.

XYZ's proposed assumptions

XYZ proposed assumptions resemble those of a solvency valuation with indexation, but XYZ may have chosen these assumptions purely for negotiation purposes. XYZ recognizes that solvency valuation will drive contributions and probably also noticed that indexing had been omitted in NOC's recent solvency valuation as this is allowed under Ontario legislation. By assuming indexation, the valuation would present a more realistic projection of the required contributions.

XYZ's proposed assumptions are conservative and would increase the liabilities. The discount rate is low. However, given the current environment, 2% may not be unreasonable. The low interest rate may also have been chosen because of XYZ's investment policy. XYZ assumed no turnover, thereby increasing the liabilities as the benefits at termination is lower than at retirement. An assumed retirement age of 58 is conservative as the plan offers early retirement subsidy.

Calculation of asset transfer value

The asset transfer will be restricted by FSCO's policy on asset transfer resulting from the sale of a business.

[Numbers in the box are in 000's]

Residual liability	= higher of solvency or GC liability for retained group = max[759,700, 1,207,700] = 1,207,700
Transfer liability	= higher of solvency or GC liability for transferred group = max[150,000, 200,000] = 200,000
Asset transfer ratio	= min[1, [MV of assets]/[sum of residual liability and transfer liability]] = min[1, [817,900/1,407,700]] = 58.1%
Asset transfer value	= asset transfer ratio x transfer liability = 0.58 x 200,000 = 116,200

Both NOC's and XYZ's proposals will not be permitted as these amounts are higher than the allowed asset transfer value of 116,200,000.

5. Continued

Financial consequences to NOC

After the asset transfer of \$116,200,000, the solvency ratio in respect of the remaining members in the NOC plan will remain unchanged and there will be little or no financial impact on NOC in terms of contribution. As such, the benefit security of the members will not be impacted.

Under exceptional circumstances, the Superintendent may allow an asset transfer in excess of the asset transfer value, determined using some other equitable basis. In such a case, the solvency and going concern positions of the NOC plan will deteriorate, requiring additional contributions.

Instead of transferring an amount higher than the asset transfer value from the NOC plan, it is more likely that the excess of the proposed amount over the asset transfer value will be reflected in the purchase price, thereby affecting NOC's balance sheet negatively.

Financial consequences to XYZ

If additional funds were negotiated, XYZ could apply these funds to strengthen the funding basis by contributing to the plan. XYZ will have to consider whether to include indexing in the plan's solvency valuation. If so, a higher level of funding will be required.

Financial consequences to Participants

The benefits for future service has not been revealed by XYZ. If these benefits are of a lesser value, retirement income will be reduced.

6. Learning Objectives:

2. The candidate will understand how to analyze/synthesize the factors that go into selection of actuarial assumptions for funding purposes.
3. The candidate will understand how to apply/synthesize the methods used to value pension benefits for various purposes.
6. The candidate will understand how to apply the regulatory framework in the context of plan funding.

Learning Outcomes:

- (2b) Evaluate and recommend appropriate assumptions for funding purposes.
- (3d) Perform valuations for special purposes, including:
 - (i) Plan termination/wind-up/conversion valuations
 - (ii) Hypothetical wind-up and solvency valuations
 - (iii) Open group valuations
 - (iv) Multi-employer pension plan valuations
- (6a) Evaluate retirement funding alternatives for the plan sponsor, shareholders and the participants.
- (6b) Evaluate funding restrictions imposed by regulations.

Sources:

Towers Watson Ch. 15 (Pension Plan Valuation Concept)

Morneau Ch. 5 (Financial Management of Pension Plans)

Commentary on Question:

This question was to test the candidates' understanding of funding supplementary plans. Most candidates did well on part (a) of the question, but missed part (b).

Solution:

- (a) Describe the pros and cons of pre-funding a defined benefit supplemental pension plan from both an employee and employer perspective.

Commentary on Question:

Candidates generally got the pros and cons from ER's perspectives, but missed the cons from the EE's perspectives.

6. Continued

Employee's perspective:

Pros:

- Pre-funding is a way to provide benefit security for employees who are or will be eligible to receive benefits from the supplemental pension plan. Ref 2
- Advance funding at an appropriate level can reduce or eliminate transfers of cost between generations of employees, shareholders, taxpayers, or other stakeholders.
- For a pay-as-you-go plan, retirees take on the risk that their benefit will stop if the employer goes bankrupt.

Cons:

- If pre-funding increases the overall cost of the supplemental plan's benefits, employees may prefer to trade off benefit security to receive additional benefits.
- The sponsor may limit the benefits provided under the supplemental plan if pre-funding is expensive or not tax-effective.

Employer's perspective:

Pros:

- Funding provides the company with an orderly method of managing cash resources.
- Funding avoids the situations where contribution requirements rise out of control as the plan matures, and also provide competitive benefits to the employees.
- In the absence of advance funding, the recognition of accounting costs will lead to large pension liability in the employer's financial statements. When the pension promise is funded, the funding contributions offset this build-up of liability.

Cons:

- Employer may be able to achieve a higher after-tax rate of return by retaining assets within the business than would be possible in an invested fund. In other words, funding would increase its ultimate cost.
- Some companies feel that funding supplementary pension plans is not appropriate particularly for executive only plans
- Concerns about funding policy issues, funding methods, administrations (e.g. regulatory filings), valuation methods, assumptions setting, etc. when advance funding is in place.

- (b) Describe the considerations in developing a funding policy for a defined benefit supplemental pension plan.

6. Continued

Commentary on Question:

For part (b), the majority of the candidates did not do well because most provided a general list of: items to be considered for funding in general, but not focusing on the considerations regarding funding a supplementary plan.

The company could consider the following objectives when establishing a funding policy:

- Level of security of pension benefits
 - How much to fund? – Risk and conservatism
Any approach to funding a pension plan involves making assumptions about future events. Inclusion of margin for conservativeness? If a plan is overfunded, the benefits are more secure and the employer can enjoy reduced future cost.
- To what extent they want to provide attractive and competitive compensation to talented, long-service, dedicated employees
 - While overfunding provides more security of pension benefits, in some cases, it may mean that benefits promised will be less as a result of the higher funding cost.
- Flexibility to allow an orderly method of managing company cash flows
- Whether to intend to reduce and eliminate transfers of cost between generations of employees, shareholders, taxpayers or other stakeholders
 - For example, pay as you go funding method may benefit members who joined the plan early on as funding costs are less, which can potentially result in money being used elsewhere, such as higher wages.
- Maximization of shareholder value
 - Should the company minimize contributions to supplementary plan and invest the money in the company's assets or otherwise?
- Impact of pension plan accruals on the corporate balance sheet
 - The purpose is to allocate pension costs over the years that employees perform their services, regardless of when the benefits are ultimately paid. In the absence of advance funding, the recognition of accounting costs will ultimately lead to a large pension liability in the employer's financial statements. In some cases, this could impair the employer's ability to raise additional financing. When the pension promise is funded, the funding contributions offset this build-up of liability.
- There are many measurements to assess the 'financial position' of a pension plan: going-concern, solvency, wind-up and accounting. Each of these measurements would normally result in a different stated financial position. If funding the supplementary pension plan, the company needs to decide which valuation method(s) to use.

6. Continued

- The company will also need to consider how a funding policy will impact the valuation of the supplementary pension plan. For example, does the funding policy affect actuarial assumptions used and the actuarial cost method for funding purposes? What is the implication on accounting?
- Nature of the supplemental plan should be considered when determining assumptions since liability can be quite sensitive to specific economic or demographic assumptions.
- Treatment of surplus. There may be pressure from employees for benefit improvements when a plan is overfunded.

7. Learning Objectives:

3. The candidate will understand how to apply/synthesize the methods used to value pension benefits for various purposes.

Learning Outcomes:

- (3b) Perform periodic valuations of ongoing plans, calculating normal cost and actuarial liability, using a variety of cost methods.
- (3c) Analyze and communicate the pattern of cost recognition that arises under a variety of funding and asset valuation methods.

Sources:

Pension Mathematics for Actuaries, Anderson, Third Edition, 2006, Chapter 2.

Commentary on Question:

A well prepared candidate will be able to calculate unfunded accrued liability and normal cost using the Entry Age Normal and Aggregate cost methods. They will also be able to calculate the required contributions to a plan using these methods and explain the differences between the two methods.

Solution:

- (a) Calculate the normal cost and the unfunded actuarial liability as at January 1, 2014.

Commentary on Question:

Overall, candidates performed quite well on this part of the question. Some candidates had minor arithmetic errors and a few candidates were confused by the level dollar method and increased the normal cost over time.

$$EAN\ NC = PVFB_w / \ddot{a}_{(y-w)} \quad (\text{or } PVFY_w)$$

$$EAN\ AL = PVFB_x - PVFNC_x \quad [\text{or alternate formulas}]$$

Employee A

$$\begin{aligned} PVFB_{30} &= 75 \times 12 \times (60 - 30) \times \ddot{a}_{60}^{(12)} \times v^{30} \\ &= 27,000 \times 14 \times .231377 \\ &= 87,461 \end{aligned}$$

$$\ddot{a}_{30} = (1 - v^{30}) / (1 - v) = 16.1411$$

$$\begin{aligned} EAN\ NC &= 87,461 / 16.1411 \\ &= 5,419 \end{aligned}$$

7. Continued

$$\begin{aligned}PVFB_{50} &= PVFB_{30} \times 1.05^{20} \\ &= 232,059 \\ EAN AL &= 232,059 - 5,419 * \ddot{a}_{10} \\ &= 188,127\end{aligned}$$

Employee B

EAN NC = 5,419 (same as A, since same entry age)

$$\begin{aligned}EAN AL &= 87,461 \text{ (same as entry age for A)} - 5,419 * \ddot{a}_{30} \\ &= 0 \text{ (new entrant)}\end{aligned}$$

$$Total AL = 188,127$$

$$Total NC = 5,419 \times 2 = 10,838$$

$$\begin{aligned}EAN UAL &= AL - F = 188,127 - 175,000 \\ &= 13,127\end{aligned}$$

- (b) Using the Aggregate cost method, calculate the normal cost and the unfunded actuarial liability as at January 1, 2014.

Commentary on Question:

Overall, candidates performed quite well on this part of the question.

$$Aggr NC = (\sum PVFBx - ALx) / \sum PVFYx \times n$$

where $AL = F$

$$PVFY50 = \ddot{a}_{10} = 8.1078$$

$$PVFY30 = \ddot{a}_{30} = 16.1411$$

$$\begin{aligned}Aggr NC &= (PVFB50 + PVFB30 - F) / [(PVFY50 + PVFY30) \times 0.5] \\ &= (232,275,059 + 87,461 - 175,000) / [(8.1078 + 16,1411) \times 0.5] \\ &= 11,920\end{aligned}$$

$$Aggr UAL = AL - F = 0 \text{ (by definition)}$$

- (c) Assuming that the client will contribute the normal cost plus the amortization payment, calculate the contributions payable under both actuarial cost methods as at January 1, 2014.

Commentary on Question:

Overall, candidates also performed quite well on this part of the question.

7. Continued

Entry Age Normal

$$\begin{aligned} \text{Amort 'n pmt} &= UAL_0 / \ddot{a}_{15\bar{i}} \\ &= 13,127 / 10.8986 \\ &= 1,204 \\ \text{Contr 'n} &= \text{EAN NC} + \text{Amort pmt} \\ &= 10,838 + 1,204 = 12,042 \end{aligned}$$

Aggregate

$$\begin{aligned} \text{Contr 'n} &= \text{Aggr NC (no amort pmt, since no UAL)} \\ &= 11,920 \end{aligned}$$

- (d) Explain why the contribution amounts calculated in (c) differ under the two actuarial cost methods.

Commentary on Question:

Candidates did not perform quite as well on this part of the question. Some candidates' responses contained only one or two points or omitted this section entirely.

- Under EAN the normal costs for the two members are the same
- Under the aggregate method the normal cost is the expected remaining amount to be funded is averaged over the members' future service
- Under EAN the unfunded liability is amortized over 15 years
- Under the aggregate method there is no additional amortization, since there is no unfunded liability
- The aggregate contribution is slightly lower, since it effectively amortizes the unfunded liability over the average of 10 and 30 years (i.e. average future service) rather than 15 years.

8. Learning Objectives:

3. The candidate will understand how to apply/synthesize the methods used to value pension benefits for various purposes.
5. The candidate will understand how to evaluate and apply regulatory policies and restrictions for registered retirement plans.

Learning Outcomes:

- (3d) Perform valuations for special purposes, including:
 - (v) Plan termination/wind-up/conversion valuations
 - (vi) Hypothetical wind-up and solvency valuations
 - (vii) Open group valuations
 - (viii) Multi-employer pension plan valuations
- (5a) The candidate will be able to describe and apply regulation pertaining to plan design.
- (5c) The candidate will be able to describe and apply regulation pertaining to plan amendment.
- (5h) The candidate will be able to describe and apply regulation pertaining to members' rights.

Sources:

Towers Watson book, Chapter 10

Pension Mathematics for Actuaries, Anderson, Third Edition, 2006, Ch. 2

Commentary on Question:

Candidates who got the right answer, with a reasonably clear process, received full credit.

Solution:

- (a) Determine the maximum benefit rate increase NOC can provide without triggering a Past Service Pension Adjustment (PSPA).

Commentary on Question:

Candidates need to be aware that the \$1.50 exclusion rule applies from the latest increase only. Further, it applies to full and partial years since the latest increase.

Maximum increase excludable amount

= max of

- base year 2000 rate indexed with AIW
- base year 2004 rate indexed with AIW
- \$1.50 exclusion rule

8. Continued

– benefit rate prior to next increase

$$\begin{aligned} &= \max [\text{rate}_{2000}+(\text{AIW increase } 2000 \times \text{rate}_{2000}), \text{rate}_{2004}+(\text{AIW increase } 2004 \\ &\times \text{rate}_{2004}), \text{rate}_{2004}+(\$1.50 \times \text{years since last increase})] - \text{rate}_{2004} \\ &= \max [75+(38.3\% \times 75), 80+(30.1\% \times 80), 80+(\$1.50 \times 9.5)] - 80 \\ &= \max [103.725, 104.08, 94.25] - 80 \\ &= 104.08 - 80 \\ &= 24.08 \end{aligned}$$

- (b) Determine the change in normal cost, going concern liability, and solvency liability as at July 1, 2013 if the benefit rate increase is \$15 per month.

Commentary on Question:

Candidates needed to identify the increase in the amounts, not just the revised amounts, to receive full credit.

Increase only applicable to actives;

$$\begin{aligned} \text{Increase} &= [\text{amounts at July 1, 2013 prior to benefit increase}] / 80 \times (80+15) \\ &- [\text{amounts at July 1, 2013 prior to benefit increase}] \end{aligned}$$

$$\text{Increase in normal cost} = \$43,000,000 / 80 \times (80+15) - \$43,000,000 = \$8,062,500$$

$$\begin{aligned} \text{Increase in going concern liability} &= \$750,000,000 / 80 \times (80+15) - \$750,000,000 \\ &= \$140,625,000 \end{aligned}$$

$$\begin{aligned} \text{Increase in solvency liability} &= \$1,235,000,000 / 80 \times (80+15) - \$1,235,000,000 = \\ &= \$231,562,500 \end{aligned}$$

- (c) Calculate the PSPA if the benefit rate increase is \$30 per month.

Show all work.

Commentary on Question:

Candidates could use the method below or could calculate the PSPA as the sum of the recalculated pension credits recognizing the maximum excludable amount less the sum of the pension credits prior to the amendment.

Maximum excludable increase amount = 24.08 (from part (a))

Note that PSPAs are for post 1989 service only, and no PSPA will be reported in 2013 since a PA based on the new rate will be reported

$$\begin{aligned} \text{PSPA} &= (\text{new increase in benefit rate} - \text{maximum excludable increase amount}) \times \\ &\text{post-1989 service prior to 2013} \times 12 \times 9 \\ &= (30-24.08) \times 13.0 \text{ years} \times 12 \times 9 \\ &= 8,311.68 \\ &= 8,312 \text{ (PSPAs are rounded to the nearest dollar)} \end{aligned}$$

9. Learning Objectives:

3. The candidate will understand how to apply/synthesize the methods used to value pension benefits for various purposes.
5. The candidate will understand how to evaluate and apply regulatory policies and restrictions for registered retirement plans.
7. The candidate will understand how to apply the standards of practice and guides to professional conduct.

Learning Outcomes:

- (3a) Differentiate between the various purposes for valuing pension plans:
 - (i) Funding
 - (ii) Solvency
 - (iii) Termination/wind-up/conversion
- (5c) The candidate will be able to describe and apply regulation pertaining to plan amendment.
- (5i) The candidate will be able to describe and apply regulation pertaining to contributions and benefits.
- (7e) Explain and apply all of the applicable standards of practice related to valuing pension benefits.

Sources:

FSCO Policy for filing plan amendment (A400-100)

Ontario Pension Benefits Act Regulations Section 3.1 and 3.2 Registration and Amendments (page 12)

Ontario Pension Benefits Act Regulations Section 5 Funding of Pension Plans, Special Payments – General (page 19 - 24)

Ontario Pension Benefits Act Section 12.1 Application for registration of amendment (page 17)

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Describe the considerations in preparing the cost certificate.

9. Continued

Commentary on Question:

The candidates were asked to describe considerations in preparing a cost certificate. Most candidates focused on elements to be disclosed in the actual cost certificate document, but did not cover details on timing, filing and approval of the cost certificate

The considerations of preparing the cost certificate are as follows:

- The cost certificate must be filed with FSCO within six months following the date when the amendment is required to be submitted for registration
- The amendment must be submitted for registration within sixty days of the effective date of the amendment
- Membership data used in the last filed valuation report can be used for cost certificate
- Need to consider if there are any adjustments necessary to reflect membership changes since the last filed valuation
- Assumptions used for the cost certificate must be applicable at the effective date of benefit improvements (i.e. use the CV and Annuity Purchase rates at July 1, 2013)
- No smoothing adjustment is allowed in the solvency assets or liabilities
- If the plan is amended to provide more than one flat dollar benefit increases and these future increases are definitive or virtually definitive at valuation date, NOC can choose to reflect all of such benefit improvements in the cost certificate as if they had become effective on valuation date. This means NOC must commence funding for the impact of these future improvements on valuation date.

The cost certificate must include the following items:

- Any increases in the normal cost due to benefit improvement;
- Any increase in the going concern liabilities not already reflected in the last filed valuation report or previous cost certificate
- Any increase in solvency liabilities due to benefit improvement
- Any increase in the Pension Benefit Guarantee Fund (PBGF) liability due to benefit improvement
- Rule for computing the incremental normal cost or the estimate of the incremental normal cost due to benefit improvement for each year up to valuation date of the next report;
- Incremental going concern special payments due to increase going concern liabilities
- Incremental solvency special payments due to increase solvency liabilities
- Any changes to minimum and maximum contribution requirements

9. Continued

- If the impact of benefit improvement is material relative to the liabilities of the plan before the improvement became effective (deemed material if solvency liabilities for benefit improvement is greater or equal to 10% of solvency liability in last filed report), the cost certificate must also include a reassessment of the transfer ratio.
 - Commencing on that date, payment of commuted values is to be based on the reassessed transfer ratio, if less than 1.0.
 - This reassessment does not trigger the requirement to perform annual valuation since it will not affect the statutory solvency liabilities on the valuation date
 - Solvency incremental cost, reconciliation of solvency surplus/deficit, and 1% discount rate sensitivities not required if using the membership data used in last filed valuation report
- (b) Calculate the increase in minimum annual contribution requirements for the cost certificate effective July 1, 2013.

Commentary on Question:

This question required candidates to understand how to determine changes in minimum funding requirements for pension plans registered in Ontario following a plan amendment and filing of a cost certificate. There were two common mistakes made by candidates. The first one was to go back to get the case study and try to recalculate the financial position before the amendment, although it was already provided in the question. Those candidates did not reflect in their solution that the cost certificate would account only for the increase in benefit (plan amendment) and not the plan experience over the 6-months period going from January 1, 2013 to July 1, 2013. The second common mistake was not being able to calculate going-concern and solvency special payments in accordance with Ontario legislation. Although some candidates demonstrated sufficient knowledge in that matter, a number of candidates were not able to perform all the steps of such calculations.

Assumptions Effective @ 7.1.2013

Going Concern Discount Rate = 5.5%

Blended solvency rate = 30% * Annuity Purchase rate + 70% * CV rate

= 0.3 * 0.032 + 0.7 * 0.026

= 2.78%

Determination the amortization payments

Increase to Unfunded AL = Active Going Concern liability after benefit rate increase – Active Going concern liability before benefit rate increase

= 938,000,000 – 750,000,000

= 188,000,000

9. Continued

$$\begin{aligned}\text{Going concern amortization factor} &= a_{12|} \text{ compounded monthly (a angle 15 at} \\ & \text{5.5\% per annum, compounded monthly)} \\ &= [1 - (1.055^{(1/12)})^{-180}] / [1.055^{(1/12)} - 1] / 12 \\ &= 10.2882\end{aligned}$$

$$\begin{aligned}\text{New Going Concern special payment} &= \text{Increase to unfunded AL} / \text{Factor to} \\ \text{amortize} &= 188,000,000 / 10.2882 = 18,273,362\end{aligned}$$

$$\begin{aligned}\text{Factor to use for solvency} &= a_{12|} \text{ compounded monthly (a angle 5 at 2.78\% p.a.,} \\ & \text{compounded monthly)} \\ &= [1 - (1.0278^{(1/12)})^{-60}] / [1.0278^{(1/12)} - 1] / 12 \\ &= 4.6670\end{aligned}$$

$$\begin{aligned}\text{Provisional solvency asset} &= \text{GC payment} * \text{a angle 5 at 2.78\% p.a. compounded} \\ & \text{mthly} \\ &= 18,273,362 * 4.6670 \\ &= 85,281,780\end{aligned}$$

$$\begin{aligned}\text{Solvency deficiency to amortize} &= \text{Increase in Solv liab} - \text{provisional solvency} \\ \text{asset} \\ &= (1,544,000,000 - 1,235,000,000) - 85,281,780 \\ &= 223,718,220\end{aligned}$$

$$\begin{aligned}\text{New Solv Pmt} &= \text{Solvency deficiency} / \text{factor to use for solvency} \\ &= 223,718,220 / 4.667 \\ &= 47,936,195\end{aligned}$$

Additional minimum annual contributions required as a result of the cost certificate effective at July 1, 2013:

$$\text{Additional NC} = 54,000,000 - 43,000,000 = 11,000,000$$

$$\begin{aligned}\text{Total additional contributions} &= \text{Additional NC} + \text{New GC pmt} + \text{New Solv pmt} \\ &= 11,000,000 + 18,273,362 + 47,936,195 \\ &= 77,209,557\end{aligned}$$

10. Learning Objectives:

3. The candidate will understand how to apply/synthesize the methods used to value pension benefits for various purposes.
5. The candidate will understand how to evaluate and apply regulatory policies and restrictions for registered retirement plans.
7. The candidate will understand how to apply the standards of practice and guides to professional conduct.

Learning Outcomes:

- (3a) Differentiate between the various purposes for valuing pension plans:
 - (iv) Funding
 - (v) Solvency
 - (vi) Termination/wind-up/conversion
- (3b) Perform periodic valuations of ongoing plans, calculating normal cost and actuarial liability, using a variety of cost methods.
- (5d) The candidate will be able to describe and apply regulation pertaining to plan termination/wind-up.
- (5g) The candidate will be able to describe and apply regulation pertaining to reporting requirements.
- (5i) The candidate will be able to describe and apply regulation pertaining to contributions and benefits.
- (7e) Explain and apply all of the applicable standards of practice related to valuing pension benefits.

Sources:

Ontario PBA/Regulations

Commentary on Question:

In this question, the candidates were asked to demonstrate their understanding of the features of various employer required contributions for an Ontario pension plan. To pass the question, the candidates need to be able to explain how to calculate properly the contributions and to reconcile the going concern funded position. A well prepared candidate should be able to calculate employer contributions, reconcile the going concern funded position and to understand the prepaid contributions .

Solution:

- (a) Calculate the 2014 minimum required employer contributions.

10. Continued

Calculate present value of existing payments	Months remaining	Factor	Annual	PV
GC (old schedule)	156	9.61	25,000	240,173.65
Solv (old schedule)	48	3.70	50,000	184,798.60
GC (old schedule) for solvency purposes	60	4.53	25,000	113,321.53
GC factor for new schedule	180	10.62		
Solv factor for new schedule	60	4.53		
GC unfunded (GC liabilities less MV of assets)	300,000			
GC unfunded less existing payments	59,826			
New GC special payments (annual) (GC deficit after existing payments, divided by GC factor)	5,636			
Solv deficit after windup expenses, before solv asset adjustment (solv liab less Market value of assets less windup expenses)	650,000			
Present value new GC payment	25,530			
PV all special payments	323,650			
Solv deficit after PV special payments	326,350			
New solv payment (annual) (solv deficit after PV special payments, divided by solvency factor)	72,042			
Total minimum payment for 2014 including NC (sum of special payments and GC normal cost)	202,678			

- (b) Calculate the estimated going concern and solvency funded positions as at January 1, 2015.

$$\text{Actual assets } (900,000 * 1.15 + (300,000 - 30,000) * 1.075) = 1,325,250$$

$$\text{Actual GC liab EOY } (1,200,000 * 1.05 + (50,000 - 30,000) * 1.025) = 1,280,500$$

$$\text{GC funded position without prior year credit balance} = 44,750$$

Expected solv liab after change in discount rate.

$$\text{Actual liab EOY } (1,500,000 * 1.04 + (75,000 - 30,000) * 1.02) * (1.11^{-0.5}) = 1,524,253$$

Solvency position after windup expense with maximum prior year credit balance = (346,374)

- (c) Describe the options that would be available to the employer regarding the additional contribution made in 2014.
- Use that contributions as prepaid contributions in 2015, i.e. prior year credit balance equal to excess contribution
Goal: reduce required contribution for 2015
 - Apply that contribution toward 2014 deficit immediately, i.e. prior year credit balance of \$0
 - Set the prior year credit balance anywhere between 1) and 2)

10. Continued

- (d) Calculate the 2015 minimum required employer contributions under each option in (c).

Calculate present value of existing payments	Months remaining	Factor	Annual	PV
GC (old schedule)	144	9.065	25,000	226,614
GC (old schedule)	168	10.755	5,636	60,615
Solv (old)	48	3.661	72,042	263,740
Solv (old)	36	2.805	50,000	140,261
Solv new	60	4.480		
A) No prepaid				
GC in surplus position (from b)				
Solv deficit after windup expenses	249,003			
Solv surplus after PV schedules	154,998			
Since surplus is > than PV of oldest schedule, that schedule is eliminated				
Remaining surplus	14,737			
Special payments maintained at \$71,993, but schedule period shortened, but no impact in 2015	3			
NC 2015 = NC 2014 increase with interest since closed group	52,500	from B)		
2015 min contributions (NC plus solv amortization)	124,542			
B) With prepaid				
Maximum Prepaid: \$300,000 - \$202,629	97,322			
GC position after prepaid	(52,572)			
GC position after PV payments	234,657			
Eliminate old GC schedule and amortize remaining over 14 yrs				
New payment GC	4,888			
Solv deficit after windup expenses and prepaid contributions	346,325			
PV solv new GC payment	21,897			
Solv position after PV payments	(79,573)			
Only the payment of the oldest schedule can be reduced, but no impact in 2015				
2015 minimum contributions before use of prepaid (NC + GC + Solv)	179,430			
if use of prepaid, min contributions	82,108			
Any contributions between these amounts is required				

11. Learning Objectives:

7. The candidate will understand how to apply the standards of practice and guides to professional conduct.

Learning Outcomes:

- (7a) Apply the standards related to communications to plan sponsors and others with an interest in an actuary's results (i.e., participants, auditors, etc.).
- (7b) Explain and apply the Guides to Professional Conduct.
- (7c) Explain and apply relevant qualification standards.
- (7d) Demonstrate compliance with requirements regarding the actuary's responsibilities to the participants, plans sponsors, etc.
- (7e) Explain and apply all of the applicable standards of practice related to valuing pension benefits.
- (7f) Recognize situations and actions that violate or compromise Standards or the Guides to Professional Conduct.
- (7g) Recommend a course of action to repair a violation of the Standards or the Guides to Professional Conduct.

Sources:

SOA Code of Professional Conduct <http://www.soa.org/about/membership/about-code-of-professional-conduct.aspx>

Soa qualification Standards <http://www.soa.org/about/membership/about-req-admission.aspx>

CIA Qualification Standards http://www.actuaries.ca/membership/enrollment_e.cfm

CIA Rules of Professional Conduct
<http://www.actuaries.ca/members/publications/2011/211033e.pdf>

R-D613-12: CIA CSOP 1000-1800, February 2011

R-D614-11: CIA Consolidated Standards of Practice – Practice Specific Standards for Pension Plans 3100-3500 December 2010

SOA Code of Professional Conduct <http://www.soa.org/about/membership/about-code-of-professional-conduct.aspx>

SOA Qualification Standards <http://www.soa.org/about/membership/about-req-admission.aspx>

11. Continued

Commentary on Question:

The question tests whether candidate knows the Rules of Professional Conduct and the relevant Standards of Practice in relation to disclosure. Candidates who did well commented on non-compliance to both Rules of Professional Conduct and the Standards of Practice. Candidates that did not do well did not address Rules of Professional Conduct and instead went into too much detail on specific sections such as data or assumptions.

Solution:

Critique the above email with respect to compliance with Canadian professional standards.

- The scope and purpose for the work. *For example, there is no mention of the type of valuation - solvency/wind-up or going concern basis?*
- Whether or not the work is in accordance with accepted actuarial practice in Canada and, if not, disclose the deviation from that practice.
- Any aspect of the work for which the actuary does not take responsibility. *For example, the actuary has not independently audited the employee data provided by the company.*
- The audience for which the figures are prepared. *It is not clear who the intended audience is in this communication.*
- The users of the information to avoid unintended use of the work. *The communication should state that results may not be relied upon for any purpose other than what is described in the communication or by any party other than the intended audience disclosed in the communication (i.e. the company and their auditors).*
- A description of the terms of the engagement. *No details on the terms of engagement have been provided. For example, the communication does not disclose any details on the nature of the plan change.*
- Sufficient details on the actuarial assumptions. *For example, there is no disclosure on what are the “current market rates”, salary scale or other applicable assumptions.*
- A description of the membership data and any limitations of the data. *No details have been provided on the membership statistics or the adjustments made to the data from January 1, 2012 to July 1, 2014*
- Any tests applied to the data.
- No details on whether assumptions or methods were used in respect of insufficient or unreliable membership data would be described
- Sources of the membership data, plan provisions (including any pending or virtually definitive amendments), and the pension assets and the dates at which they were compiled.
- A description of the assets, the asset valuation method, and a summary of the assets by major category.
- A description of the actuarial cost method.

11. Continued

- Description of any subsequent event that is not taken into account in the work or statement that the actuary is not aware of any subsequent events.
- Sufficient details to enable another actuary to examine the reasonableness of the valuation.
- An actuarial opinion on the results of the work.