ii. access controls over data containing calculation parameters
iii. access controls, systems development controls and change controls over calculation tools, such as spreadsheets and modelling software and controls to ensure that such tools are being used for the purpose for which they are intended
iv. controls over the process for estimating assumed amounts
v. controls over the process for considering, justifying and selecting methods used in calculations
vi. independent checks of logic used in deriving calculations
vii. independent checks of calculations
viii. identifying sources of earnings
ix. comparisons of current actuarial calculations with those used in prior years, with investigation of any variations that were not anticipated

## Identifying and assessing the risks of material misstatement

55 Paragraph 28 of CAS 315 requires the auditor to identify the risks of material misstatement and determine whether they exist at:

a. the financial statements level
b. the assertion level for classes of transactions, account balances and disclosures

56 Paragraph 30 of CAS 315 specifies that for identified risks of material misstatement at the financial statement level, the auditor shall assess the risks and:

a. determine whether such risks affect the assessment of risks at the assertion level
b. evaluate the nature and extent of their pervasive effect on the financial statements

57 Paragraph 31 of CAS 315 states that for identified risks of material misstatement at the assertion level, the auditor shall take into account how, and the degree to which:

a. inherent risk factors effect the susceptibility of relevant assertions to misstatements
b. the risks of material misstatement at the financial statement level effect the assessment of inherent risks of material statements at the assertion level

58 CAS 315 further states that auditor shall determine whether any of the assessed risks of material misstatement are significant risks and the auditor shall determine whether substantive procedures alone cannot provide sufficient and appropriate audit evidence for any of the risks of material misstatement at the assertion level.

59 Examples of risk factors relating to actuarially determined amounts include factors discussed in paragraph 28 and business risks discussed in paragraph 40.

60 Actuarially determined amounts are, in many cases, complex accounting estimates and computations involving assumptions about future events and requiring the specialized expertise of an actuary. Those risks of material misstatement relating to actuarially determined amounts may be considered significant risks, particularly if the actuarially determined amount is a material component of the financial statements taken as a whole. For example, it is likely that the auditor considers insurance contracts of an insurance enterprise, the benefit liability of a public personal injury compensation plan or the pension liability in a pension plan's financial statements to be significant risks, whereas an actuarially determined liability for an employee future benefit plan may not be a significant risk or material to the financial statements of the plan sponsor. CAS 315 para. 19-27 require the auditor to obtain an understanding of the entity and its environment, the applicable financial reporting framework and the entity's system of internal control.[6] Risk assessment procedures to obtain audit evidence about the design and implementation of controls may include inquiring of entity personnel, observing the application of specific controls, inspecting documents and reports, and tracing transactions through the information system relevant to financial reporting. Inquiry alone is not sufficient for such purposes.

## The auditor's responses to assessed risks

### Overall responses

61 Paragraph 5 of CAS 330, *The Auditor's Responses to Assessed Risks*, requires the auditor to design and implement overall responses to address the risks of material misstatement at the financial statement level. Such responses may include:

a. emphasizing to the audit team the need to maintain professional skepticism
b. assigning more experienced staff or those with special skills, or using experts
c. providing more supervision
d. incorporating additional elements of unpredictability in the selection of further audit procedures to be performed

Additionally, the auditor may make general changes to the nature, timing or extent of audit procedures (for example, performing substantive procedures at the period end instead of at an interim date or modifying the nature of audit procedures to obtain more persuasive audit evidence).

62 The auditor may use an auditor's actuary on the audit. Determining the need for an auditor's actuary is discussed in paragraphs 14-19. The role of the auditor's actuary, when used by the auditor, will depend on the circumstances of the audit and may range from extensive involvement in all phases of the audit to more limited participation in specifically identified areas.

6 Examples of risk assessment procedures are included in CAS 315, paragraph 21.

63 An accounting estimate is a monetary amount for which the measurement, in accordance with the requirements of the applicable financial reporting framework, is subject to estimation uncertainty. Actuarially determined amounts are considered to be an accounting estimate that may have a significant or pervasive effect on the financial statements, depending on the circumstances. Management is responsible for the accounting estimates included in financial statements, including establishing policies and procedures for the preparation of accounting estimates, which would normally include matters such as gathering the necessary data on which to base estimates, developing assumptions as to the most likely outcome, determining the amounts of estimates and considering statement disclosures.

64 The determination of actuarially determined amounts, including the establishment of policies and procedures with respect to the preparation of the actuarially determined amounts, may be performed by the actuary involved in the preparation of the financial statements. In this regard, the actuary is functioning as management, as management's expert, whether or not they are an employee or external consultant. If information to be used as audit evidence has been prepared using the work of a management's expert, paragraph 8 of CAS 500, *Audit Evidence*, requires the auditor, to the extent necessary, having regard to the significance of that expert's work for the auditor's purposes to:

- evaluate the competence, capabilities and objectivity of that expert
- obtain an understanding of the work of that expert
- evaluate the appropriateness of that expert's work as audit evidence for the relevant assertion

When the financial statements prepared by management include amounts determined by or with the assistance of an actuary, communications between the auditor and the actuary are guided by the *Joint Policy Statement Concerning Communications between Actuaries Involved in the Preparation of Financial Statements and Auditors* appended to CAS 500.

65 An understanding of the work of the management's expert includes an understanding of the relevant field of expertise. An understanding of the relevant field of expertise may be obtained in conjunction with the auditor's determination of whether the auditor has the expertise to evaluate the work of the management's expert, or whether the auditor needs an auditor's expert for this purpose. As discussed in paragraphs 14-19, if the auditor does not possess the necessary expertise to audit actuarially determined amounts prepared by an actuary and the amounts are material to the financial statements taken as a whole, the auditor would likely use an auditor's actuary to obtain sufficient appropriate audit evidence regarding those amounts. Accordingly, in these cases, developing overall responses to the assessed risks, the auditor may use the information produced by the entity, (i.e., by the actuary involved in the preparation of financial statements). However, the auditor is responsible for obtaining sufficient appropriate audit evidence with respect to information produced by the entity. When

using information produced by the entity, paragraph 9 of CAS 500 requires the auditor to evaluate whether the information is sufficiently reliable for the auditor's purposes, including as necessary in the circumstances:

a. obtaining audit evidence about the accuracy and completeness of the information

b. evaluating whether the information is sufficiently precise and detailed for the auditor's purposes

66 CAS 620, U*sing the Work of an Auditor's Expert*, provides guidance to the auditor when the work of an auditor's actuary is used to assist the auditor in obtaining sufficient appropriate audit evidence, including evaluating the adequacy of the auditor's actuary's work.

## Audit procedures responsive to the assessed risks of material misstatement at the assertion level

67 Paragraph 6 of CAS 330, requires the auditor to design and perform further audit procedures whose nature, timing and extent are based on and are responsive to the assessed risks of material misstatement at the assertion level (see paragraphs 55-57). In some cases, the auditor may determine that only by performing tests of controls may the auditor achieve an effective response to the assessed risk of material misstatement for a particular assertion. In other cases, the auditor may determine that performing only substantive procedures is appropriate for particular assertions and, therefore, the auditor excludes the effect of controls from the relevant risk assessment. This may be because the auditor's risk assessment procedures have not identified any effective controls relevant to the assertion, or because testing controls would be inefficient and therefore, the auditor does not intend to rely on the operating effectiveness of controls in determining the nature, timing and extent of substantive procedures, or a combined approach using both tests of controls and substantive procedures is an effective approach. However, as required by paragraph 18 of CAS 330, irrespective of the approach selected, the auditor designs and performs substantive procedures for each material class of transactions, account balance and disclosure. This may require substantive testing of the computations, modelling and reasonableness of assumptions used in determining the insurance contracts of an insurance enterprise or liabilities of a public personal injury compensation plan or an employee future benefit plan, as these are likely to be material account balances to the financial statements taken as a whole.

## Tests of controls

68 Paragraph 8 of CAS 330 requires the auditor to perform tests of controls to obtain sufficient appropriate audit evidence as to the operating effectiveness of controls if the auditor's assessment of risks of material misstatement at the assertion level includes an expectation that controls are operating effectively (i.e., the auditor intends to rely on the operating effectiveness of controls in determining the nature, timing and extent of substantive procedures), or substantive procedures alone cannot provide sufficient appropriate audit evidence at the assertion level. Tests of the operating effectiveness of controls, such as tests relating to the controls discussed in paragraph 44, may include the same types of audit procedures used to evaluate the design and implementation of controls; however, inquiry and observation alone are not sufficient to test operating effectiveness of controls. Accordingly, other audit procedures are performed in combination with inquiry and observation, such as inspection or reperformance of the application of the control by the auditor. The auditor would refer to CAS 330 for further guidance and requirements on tests of controls. If the auditor plans on relying on controls over a risk considered to be a significant risk, paragraph 15 of CAS 330 requires the auditor to test those controls in the current period.

## Substantive procedures responsive to significant risks

69 Paragraph 21 of CAS 330 requires the auditor to perform substantive procedures that are specifically responsive to significant risks. When the approach to a significant risk consists only of substantive procedures, those procedures need to include tests of details. The auditor performs substantive procedures to address such risks. Examples of possible audit procedures to address the assessed risks of material misstatement are presented in the Appendix. The Appendix includes examples of responses to the auditor's assessment of the risks of material misstatement for life insurance and property and casualty insurance enterprises, including reinsurance enterprises, public personal injury compensation plans, defined benefit employee future benefit obligations of plan sponsors or defined future employee benefit plans.

70 The following are areas where the auditor's actuary may assist in performing substantive procedures on those actuarially determined amounts where the auditor judges the risks of material misstatement to be significant risks:

a. Assessment of the reasonableness of the source data in the actuarial analysis, identification of important source data for testing, evaluation as to whether the source data used is appropriate (relevant, complete and accurate) and inquiry of the actuary involved in the preparation of financial statements as necessary.

b. Reading of reports from the actuary involved in the preparation of financial statements and dialogue with that actuary regarding consistency of the report with that actuary's understanding of the underlying data, methods and assumptions used in developing the actuarially determined amounts as well as industry experience.

c. Review of financial statement footnotes pertaining to actuarially determined amounts for completeness and accuracy.

d. Review of the actuarial analysis for reasonableness, including:

   i. appropriateness of the level of detail used

   ii. appropriateness of methods used (consistency with authoritative practice and industry practice)

   iii. appropriateness of assumptions in light of experience and other information

   iv. judgments made

   v. selections made

   vi. completeness of valuation, including the reflection of all relevant events and changes to the employee future benefit plans or insurance contracts

   vii. completeness of documentation included in actuarial analysis

   *Consideration specific to insurance enterprises*

   viii. review of reinsurance transactions to assess risk transfer and appropriateness of accounting treatment

   *Consideration specific to employee future benefit plans*

   ix. review of the timing of employee future benefit plan valuations and the appropriateness and sufficiency of extrapolations performed in between formal valuations

   x. review of any risk-transfer (e.g., annuity purchase) transactions to assess risk transfer and appropriateness of accounting treatment

   xi. review of the impact of benefit changes on the valuation and the appropriateness of accounting treatment

*Considerations specific to insurance enterprises*

e. Testing of the insurance contracts to determine if they are being calculated consistent with the indicated methodology and assumptions. The testing would confirm that the documented methodology is being accurately applied in the valuation model and that the assumptions are used appropriately. For a life insurance enterprise, the auditor's actuary may target test-specific insurance contracts and other actuarial balances, typically at the policy or cohort level, depending on the nature of the calculation. For a property and casualty insurance enterprise, the auditor's actuary may test loss and expense insurance contracts for more significant lines of business and evaluate for reasonableness the loss development patterns and loss ratio assumptions, and the impact of significant business changes, claims handling expenses and other key assumptions.

*Consideration specific to public personal injury compensation plans*

f. Testing of liabilities to determine if they are being calculated consistent with the indicated methodology and assumptions. The testing would confirm that the documented methodology is being accurately applied in the valuation model and that the assumptions are used appropriately.

g. Discussion of the relationship between the asset portfolio and the discount rate and implications on the actuarially determined amounts with the actuary involved in the preparation of financial statements.

*Consideration specific to employee future benefits*

h. Testing of member liabilities and service costs to determine if they are being calculated consistent with the indicated methodology and assumptions, and the plan provisions, as described. The testing would confirm that the documented methodology is being accurately applied in the valuation model, and that the assumptions are used appropriately, and that the terms of the plan are interpreted correctly. For an employee future benefits plan, the auditor's actuary may review aggregate liabilities and service costs at the plan level, for a segment of the membership population, or target-test individual plan members' liabilities and service costs.

i. Testing of the annuity buy-in contracts to determine whether they are being calculated consistently with the indicated methodology and assumptions. The testing would confirm that the documented methodology is being accurately applied in the valuation model and that the assumptions are used appropriately.

The extent of assistance would be impacted by such factors as the complexity of the actuarially determined amounts, the auditor's cumulative knowledge of the integrity of the actuarially determined amounts and valuation process, the effectiveness of the internal control structure, the degree and nature of changes in the actuarially determined amounts in the current year, and other changes in areas impacting on the actuarially determined amounts.

## Evaluating the sufficiency and appropriateness of audit evidence

71 Paragraphs 25-27 of CAS 330 require the auditor to evaluate the sufficiency and appropriateness of audit evidence. This evaluation is primarily a qualitative matter based on the auditor's judgment. Such an evaluation may provide further insight about the risks of material misstatement of actuarially determined amounts and whether there is a need to perform additional or different audit procedures. The auditor would conclude whether sufficient appropriate audit evidence has been obtained. In developing an opinion, the auditor considers all audit evidence, regardless of whether it appears to corroborate or to contradict the assertions in the financial statements. If the auditor is unable to obtain

sufficient appropriate audit evidence as to whether the assessments of the risks of material misstatement at the assertion level remain appropriate, the auditor is required to express a qualified opinion or disclaim an opinion on the financial statements.

72 If, based on the audit evidence obtained, the auditor concludes that the financial statements are materially misstated, they would request that management address the material misstatement. If management does not appropriately address the misstatement, the auditor modifies the opinion in the auditor's report. If the auditor concludes that there is a material misstatement in the financial statements with respect to actuarially determined amounts due to fraud, they refer to CAS 240, *The Auditor's Responsibilities Relating to Fraud in an Audit of Financial Statements*.

73 CAS 705, *Modifications to the Opinion in the Independent Auditor's Report*, provides guidance to the auditor regarding the types of modified opinions to be issued in cases where:

a. the auditor concludes, based on the audit evidence obtained, that the financial statements as a whole are not free from material misstatement; or

b. the auditor is unable to obtain sufficient appropriate audit evidence to conclude that the financial statements as a whole are free from material misstatement.

## Communicating deficiencies in internal control to those charged with governance and management

74 CAS 265, *Communicating Deficiencies in Internal Control to Those Charged with Governance and Management,* requires the auditor to communicate in writing significant deficiencies in internal control identified during the audit to those charged with governance and management at an appropriate level of responsibility. Other deficiencies in internal control identified during the audit that have not been communicated to management by other parties and that, in the auditor's professional judgment, are of sufficient importance to merit management's attention should also be communicated to management on a timely basis.

75 Paragraph 10 of CAS 580, *Written Representations*, requires the auditor to request management to provide a written representation that it has fulfilled its responsibility for the preparation of the financial statements in accordance with the applicable financial reporting framework. Paragraph 13 of CAS 580 requires the auditor to request one or more written representations that the auditor determines necessary to support other audit evidence relevant to the financial statements or one or more specific assertions in the financial statements. Such written representations may supplement, but do not form part of, the written representation required by paragraph 10 of CAS 580. In the case of actuarially determined amounts, they may include representations about the following:

a. whether the selection and application of accounting policies are appropriate
b. whether matters, such as the following, under the applicable financial reporting framework, have been recognized, measured, presented or disclosed in accordance with that framework:
    i. actuarially determined amounts for employee future benefits, including:
        - the use of specific actuarial assumptions that are management's best estimate assumptions[7]
        - the determination of the discount rate, inflation, salary increase, mortality and other key economic and demographic assumptions
        - the completeness and accuracy of plans included in the valuation, the source data and plan provisions
        - the accuracy of extrapolations, including proper reflection of the effects of changes and events occurring subsequent to the most recent valuation that had a material effect on the extrapolations
    ii. actuarially determined amounts for insurance contracts
    iii. aspects of laws and regulations that may affect the financial statements, including non-compliance

7 CAS 540, paragraphs 26-27, *Management's Selection of a Point Estimate and Related Disclosures about Estimation Uncertainty.*

# Appendix

## Examples of possible audit procedures to address the assessed risks of material misstatement

The examples provided cover possible audit procedures to address the assessed risks of material misstatement of actuarially determined amounts applicable to many engagements; however, not all matters are relevant to every engagement and the list of examples is not necessarily complete.

This Appendix provides examples regarding the following actuarially determined amounts:

a. insurance contracts of insurance enterprises, including reinsurance activities; and
b. defined benefit or similar employee future benefit obligations of plan sponsors, or defined benefit or similar future employee benefit plans

## Examples of possible audit procedures to address the assessed risks of material misstatement of insurance contracts and liabilities

### Liability for remaining coverage

| ASSERTION(S) | OBJECTIVE | EXAMPLE AUDIT PROCEDURES | GENERAL MEASUREMENT MODEL (GMM) | VARIABLE FEE APPROACH (VFA) | PREMIUM ALLOCATION APPROACH (PAA) |
|---|---|---|---|---|---|
| Completeness and existence | Test reconciliation of policy data to valuation models | • Reconcile the policy data file to the input into the valuation model to verify that in-force policies are properly included in the estimate of future cash flows and that the policy attributes are correct.<br>• Assess whether the policy data file is complete by reconciling the underlying data to source administration system.<br>• Obtain an understanding of insurance contracts (i.e., through discussion with management and review of supporting documents). For a sample of policies, confirm the existence of the policy and test attributes such as contract classification, key terms of the contract and contract boundary. | X | X | X |

| ASSERTION(S) | OBJECTIVE | EXAMPLE AUDIT PROCEDURES | GENERAL MEASUREMENT MODEL (GMM) | VARIABLE FEE APPROACH (VFA) | PREMIUM ALLOCATION APPROACH (PAA) |
|---|---|---|---|---|---|
| Valuation | Evaluate models for future cash flows or perform an independent estimation of future cash flows | • Perform procedures to assess whether the method, assumptions and data used are appropriate<br>When the auditor chooses to develop its own point estimate or range to evaluate management's estimate:<br>• Perform an independent estimation of future cash flows for a sample of group of contracts<br>• Compare the outcome of the independent estimates with the entity's results, based on the established testing thresholds. | X | X | |
| Valuation | Test classification of cash flows (acquisition, fulfilment of existing contracts, other general) | • Evaluate whether the methodology applied to determine the classification of expense cash flows is consistent with the requirements of the accounting standard and has been applied correctly.<br>• Obtain supporting documents on a sample basis to test the expense allocation. | X | X | X |
| Valuation | Test asset for insurance acquisition cash flows | • Assess the entity's approach to determining the completeness and accuracy of pre-recognition insurance acquisition cash flows.<br>• Assess the existence of pre-recognition insurance acquisition cash flows by agreeing deferred expenses to supporting documentation.<br>• Test the nature of expenses that are included in pre-recognition insurance acquisition cash flows to determine that they are deferred in accordance with the entity's accounting policies and applicable financial reporting framework.<br>• Assess the entity's assessment of impairment of asset for insurance acquisition cash flows based on the requirements of IFRS 17. | X | X | X – not applicable if election made to expense acquisition costs immediately |

| ASSERTION(S) | OBJECTIVE | EXAMPLE AUDIT PROCEDURES | GENERAL MEASUREMENT MODEL (GMM) | VARIABLE FEE APPROACH (VFA) | PREMIUM ALLOCATION APPROACH (PAA) |
|---|---|---|---|---|---|
| Valuation | Evaluate economic and non-economic assumptions | • Determine which economic and non-economic assumptions used in the valuation model are significant and evaluate the reasonableness of significant assumptions.<br>• Consider performing sensitivity analysis to understand the risk and impact and benchmark results.<br>• Assess whether the input of assumptions into the valuation model is appropriately applied.<br>• On a sample basis, test data used in experience studies (e.g., comparing key data points to source documentation). | X | X | |
| Valuation | Evaluate the discount rate(s) used | • Evaluate the appropriateness of the method used to determine the discount rate(s).<br>• The auditor may choose to either review the calculation of discount rate(s) used by the entity or develop its own discount rate and compare against the results of the insurance enterprise. | X | X | X – if applicable |
| Valuation | Evaluate risk adjustment | • Test the assumptions used to determine the risk adjustment for non-financial risk.<br>• Assess the appropriateness of the calculation of the risk adjustment for non-financial risk to determine whether methodology and assumptions have been implemented appropriately.<br>• Assess the appropriateness of the input of the risk adjustment for non-financial risk into the model.<br>• Assess whether the risk adjustment reflects the amount of compensation that the entity requires for uncertainty of cash flows related to non-financial risk. | X | X | |

| AREA | ASSERTION(S) | PROCEDURES |
|---|---|---|
| Test benefit cost by performing substantive analytical procedures | Existence, rights and obligations, completeness, valuation and allocation | To test benefit cost by performing substantive analytical procedures, consider the following procedures:<br>• Determine the suitability of particular substantive analytical procedures for given assertions, taking account of the assessed risks of material misstatement and tests of details, if any, for these assertions.<br>• Evaluate the reliability of data from which the expectation of recorded amounts or ratios is developed, taking account of source, comparability, nature and relevance of information available, and controls over preparation.<br>• With the help of auditor's actuary, obtain a sample of member data (or entire data set) and recalculate the benefit obligation and service cost for the sample of plan members (or the aggregate amount). Inquire about any significant differences identified with management and obtain appropriate audit evidence. |

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