



**AUTORITÉ
DES MARCHÉS
FINANCIERS**

Actuary's Guide to Reporting on Insurers of Persons' Policy Liabilities

Senior Direction, Supervision of Insurers and
Control of Right to Practise

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Introduction

This Guide is intended for actuaries of Quebec chartered insurers of persons.

It sets out the requirements of the *Autorité des marchés financiers* (the “AMF” or the “Authority”) for the content and presentation of the report required under section 128 of the *Insurers Act*, CQLR, c. A-32.1 (the “Act”). It does not in any way limit the information that may be included in the report. The actuary should include all information—in addition to that mentioned in this Guide—that is necessary for a proper understanding of his work.

As required in section 129 of the Act, the actuary shall apply generally accepted actuarial practice in carrying out his work. He shall, however, take into account any changes, clarifications or requirements made thereto by the AMF. Accordingly, he should comply with the accepted actuarial practice set out in the Standards of Practice of the Canadian Institute of Actuaries (the “CIA”). The actuary must consider the guidance provided by the CIA’s Committee on Life Insurance Financial Reporting (“CLIFR”), in particular, in the Educational Note “*Guidance for the 2019 Valuation of Insurance Contract Liabilities of Life Insurers*”. **He must justify any failure to comply with the above-mentioned documents and guidance.**

The actuary’s opinion deal with the insurer’s consolidated business. Some tables in the actuary’s report are intended for reconciliation with the LIFE form and must therefore be presented on a consolidated basis. Those tables are explicitly identified in this Guide. All other information required herein concerns strictly non-consolidated business, since the information relating to the business of subsidiaries is found in the actuary’s reports of the latter.

The AMF expects that the valuation methods and assumptions to be clearly justified. Among other things, the source of the assumptions must be clearly disclosed. Thus, the actuary may be required to produce additional explanations if the financial returns or the actuary’s report do not make it possible to judge the relevance of the methods and assumptions used. To that end and for the purpose of on-site examination, the actuary must collect and keep:

- the tests, studies and other analysis he carried out;
- the documents that could provide a clear and complete justification for the choice of methods and assumptions used; and
- the control procedures for data, assumptions and calculations.

Summary of tables

The tables the actuary must include in the appropriate sections of the report are as follows:

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The actuary must ensure that these tables contain all the information required by this Guide, and comply with **the format provided for herein, as applicable.**

Format of report

Table of contents

The report must include a detailed table of contents, containing all the sections outlined in this Guide in the order in which they are provided. If the actuary deems it appropriate to add sections to the report, he may do so after the prescribed appendices. Furthermore, the different sections must be identified and all pages must be numbered, in such a way that a reference can be made in the table of contents.

Contact person

The report must provide the contact information for that person, who is appointed by the actuary to answer disclosure questions relating to the report.

Such contact information must be clearly indicated on the first page of the report and include the:

- contact person's name;
- mailing address;
- telephone number;
- e-mail address.

Outline of report

The actuary must ensure to produce a clear and complete report that contains all the sections, sub-sections and appendices set out in this Guide, as well as all the required tables listed on page B2.1.

All the sections, appendices and tables are required in the report for administrative purposes. Thus, even if a section does not apply to an insurer, it must still be included in the report.

Section 1 – Executive summary

This section of the report is intended to describe the context in which the actuarial valuation of the policy liabilities and reinsurance recoverables (“reinsurance assets”) was performed. Accordingly, the actuary must include especially the following:

- a brief presentation of the insurer:
 - an overview of the insurer’s structure;
 - the changes made to the structure;
 - the insurer’s lines of business, etc.
- the significant developments in recent years materially affecting policy liabilities, reinsurance assets or the insurer’s results:
 - the introduction or termination of an important product or line of business;
 - the implementation or discontinuation of an important reinsurance treaty;
 - a portfolio transfer, partnership, merger or acquisition;
 - a brief description of all material changes arising from the implementation of new accounting or actuarial standards, etc.
- a description of the material risks the insurer is facing:
 - the material risks raised in connection with the last report on the insurer’s financial position (“DCAT”);
 - any other risk deemed material by the insurer;
 - any material change to the methods and assumptions, etc.
- any other element required for a proper understanding of the valuation, such as:
 - the significant issues or concerns identified by the actuary and the manner in which they were resolved;
 - any unusual situation identified in connection with the valuation, etc.

Section 2 – Summary of consolidated net contract liabilities and net provisions for adverse deviations

2.1 Net contract liabilities – consolidated

In this section of the report, the actuary must provide a detailed table that reproduces the (gross) insurance and investment/service contracts liabilities (the “contract liabilities”) indicated on pages 22.010, 22.020 and 75.030 of the LIFE form. In this Guide and in the table below, “net contract liabilities” refers to (gross) contract liabilities less reinsurance assets. The actuary should also provide information on the premiums and amounts in force.

The information in this table must cover non-consolidated business and the business of subsidiaries, in order to reproduce certain amounts from the annual return. However, since the primary objective of the actuary’s report is to provide information on a non-consolidated basis, complete information is required strictly for non-consolidated business.

For each line of business, the actuary must provide the following information:

LINE OF BUSINESS (in \$000)							
Valuation class	Gross			Net (of reinsurance assets)			Allocation of net contract liabilities
	Premiums	Amount in-force	Contract liabilities	Premiums	Amount in-force	Contract liabilities	
Non-consolidated – Canada							
Class 1							
Class 2							
...							
Subtotal							
Subsidiaries – Canada							
Canada – total							
United States							
...							
Line of business – total							

Please note the following points with respect to the table above:

- For each valuation class of non-consolidated business, the “Valuation class” column must include:
 - a numbering;
 - the product name or type of product;
 - the number of the page in section 4.2 of the report, where the description of the assumptions for this class is disclosed.
- For non-consolidated business, a subtotal for each column must be provided.
- For business of subsidiaries, the information required must be provided on a single line after non-consolidated business (enter “Subsidiaries” in the “Valuation class” column). Complete information for this business must be found in the actuary’s report of the subsidiaries.
- If necessary, the information must be provided first for business issued in Canada, then for business issued in the United States, and finally for business issued in other countries. For each region, a total must be provided for each column.
- The allocation of net contract liabilities is the proportion (as a %) of the net contract liabilities in the valuation class to the insurer’s consolidated net contract liabilities.
- The actuary must specify the basis on which the premiums were calculated (e.g. annualized basis according to the valuation system, basis used for the results in the annual return). Note that the premiums may be presented, if necessary, by line of business or for certain groupings of valuation classes.
- For certain products, including accumulation products, the premiums correspond to deposits in the past year.
- The amounts in force correspond, where applicable, to the amount of insurance, the amount of the yearly annuity or the value of the fund.
- The actuary must provide the totals by line of business and for all business.
- The total (gross) contract liabilities must correspond to the sum of the amounts disclosed on page 20.020, line 010, column 01, and on page 22.020, line 450, column 41, of the LIFE form.
- The total net contract liabilities must correspond to the total (gross) contract liabilities, as defined above, less the reinsurance assets disclosed on page 22.020, line 559, column 01 of the LIFE form.

2.2 Net provisions for adverse deviations – consolidated

The actuary must provide two detailed tables of the provisions for adverse deviations (“PfADs”) included in the consolidated net contract liabilities.

The actuary must provide the PfADs by type for each of the insurer’s lines of business on a non-consolidated basis and for the subsidiaries. A breakdown of the subsidiaries’ PfADs, by line of business, is found in the actuary’s report of these ones. The first table below must be completed.

The net PfADs for the investment expenses must be provided in the column “Others” in “Economic assumptions” instead of in the column “Expenses”.

The actuary must provide the PfADs by year included in the consolidated net contract liabilities for the last three years. The second table below must be completed.

The order of the PfADs calculation should be disclosed. The AMF expects the calculation method for the PfADs to be comparable from one year to another. Any change in method must be disclosed and justified. Also, if the order of the PfADs calculation differs by product line, this difference must be disclosed and justified.

2.2.1 Additional net provisions for adverse deviations – consolidated

The actuary must disclose the additional net provisions for adverse deviations (“additional net PfADs”) included in the net contract liabilities. That enables the AMF to judge, among other things, the level of conservatism incorporated into the net contract liabilities. For the AMF, the “additional net PfADs” are defined as the difference between the net contract liabilities on the books and the minimum liabilities permitted by the CIA’s Standards of Practice.

Mortality

The actuary must disclose whether the best estimate assumption of mortality in life insurance, in accident and sickness insurance or in annuities includes a prospective mortality improvement assumption.

The actuary must provide the resulting additional PfADs in the appropriate column of the following table. Such additional PfADs correspond to the excess between the net insurance contract liabilities in the books and the liabilities recalculated using the mortality improvement rates promulgated from time to time by the Actuarial Standards Board (“ASB”).

Economic assumptions

Under the Canadian Asset Liability Method (“CALM”), the actuary must disclose the difference between the net contract liabilities calculated according to the worst-case scenario on the interest rates prescribed by the CIA’s Standards of Practice and those calculated according to the base scenario as the “net PfADs by type” for the “interest rate (C-3 risk)” in the table below.

If the actuary uses a yield assumption for non-fixed income assets (stocks only) less favourable than the historical yield of assets with the same characteristics in the same category, he must provide a note below the table “net PfADs by type” and indicate the impact in the “additional net PfADs”.

If the actuary uses a more unfavourable economic scenario than those prescribed and/or ultimate risk-free reinvestment rates lower than the minimum of the range of interest rates promulgated from time to time by the ASB, he must provide the difference between the liabilities on the books and the liabilities calculated according to the worst prescribed scenario and/or calculated according to the prescribed ultimate risk-free reinvestment rates as an “Additional net PfADs” in the appropriate column of the table “Net PfADs by type”.

Thus, the difference between the net contract liabilities on the books and those liabilities calculated according to the CALM base scenario must be equal to the sum of the “Net PfADs by type” for the “Interest rate (C-3 risk)”, for the “Credit spreads”, for the “Supplementary PfADs for credit spreads” if applicable and for the economic “Additional net PfADs” mentioned above.

(in \$000)

Lines of business		Net contract liabilities	Net PfADs by type													Additional net PfADs (deviation with the CIA's minimum)			Total net PfADs	
			Economic assumptions						Insurance assumptions					Other assumptions		Mortality			Economic	Amount (including the additional net PfADs)
Non-consolidated - Non-participating			Fixed income asset default (C-1 risk)	Non-fixed income asset market risk	Interest rate (C-3 risk)	Credit spreads	Supplementary PfAD for credit spreads (SOP 2330.08)	Supplementary PfAD for NFI usage (SOP 2340.20)	Other	Mortality	Mortality improvement	Morbidity	Morbidity improvement	lapse	Expenses	Other	Mortality improvement	Stock return	Additional economic scenario and interest rates	
		Life	individual group																	
Annuity	individual group																			
Accident / sickness	individual group																			
Total - non-consolidated non-participating																				
Total - non-consolidated participating																				
Total - non-consolidated non-participating and participating																				
Subsidiaries																				
TOTAL - consolidated																				

Note that the net PfADs by type for the “non-fixed income asset market risk”, the “interest rate (C-3 risk)” and the “mortality improvement” in the above table **must not** include the corresponding “additional net PfADs”. These additional net PfADs must be presented in the section “additional net PfADs”. If not, the actuary must provide explanations below the previous table.

The total net PfADs presented at the end of this table must include the additional net PfADs.

The actuary must provide explanations if some amounts are presented in the columns “Other”.

(in \$000)										
Net PfADs by year										
Lines of business		T			T-1			T-2		
Non-consolidated - Non-participating		Net contract liabilities	Total net PfADs (including the additional net PfADs)	Net PfADs as a % of the net contract liabilities	Net contract liabilities	Total net PfADs (including the additional net PfADs)	Net PfADs as a % of the net contract liabilities	Net contract liabilities	Total net PfADs (including the additional net PfADs)	Net PfADs as a % of the net contract liabilities
Life	individual group									
Annuity	individual group									
Accident/sickness	individual group									
Total - non-consolidated non-participating										
Total - non-consolidated participating										
Total - non-consolidated non-participating and participating										
Subsidiaries										
TOTAL - consolidated										

2.3 Provisions for adverse deviations – consolidated – CARLI

The actuary must provide in the following detailed table the provisions for adverse deviations (PfADs) by type that are included in the Surplus Allowance as per the *Capital Adequacy Requirements Guideline for Life and Health insurers* (the “CARLI Guideline”).

(in \$000)									
Line of business		Net contract liabilities ⁽¹⁾	Provisions for Adverse Deviations (PfADs) in Surplus Allowance by type ⁽²⁾						Surplus Allowance ⁽³⁾
			Economic assumption	Non-economic assumptions					
			Risks-free Interest Rate	Mortality	Morbidity	Withdrawal and Partial Withdrawal	Lapse	Expense	
Life	individual group								0
									0
Annuity	individual group								0
									0
Accident / Sickness	individual group								0
									0
Total - non-consolidated non-participating		0	0	0	0	0	0	0	0
Total - non-consolidated participating									0
Total - non-consolidated non-participating and participating		0	0	0	0	0	0	0	0
Subsidiaries									0
TOTAL - consolidated		0	0	0	0	0	0	0	0

(1) The net contract liabilities must correspond to the amount disclose in the table of section 2.2 of the report on policy liabilities.

(2) See section 1.1.3 of the CARLI Guideline for the description of the particular PfADs included in Surplus Allowance used to calculate the CARLI ratios.

(3) The Surplus Allowance must correspond to the amount presented in the CARLI disclosure form at page 10.100 line 1010010060.

Section 3 – Verification of data and calculations

In this section of the report, the actuary must indicate the procedures used to verify the integrity and validity of the valuation data. The procedures must cover, among other things, the data related to the assets used in the calculation of net contract liabilities.

The actuary must also summarize the process used to ensure that the data and calculations for policy liabilities net of reinsurance assets reflect the provisions of contracts and are in line with the actuarial method and assumptions chosen.

The actuary must specify the extent to which he used and verified data produced by a third party.

Section 4 – Valuation assumptions

This section of the report is divided into two parts: the determination of valuation assumptions; and a description of valuation classes and assumptions. The valuation assumptions for asset and liability cash flow using CALM must be covered for net insurance contract liabilities. Any projection of cash flows using approximations must be covered in section 7 of the report.

As indicated in the introduction of this Guide, the actuary’s report must provide information on a non-consolidated basis. Accordingly, the information required in this section must be presented on a non-consolidated basis. The information concerning the business of subsidiaries must be found in the actuary’s report of the latter.

4.1 Determination of valuation assumptions

Since the actuary applies his judgment in performing the valuation, it is essential for him to justify such application for all phases of the assumption determination process.

To that end, the actuary must describe the determination process in detail for each valuation assumption chosen to calculate the insurer’s non-consolidated net contract liabilities. **The actuary must indicate, in each case, the best estimate assumption and margin for adverse deviations (“MfADs”) separately.** The AMF expects the actuary to discuss, where relevant, the impact of the DCAT results on the determination of assumptions.

The actuary must explain the reasons why he deems the best estimate assumption adequate, by referring to any supporting test, study (internal or industry) or analysis. He must give a clear description of such test, study or analysis.

The actuary must complete the following table, to disclose when the expected experience assumptions were last updated or reviewed and how frequently each assumption is to be updated or reviewed, for each assumption discussed in this section.

Schedule of the experience study			
<i>Name of the assumption</i>			
Group of policies affected by the experience study	Date of the last 2 experience studies were produced (month, year)	Expected date of the next experience study (month, year)	Frequency at which an experience study is produced

If, for any case, the same study experience covers all policies, the actuary must indicate "All" in the "Group of policies affected by the experience study" column.

Justification must be provided if the date of the next experience study is unknown or if an experience study planned to be carried out has been postponed. Explanation must be provided if there is no established process for updating the experience study, including the frequency at which an experience study is produced.

The actuary must provide the following for each assumption discussed in this section:

- the source of the data;
- a justification of the relevance of the data;
- the treatment of the data;
- the credibility of the data used;
- the results obtained;
- the link between the study results and the assumption chosen.

The actuary must, in particular, describe and justify any trend reflected in the assumption chosen. **He must also indicate how he determined assumptions for which the sources of data are limited.**

The actuary must mention if he considered the most recent studies published by the CIA to determine the assumptions. If not, he must justify it.

In addition, the actuary must describe and explicitly justify the MfADs chosen and their variation. He should discuss the testing done to ensure that the addition of each of the MfADs served to increase the net contract liabilities. Also, if a margin is outside the range recommended in the CIA standards, the actuary must disclose and justify it.

The actuary must present the assumptions in the order in which they appear in this Guide. For each assumption, he must describe the determination process, following the order for lines of business used in section 2, "Summary of consolidated net contract liabilities and net provisions for adverse deviations," of his report.

The use of independently reasonable assumptions is required. The use of explicit assumptions is also required, except in the situations provided for by the CIA's Standards of Practice. Any use of an implicit assumption must be disclosed.

4.1.1 Mortality

The actuary must indicate the extent to which the assumptions chosen are based on the insurer's own experience and/or the industry's experience. In any case, he must justify his choices, using, among other things, the credibility applied to the insurer's experience. If changes are made to the mortality tables published, they must be explicitly disclosed. If the mortality table used is not the most recent published by the CIA, the actuary must justify why.

When the actuary takes the insurer's experience into account, he must provide a detailed description of the experience study and the main results thereof in his report. To that end, he must provide a table illustrating this experience over the past few years, using actual to expected experience ratios. For all the years indicated, the expected experience must be calculated using 100% of the mortality table used in the choice of mortality assumption at the valuation date.

The table to be provided for the information used to determine the mortality experience ratio is as follows:

Mortality experience				
Year of experience	Number of deaths	(1) Gross actual deaths (in \$000)	(2) Expected deaths (in \$000)	Experience ratio (1)/(2)
...				
t-3				
t-2				
t-1				
t				
TOTAL				

The actuary must clearly explain the entire determination process for best estimate assumptions, from the experience ratios to the valuation assumptions chosen. He must describe, justify and quantify all adjustments made to the data, in particular to the experience ratios (e.g. for mortality improvement prior to the valuation date).

The actuary must provide clear and complete explanations as to the expected mortality for the different groups of insureds, such as men/women and smokers/non-smokers.

Also, when a unique adjustment factor is applied to a mortality table for all ages, the actuary must mention if he is confident that this adjustment factor is pertinent for the advance ages if there's only few data available at these ages. The actuary must also justify his choice when an identical adjustment factor for the select and ultimate period is applied.

The actuary must explain how the best estimate assumption of mortality and margins for adverse deviations were determined for products priced on a preferential basis or with guaranteed issue. For the different adjustment factors applied to the different preferential classes, the actuary must mention how the selection effect disappears in the future so as to bring the adjustment factors at the same level. He must also explain how he took into account the fact that the mortality for products priced on a basis other than preferential may be influenced by preferentially priced products on the market.

The actuary must indicate whether there are products that are death-supported. He must also clearly explain the treatment applied to the valuation of such contracts.

i) *Future mortality improvement*

The actuary must disclose the future mortality improvement assumption that is included in the best estimate mortality assumptions for each product grouping. He must justify his choices. The actuary must also indicate which factors have been taken into account in establishing each of the product groupings.

ii) *Margins for adverse deviations*

For all mortality-related assumptions, the actuary must describe and explicitly justify the MfADs chosen and their variation. He should discuss the testing done to ensure that the addition of each of the MfADs served to increase the net contract liabilities. Also, if a margin is outside the range recommended in the CIA standards, the actuary must disclose and justify it.

When a lower MfAD is applied to the best estimate future mortality improvement assumptions due to diversification between death-sensitive block of products and death-supported block of products, the actuary must disclose and justify the application of such diversification factors. For each block of business of death-sensitive and death-supported taken jointly to establish a diversification factor, the actuary must explicitly justify the elements considered in determining the diversification factor applied. In addition, the actuary must present the sensitivity test carried out and the results obtained which led to establishing the diversification factor applied.

iii) Credibility

The actuary must indicate how he calculated the credibility factor(s) applied to the insurer’s experience, and specify, in particular, the years of experience used to determine the number of deaths. The actuary must also justify the use of an overall credibility factor for the insurer or a factor for each product sub-category, as the case may be. The actuary must indicate whether the Normalized method was used and explain its application. If that method was not used, he must justify the use of another method.

The following table must be provided:

Mortality credibility				
	Product sub-category			
	(1)	(2)	(3)	Etc.
Number of deaths				
Credibility factor				
Actual/expected ratio				
Industry’s experience				
Ratio calculated with credibility				
Assumption chosen (t)				
Assumption chosen (t-1)				

iv) *Changes to mortality rates*

The actuary must discuss in detail changes made to mortality rates, and disclose the following:

- the impact of selective lapsation on mortality, particularly for renewable term insurance;
- the mortality improvement (as mentioned previously);
- the mortality for multiple life insurance policies;
- any other item affected by or influencing the determination of the assumption.

4.1.2 Morbidity

The explanations must focus on the morbidity incidence rates and the recovery rates (termination rates).

The actuary must indicate the extent to which the assumptions chosen are based on the insurer's own experience and/or the industry's experience. In any case, he must justify his choices, using, among other things, the credibility applied to the insurer's experience. If changes are made to the contingency tables published, they must be explicitly disclosed.

When the actuary takes the insurer's experience into account, he must provide a detailed description of the experience study and the main results thereof in his report. To that end, he must provide a table illustrating this experience over the past few years, using actual to expected experience ratios. For all the years indicated, the expected experience must be calculated using 100% of the contingency table used in the choice of morbidity assumption at the valuation date. The table must indicate whether the data were collected according to amount of insurance or number of disabled persons.

The following table must be provided for the recovery rate assumption:

Experience and morbidity assumption							
Recovery rate							
Disability duration	Year of experience <i>xxxx at yyyy</i>				% of <i>Name of the contingency table</i>		
	Actual terminations	Expected terminations	Actual/expected ratio (%)	Credibility (%)	Best estimate (%)	MfAD (%)	Total (%)
< 1 year							
1 year							
2 years							
3 years							
4 years							
5 years							
6-10 years							
10+ years							

The actuary must clearly explain the entire determination process for best estimate assumptions, from the experience ratios to the valuation assumptions chosen. He must describe, justify and quantify all adjustments made to the data, in particular to the experience ratios (e.g. to take into account of a morbidity improvement trend prior to the valuation date).

The actuary must provide clear and complete explanations as to the expected morbidity for the different groups of insureds, such as men/women disabled, and for the different durations of disability.

i) *Future morbidity improvement*

The actuary must disclose whether the best estimate assumptions of morbidity in accident/sickness insurance include a morbidity improvement trend. He must justify his choices.

ii) *Margins for adverse deviations*

For all morbidity-related assumptions, the actuary must describe and explicitly justify the MfADs chosen and their variation. He should discuss the testing done to ensure that the addition of each of the MfADs served to increase the net contract liabilities. Also, if a margin is outside the range recommended in the CIA standards, the actuary must disclose and justify it.

iii) *Credibility*

The actuary must indicate how he calculated the credibility factor(s) applied to the insurer's experience, and specify, in particular, the following for each factor:

- the group of insureds chosen (all insureds or a sub-group);
- the basis used for calculating the factor (expected disabilities or actual disabilities);
- the years of experience chosen.

iv) *Changes to morbidity rates*

The actuary must discuss in detail changes made to morbidity rates, and disclose the following:

- the possibility of anti-selection by insureds;
- the morbidity improvement (as mentioned previously);
- any other item affected by or influencing the determination of the assumption.

4.1.3 Economic assumptions

The actuary must include a table in Appendix 3 of his report that provides segmentation of the insurer's non-consolidated assets and liabilities.

For insurance contracts, the actuary must describe and justify all economic assumptions chosen. More specifically, he must discuss the following points and he must discuss explicitly any situation where material judgment or discretion may be required for the interpretation/implementation of the CIA Standards of Practice concerning economic reinvestment assumptions.

i) *Cash flows projected from assets*

For each type of asset, the actuary must describe the assumptions used to produce the forecast cash flows as well as the corresponding MfADs, where necessary. He must indicate whether certain assumptions used for forecast cash flows from certain assets were provided by a source other than the insurer.

- **Fixed income assets**

The actuary must specify the duration of the projected cash flows.

When fixed-income assets used to match policy liabilities require the establishment of assumptions (e.g., policy loans), such as the expected rate of return, expected amortization period, etc., these assumptions must be disclosed and justified.

- **Non-fixed income assets**

In the event that the actuary uses non-fixed income assets, the assumptions concerning investment income (e.g. dividends) and capital gains (losses) must be described and justified separately for the various asset categories (stocks, real estate, etc.).

The actuary must mention if the best estimate assumption on a non-fixed income asset comes from reliable historical data.

The actuary must indicate, among other things, the name and reference period of any index published or a description and summary of the internal studies he used to develop the assumptions chosen.

He must indicate and explain the difference between the yield from historical data and the assumption chosen. He must also indicate the duration of the

projected cash flows and the link between these assumptions and the interest rate scenarios. If reliable historical information is not available for a non-fixed income class of assets, the actuary must discuss how he determines the best estimate assumption and the MfADs.

In addition, concerning the MfADs for the common share and real estate capital gains assumption, the actuary must describe and justify the one-time shock, as a percentage of the market value that is added to the MfADs of 20% of the best estimate. He must discuss the time and financial repercussions of such shock. The shock would occur at the time when the change is most adverse for the insurer. The actuary would disclose how he provided for it.

The actuary must discuss and justify the MfADs of the dividend/income return assumption for each type of asset and he must ensure compliance with CIA's Standard of Practice 2340.17.

For contracts where the liability cash flows are dependent on the underlying assets, the actuary must specify whether the MfADs applicable to non-fixed income assets described above have also been applied to these underlying assets with a reflected effect thereafter on the liability cash flows. An example would be the liability cash flows of universal life policies for which client funds would be invested in non-fixed income assets.

The following table must be provided:

Non-fixed Income Assets Assumptions used in Valuation						
Asset Category	Dividend/Income Return		Capital Gain		Market Shock	
	Best estimate (%)	MfAD (%)	Best estimate (%)	MfAD (%)	(%) of the MV	Year of the shock
Equities						
Real Estate						
Other (please specify)						

In addition, the actuary must mention if he complies with the CIA's Standard of Practice 2340.20 on the proportion of reinvestments in non-fixed income assets that support liabilities. The discount rate used in calculating the maximum non-

fixed income assets at each projection period must be disclosed. The following table must be provided for each asset segment:

Projected Percentage of Non-fixed Income Assets Relative to Total Asset Value <i>Asset Segment</i>							Maximum % over the projection year	The projection year when the maximum % is reached
	Duration (year)							
	0	5	10	20	30	40		
Projected Percentage retained								
Projected Percentage permitted by the investment strategy								
Projected Percentage permitted by the CIA Standard of Practice								

The projected percentage retained at the valuation date indicated in the first line and first column of the table above should be the same as the proportion it is possible to calculate from the Appendix 3 presenting the segmentation of assets and liabilities, for each segment. In the case there is a difference, the actuary must explain it.

Also, the actuary must justify any increase in the projected percentage retained (increase of the percentages indicated in the first line of the table above) in the years after the valuation date compared with the percentage indicated for the valuation date. If this investment strategy is used to calculate the actuarial liabilities, the actuary must present the increase in the actuarial liabilities that could result from keeping the percentage of non-fixed income assets for the years after the valuation date equal to the percentage retained at the valuation date. If the valuation is done globally instead of by segment, the result of this test must be presented only if there's an increase in the non-fixed income assets percentage for the liabilities backed with these assets in the years after the valuation date compared with the percentage at the valuation date. For example, an insurer, that includes in its calculation both annuity products and life insurance products, but for which the non-fixed income assets only backed life insurance products, could calculate the limit for the life insurance liability only and not for the total annuity and life liabilities. In this context, the increase in liabilities resulting from limiting the percentage of non-fixed income assets to the percentage retained at the valuation date must be presented.

Finally, the actuary must present the increase in the actuarial liabilities that could result from the replacement of all non-fixed income assets by fixed income assets permitted by the insurer's investment policy to calculate the actuarial liabilities. The fixed income assets used to replace the non-fixed income assets in this calculation must be indicated.

In these two tests above, all the impact related to non-fixed income assets on the actuarial liabilities must be included, as the loss of the tax benefit of dividends on shares of Canadian Companies.

ii) *Treatment of net projected cash flows*

The actuary must provide the following information:

- the expected reinvestment rate curve by type of asset as well as the source of such data (including the date risk-free interest rates are set);
- the projected investment policy for each future year by type of investment and term;
- the link between the actual and projected investment policy;
- the strategy used (e.g., sale or purchase of assets) when net cash flows are negative. The methodology used to ensure that leverage is not created (eg, initial sale of short-term assets, followed by purchases of long-term assets) should be mentioned. The actuary should describe the application of the CIA's Standard of Practice 2330.18.

The assumptions concerning the credit spreads must be described and justify separately for each type of asset. The actuary must also indicate the duration of the projected cash flows and the link between these assumptions and the interest rate scenarios.

The actuary must discuss how he determines the best estimate assumption of credit spreads for each type of asset.

The actuary must also indicate, among other things, the name and reference period of any index published or a description and summary of the internal studies he used to develop the assumptions chosen. If some data are excluded from the reference period (“outliers”), the actuary must justify it. He must indicate and explain the difference between the credit spread from historical data and the assumption chosen.

The actuary must indicate explicitly the MfADs.

The actuary must provide a table illustrating the best estimate assumptions and the MfADs, for each type of asset, of the credit spreads and the asset default risk factors (C-1 risk) for certain durations.

The following table must be provided for each type of asset:

Fixed income Assets Assumption Used in Valuation <i>Type of asset and proportion</i>					
Duration (year)	Credit Spread		Asset Default Risk Factors (C-1 risk)		Net Credit Spread
	Best estimate (%)	MfAD (%)	Best estimate (%)	MfAD (%)	Total (%)
0					
5					
30					

iii) **Asset default risk (C-1)**

This risk can be divided into three components:

1. The risk that performing assets become non-performing;
2. The risk of a further deterioration to the return of non-performing assets;
3. The risk that variable return assets generate a return lower than expected.

The actuary must provide assumptions for all components relevant to the insurer. He must, among other things, take into account the following economic losses:

- interest losses from the date of insufficient return to the final disposal of the assets in question;
- capital losses on the sale of assets;
- extraordinary expenses related to management of the events causing the insufficient return.

If a general provision is held in the assets on the balance sheet, the actuary should take it into account in determining the assumption related to the risk that performing assets will become non-performing.

The actuary must indicate the extent to which the assumptions chosen are based on the insurer's own experience and/or the industry's experience. In any case, he must justify his choices. When he takes the insurer's experience into account, he must provide a detailed description of the experience study and the main results thereof in his report. **When the industry's experience is used, he must refer to the source of the data used.**

The actuary must describe and explicitly justify the MfADs he chosen and their variation.

The actuary must provide a table illustrating the best estimate assumptions and the MfADs, in basis points, for each type of asset. The following standard table must be completed:

Asset Default Risk Factors (C-1 risk)			
Type of Asset	Best estimate (%)	MfAD (%)	Total (%)
Federal bonds			
Provincial bonds			
Municipal bonds			
Corporate bonds – AAA			
Corporate bonds – AA			
Corporate bonds – Etc.			
Insured mortgage loans			
Uninsured mortgage loans			
Policy loans			
Preferred shares			
Etc.			

iv) Investment expenses

It is advisable for the actuary to establish investment expense assumptions according to a study of the insurer’s experience on a non-consolidated basis. The actuary must include a detailed description of the study and the main results thereof in his report. He must also indicate the existing relationship between the expected investment expense assumptions and the actual investment expenses incurred by the insurer on a non-consolidated basis.

The actuary must describe and explicitly justify the MfADs chosen and their variations.

The actuary must provide a table illustrating the results of experience studies, comparing actual to expected investment expenses for the past few years. He must also provide a table illustrating the assumptions chosen as a percentage of assets for the best estimate and the MfADs for each type of asset. The following table must be provided:

Investment expenses								
Asset Category	Results of the experience study					Valuation assumption		
	Actual investment expenses		Expected investment expenses		Expected/actual ratio	Best estimate	MfAD	Total
	\$000	Basis point	\$000	Basis point	(expected \$ / actual \$)	Basis point	Basis point	Basis point
Long-term deposits								
Bonds								
Equities								
Mortgage loans								
Etc.								
Total								

The actual investment expenses of the experience study may be over a horizon of more than one year. The actuary must mention the period used.

v) Provision for adverse deviations for interest rate risk (C-3)

In order to determine net insurance contract liabilities using CALM, the actuary must test all interest rate scenarios prescribed by the CIA’s Standards of Practice, as well as other scenarios according to the insurer’s characteristics. Where no additional interest rate scenario is presented, the AMF requests that the actuary justify this as appropriate.

The following table must be provided:

NET INSURANCE CONTRACT LIABILITIES AND PROVISION FOR ADVERSE DEVIATIONS (C-3) (net of reinsurance assets) (in \$000)					
Segments	Base scenario (1)	Scenario 1	...	Net liabilities chosen (2)	PfADs C-3 (2) – (1)
[Segment 1]					
...					
TOTAL					

This table must include the net insurance contract liabilities obtained according to the following scenarios:

- the base scenario;
- each of the prescribed scenarios;
- each additional scenario, if applicable;
- the scenario chosen that produces the highest net contract liabilities for each segment.

The provision for adverse deviations for interest rate risk (C-3) is defined, for each segment, as the difference between the net insurance contract liabilities chosen and the net insurance contract liabilities calculated according to the base scenario. Note that the PfADs indicated in the table above must correspond with the sum of the PfADs for interest rate risk (C-3), the PfADs for the credit spreads and the additional PfADs for these two risks indicated in the table in section 2.2.

The information in the table above must be provided for each of the insurer's segments and for all the insurer's segments on a non-consolidated basis. The net insurance contract liabilities chosen by segment must correspond with the insurance contract liabilities net of the reinsurance assets related to those contracts, as presented in the table in Appendix 3 – Segmentation of assets and liabilities.

The actuary must justify the provision for adverse deviations for interest rate risk (C-3) held globally for the insurer on a non-consolidated basis. He must also explain his method of allocation by segment and mentioned if he took into account the CIA educational note *“Aggregation and Allocation of Policy Liabilities”*, published in September 2003. The AMF expects that the provision for a given segment to be positive, that the actuary recognize only the synergies between permanent and actual segments, and that the method of allocation be applied consistently over time.

If the actuary determines the provision for adverse deviations for interest rate risk (C-3) using a stochastic model, the following information must be described:

- a description of the stochastic model;
- the random number generator;
- the number of scenarios;
- the estimation of the stochastic model parameters;
- the investment yield assumptions chosen;
- the model calibration results;
- the CTE percentage chosen and its justification according to investment yield, estimate of parameters and model risk. The actuary must confirm that he complies with the CIA's Standard of Practice 2330.34 et 2370.06;
- any approximation used in the model;
- any other information deemed relevant by the actuary.

vi) *Interest rate sensitivity testing*

The actuary must present the increase in net contract liabilities resulting from the application of the two tests below.

The actuary must present the increase in net contract liabilities separately for each test.

The net contract liabilities' increase represents the difference between the highest net contract liabilities obtained (before tax) when recalculated according to each test below and the highest net contract liabilities obtained according to the CIA prescribed scenarios applicable in each test (or the net contract liabilities retained in the third test).

1. The first test consists of the recalculation of the net contract liabilities in all CIA prescribed scenarios with a uniform decrease of 10 basis points of the interest rates curve at the valuation date. The ultimate interest rates must not be changed. If the scenario retained by the actuary is an additional scenario, he must present the impact compared with the CIA prescribed scenario that gives the highest net contract liabilities between the 8 CIA prescribed scenarios.

2. The second test consists of the recalculation of the net contract liabilities with a decrease of 10 basis points of the “ultimate risk-free reinvestment rate-low” as promulgated by the ASB, in the CIA prescribed scenarios where these rates are applicable, i.e. in the prescribed scenarios 1, 3, 4, 5 and 6. If the CIA prescribed scenario that gives the highest net contract liabilities is not the prescribed scenario 1, 3, 4, 5 or 6, this test is not necessary. If the scenario retained by the actuary is an additional scenario, he must present the impact compared with the CIA prescribed scenario that gives the highest net contract liabilities between prescribed scenario 1, 3, 4, 5 or 6, but only if one of these scenarios gives the highest net contract liabilities between the 8 CIA prescribed scenarios and the actuary would have retained one of them if he didn't retain an additional scenario.

3. The third test consists of the recalculation of the net contract liabilities using flat discount rates as presented in the table below as the valuation interest rates. The liability cash flows must be established assuming a current and future interest rate environment corresponding to the flat discount rates presented below. Thus, inflation rates, Investment Income Tax, the projection of participating policyholder dividends, the guarantees offered by certain life insurance product must reflect, when required, this interest rate environment for the entire duration of the valuation for the establishment of the liability cash flows. The difference between the net contract liabilities recalculated in this test and the net contract liabilities retained must be presented, disclosing the present value of best estimate liabilities and the present value of the provisions for adverse deviations separately. Thus, two calculations must be performed (test 3a and test 3b) according to the following discount rates.

Geography	Test 3a	Test 3b
Canada, États-Unis et Royaume-Uni	3,5%	5,3%
Europe, sauf le Royaume-Uni	3,5%	3,6%
Japon	3,5%	1,8%
Autres pays	3,5%	5,3%

vii) Inflation

The choice of inflation assumptions must be justified. The actuary must, in particular, justify the degree of correlation between the inflation assumptions and interest rate scenarios.

viii) Foreign currency exchange rates

The choice of assumptions on foreign currency exchange rates must be justified. The actuary must also describe the method used to determine the associated provision for adverse deviations.

ix) Specific securities

- **Inter-segment transactions**

The actuary must describe, if appropriate, the inter-segment transactions and justify their use. He must indicate the segments involved as well as the number and structure of transactions (amount, maturity, and yield). The way in which the price of transactions was established must be clearly explained. The treatment of cash flows movements from the transactions in the calculation of net contract liabilities and the margin for asset default risk (C-1) applied to such movements must be described and justified.

In addition, the actuary must describe the methods and procedures used to ensure the monitoring and control of these transactions.

- **Derivative instruments**

The actuary must describe his use of derivative instruments. He must also explain how cash flows were projected and, in particular, their link with interest rate scenarios.

4.1.4 Expenses

It is advisable for the actuary to establish expense assumptions according to a study of the insurer's experience on a non-consolidated basis. A detailed description of that study and the main results of it must be included in the report.

In order to justify the sufficiency of assumptions for maintenance expenses before MfADs, the actuary must provide the table presented further on in this section of the Guide. He must **explain any situation** where:

- 1- The total amount of actual expenses to be funded is **greater** than the total amount of expected expenses in the net contract liabilities (before MfADs) in the past year;
- 2- The total amount of actual expenses to be funded is **greater** than the total amount of maintenance expenses expected in the budget, when the budget was used to determine the maintenance expense assumption;
- 3- The total amount of maintenance expenses expected in the budget is **greater** than the total amount of expenses expected in the net contract liabilities (before MfADs) in the past year, when the budget was used to determine the maintenance expense assumption.

In addition, the actuary must explain **any significant deviation** when:

- 1- The total amount of actual expenses to be funded is **less** than the total amount of expected expenses in the net contract liabilities (before MfADs) in the past year;
- 2- The total amount of actual expenses to be funded is **less** than the total amount of maintenance expenses expected in the budget, when the budget was used to determine the maintenance expense assumption;
- 3- The total amount of maintenance expenses expected in the budget is **less** than the total amount of expenses expected in the net contract liabilities (before MfADs) in the past year, when the budget was used to determine the maintenance expense assumption.

Explanation concerning the budget may be omitted if the budget was not used to determine the maintenance expense assumption.

The actuary must clearly justify all assumptions concerning a decrease in unit maintenance expenses related to an increase in productivity or a reduction in expenses that were used to determine the maintenance expense assumption.

The actuary must provide information explaining:

- 1- the difference, excluding inflation, between the actual expenses of the valuation year and the expected expenses in the following year budget;
- 2- an evolution of in-force business that has an impact on unit expenses.

In addition, the actuary must provide the following information, in particular:

- the frequency of expense studies and the date of the most recent study;
- a description of the process used to collect the data required for the study (meeting with managers, surveys, etc.);
- the method for the allocation of expenses between acquisition expenses and maintenance expenses, as well as any change to the methodology from the previous study;
- the way in which maintenance expenses were allocated among expenses per policy, expenses per \$1,000 of in-force business, expenses as a percentage of the premium, or any other allocation method, as well as any change to the methodology from the previous study;
- a table presenting the unit maintenance expenses over the past two years (expenses per \$1,000 of insured amount; expenses per policy for premium payment policies; expenses per policy for paid-up policies; expenses per rider, etc.);
- explanations concerning the evolution in the experience ratios presented in the expense table “Evolution of maintenance expense experience ratios” (p. B11.4), such as the reasons for material variations in the expenses to be funded in relation to general expenses, and the reasons for the insufficiency of maintenance expenses funded in net contract liabilities. He must also discuss solutions considered for containing expense insufficiency.

The actuary must describe and explicitly justify the MfADs chosen and their variation. He should discuss the testing done to ensure that the addition of each of the MfADs served to increase the net contract liabilities. Also, if a margin is outside the range recommended in the CIA standards, the actuary must disclose and justify it.

MAINTENANCE EXPENSES COMPARISON OF ACTUAL AND EXPECTED EXPENSES ⁽¹⁾ (in \$000)											
Lines of business		Actual expenses						Expected expenses			
Non-consolidated – Non-participating		General expenses ⁽²⁾	Taxes	Non-recurring expenses ⁽³⁾	Acquisition expenses and other policy issuance expenses ⁽⁴⁾	Other expenses ⁽⁵⁾	Expenses to be funded (a) - [(b)+(c)+(d)+ (e)] = (f)	Ratio of expenses to be funded to general expenses (f) / (a) = (g)	Release of net contract liabilities (before MfADs) in the past year ⁽⁶⁾	Release of net contract liabilities (before MfADs) in the next year ⁽⁷⁾	Ratio of expected expenses to expenses to be funded (h) / (f) = (i)
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)			
Life	individual group					0	-			-	
						0	-			-	
Annuity	individual group					0	-			-	
						0	-			-	
Accident/sickness	individual group					0	-			-	
						0	-			-	
Total – non-consolidated – non-participating		0	0	0	0	0	-	0	0	-	
Total – non-consolidated – participating						0	-			-	
Total – non-consolidated non-participating and participating		0	0	0	0	0	-	0	0	-	

- (1) All data concern the last year completed (the year of the balance sheet date), except for the release of net contract liabilities (before MfADs) in the next year.
- (2) The total amount of general expenses must correspond with that of line 540 (and may include line 570) on page 70.030 of the LIFE form.
- (3) The actuary must explain and justify all amounts entered in this column.
- (4) Including the maintenance expenses for policies issued during the current year.
- (5) The actuary must explain and justify any amount entered in this column. This column would include, for example, expenses for products not requiring net contract liabilities for maintenance expenses (ASO, segregated funds, etc.)
- (6) Portion of the net contract liabilities for maintenance expenses without MfADs calculated during the previous year valuation for expenses of the last year completed, excluding taxes.
- (7) Portion of the net contract liabilities for maintenance expenses without MfADs calculated during the present valuation for the maintenance expenses of the next year, excluding taxes.

Evolution of maintenance expense experience ratios (as a %)						
Lines of business	Ratio of expenses to be funded to general expenses			Ratio of expected expense to expenses to be funded		
	(t)	(t-1)	(t-2)	(t)	(t-1)	(t-2)
Non-participating individual life						
...						
TOTAL						

i) Inflation

The actuary must describe the inflation assumptions used in projecting expenses. The determination and justification of inflation assumptions must be provided in section 4.1.3 Economic assumptions.

ii) Taxes

The actuary's explanations must address the treatment of the different types of tax applicable. The actuary must mention if he complies with the latest CIA publications related to future tax treatment.

The actuary must disclose the assumptions established to determine the temporary and / or the permanent differences concerning future tax in the calculation of net contract liabilities. The type of differences could be for examples:

Temporary differences:

- Differences between statutory and fiscal reserves;
- Capital appreciation of shares
- Non-realised gains on real estate
- ...

Permanent differences:

- Dividends from taxable Canadian Corporations
- Net capital gains
- Income from subsidiaries
- ...

He must also indicate the amount included in net contract liabilities and the amount entered on the balance sheet in accordance with accounting principles. The projected tax rate used to perform the calculations must be mention.

When applicable, the actuary must mention the assumptions and the timing of the projected source of income used to realize the recoverability test. The actuary must confirm that he has validated that the same source of recovery has not been double counted.

iii) *Premium taxes*

The actuary's explanations must address the treatment of the premium taxes applicable. The actuary must disclose the assumptions established concerning premium taxes in the calculation of net contract liabilities.

iii) *Assuris*

The actuary must mention whether he took into account the expenses charged by Assuris, including special or additional contributions if any.

4.1.5 Lapses and partial withdrawals

The actuary must indicate the extent to which the assumptions chosen are based on the insurer's own experience and/or the industry's experience. In any case, he must justify his choices using, among other things, the credibility applied to the insurer's experience, where applicable.

When the actuary takes the insurer's experience into account, he must provide a detailed description of the experience study and the main results thereof in his report. To that end, he must provide summary tables illustrating the main results of the study in order to support the assumptions chosen.

The actuary must describe and explicitly justify the MfADs chosen and their variation. He must also explain how he ensured that the MfADs chosen increase net insurance contract liabilities according to the scenario, insured's age, policy duration, and other relevant parameters. Any grouping of policies must be described and justified. In addition, the actuary must discuss the degree of correlation between the lapse assumptions and the various interest rate scenarios.

i) *Individual life insurance*

The actuary must, in particular, describe and justify the lapse rates applied to lapse-supported products, such as level-cost of insurance universal life insurance products and the T100 life insurance product without cash value. If the actuary cannot use the insurer's experience for these types of product, he should justify the use of ultimate (expected) lapse rates greater than those of the CIA's most recent studies. The Appendix 5 asks for additional information about lapse-supported products.

The additional and selective lapse rates for renewable term insurance must also be described and justified.

Any change to the MfADs relating to lapse assumptions (in comparison with the previous year) must be justified, described and commented on.

ii) *Annuities*

The actuary must pay particular attention to full or partial withdrawals not subject to market value adjustments or any other form of penalty. He must provide details on such situations.

4.1.6 Other assumptions

This section must include the description and justification of assumptions relating to, in particular:

- the expected dividends for participating insurance products;
- the premiums, benefits, cash values and other variable elements of universal life or adjustable products;
- the integration of accident/sickness insurance policies with public plans;
- the determination of reinsurance assets, where assumptions differ from those used to determine contract liabilities;
- any other information deemed relevant by the actuary.

The effect of the different scenarios tested on the determination of expected dividends, on expected policyholder behaviour, and on any other assumption that could be influenced by the economic climate, must be considered by the actuary. In particular, the way in which the period between the deterioration in experience and the reduction in dividends was taken into account must be discussed.

Only the assumptions chosen for net contract liabilities must be included in this section. Assumptions concerning commitments of the general fund to segregated funds as well as assumptions concerning “Other consolidated contract liabilities” must be described in the appropriate sections of the actuary’s report.

4.2 Description of valuation classes and assumptions

For each valuation class, the actuary must provide:

- a brief description of the products included therein;
- the segment in which the products are included (in reference to Appendix 3);
- the years in which the products were sold;
- the net amounts of insurance in force (in reference to section 2);
- the (gross) contract liabilities (in reference to section 2);
- the net contract liabilities (in reference to section 2);
- the reinsurance agreement(s) (in reference to section 9);
- a description of all the assumptions used;
- any future mortality or morbidity improvement assumption included in the best estimate assumption of mortality or morbidity (if it differs from that provided in section 4.1.1 or 4.1.2);
- the main risks to which the valuation class is sensitive.

The order of the valuation classes must follow that of the table in section 2. There is no need to describe an assumption common to several valuation classes several times. An indication as to where the relevant description can be found is sufficient.

The approximations used must be described in section 7 of the report - Materiality standard and approximations.

Section 5 – Valuation method and system

As indicated in the introduction to this Guide, the actuary must apply generally accepted actuarial standards in carrying out his work, which implies the use of CALM to determine net insurance contract liabilities.

The actuary must describe the methodology used, in particular:

- the date the scenario was performed and, if the scenarios were not performed at the valuation date, the calculation method at the valuation date as well as the adjustments required for material changes since the date the scenarios were performed;
- the selection of assets, at the calculation date, for the base scenario and for each scenario tested;
- the treatment of policy owner reasonable expectations;
- the treatment of risk transfer characteristics to policy owner.

The actuary must describe the approximation methods used for the valuation. The justification for such choices will be found in section 7 - Materiality standard and approximations.

The actuary must disclose whether the valuation system is an in-house system or a commercially purchased system. Any changes in valuation systems should be disclosed and the effects quantified. The results of any audit or review related to changes in valuation systems should be described. If changes in valuation systems have not been subject to audits or reviews, this should also be noted.

Seriatim calculation of net insurance contract liabilities

Seriatim calculation of net insurance contract liabilities is required, in particular, to calculate the solvency ratio and to obtain the allocation of net contract liabilities by valuation class. To that end, the actuary must use a reasonable allocation method reflecting the characteristics of the policies and assets to be allocated. This allocation method must reproduce the net insurance contract liabilities determined using CALM.

The actuary must describe and justify in his report the methodology used to allocate net insurance contract liabilities per policy. The AMF expects this methodology to be applied consistently over time.

Section 6 – Other net contract liabilities – consolidated

In this section of the report, the actuary must discuss other **gross and net** contract liabilities on a consolidated basis that are an integral part of policy liabilities net of reinsurance recoverables, as mentioned in the actuary’s certificate.

In addition, the methods and assumptions used to determine other net contract liabilities on a non-consolidated basis must be described in this section of the report.

Among other things, the actuary must specifically indicate the way in which the provisions for claims incurred but not reported (“IBNR”) were calculated and **disclose the amounts of these provisions by line of business**. The corresponding information for subsidiaries must be found in the actuary’s report of the latter. The actuary must also disclose all changes to the methods and assumptions used from the previous year as well as the impact thereof on the value of other net contract liabilities in a table similar to that in section 8 of this Guide, i.e. including the monetary impact and a short description of the change made.

The actuary must provide the amounts for other consolidated contract liabilities in the following table form:

OTHER GROSS AND NET CONTRACT LIABILITIES – CONSOLIDATED (in \$000)				
	GROSS		NET	
	T	T-1	T	T-1
Outstanding payments under settlement annuities				
Premiums received in advance				
Policyholder/Certificateholder dividends and experience rating refunds, due and unpaid				
Policyholder/Certificateholder amounts on deposit				
Outstanding claims and adjustment expenses				
Provision for experience rating refund				
Other				
Total				

The total must correspond with the sum of lines 410 to 440 and 460 to 480 of column 41 on page 22.020 of the LIFE form, minus the reinsurance assets of line 570 on that page. Therefore, the table above does not include net investment/service contract liabilities, since these liabilities are already considered in section 2 of the report. Note that the line “Outstanding claims and adjustment expenses” includes IBNR provisions.

The actuary must also describe in this section all other liabilities maintained which he refers to in his certificate and report. The description must include the amounts of these liabilities as well as the methods and assumptions used to determine them.

Section 7 – Materiality and approximations

In this section, the actuary must discuss the standard of materiality chosen as well as the approximations used.

i) *Standard of Materiality*

The actuary must provide details about the standard of materiality used and describe the procedures followed to establish it. To that end, the actuary must include the following:

- the formulas used to establish the standard;
- the amounts of the standard;
- the discussions with the external auditor on the agreement concerning the standard;
- the discussions on the application of the standard to the valuation of net policy liabilities;
- the disclosure of and justification for using a standard for the valuation of net policy liabilities different from that used by the external auditor for the financial statements;
- the justifications for the use of multiple standards;
- any other item deemed relevant.

ii) *Approximations*

The use of approximations must be justified. Any approximation method must produce a result that does not differ materially from what would have been produced by an exact method.

The actuary must be sure to refer to the methods and assumptions outlined in the other sections of the report that deal with approximations. He must indicate how he verified that the difference between the approximation method and the exact method is less than the standard of materiality. He must provide a justification as to the adequacy of using an approximation, according to the circumstances.

Section 8 –Variation in consolidated net contract liabilities

8.1 Summary

In this section of the report, the actuary must discuss the variation in consolidated insurance and investment/service contract liabilities net of reinsurance assets. The section must begin with a table detailing the variation over the past year.

Type of variation	Net amount (net of reinsurance assets) (in \$000)
Net contract liabilities – end of previous fiscal year	
+ <u>Net adjustment from prior fiscal years</u>	
Net contract liabilities – start of current fiscal year ⁽¹⁾	
+ Net normal variation – due to the passage of time ⁽²⁾	
+ Net normal variation – due to the issuance of new contracts or guarantees ⁽²⁾	
+ Net normal variation – due to assumptions update ⁽²⁾	
+ Net basis change ⁽³⁾	
+ <u>Net miscellaneous variation</u>	
Net contract liabilities – end of current fiscal year ⁽⁴⁾	

Note that the following references identify the page, line and column numbers for the data on the LIFE form to which the amounts in the above table must correspond.

- (1) 20.020/010/03 + 22.020/450/43 - 22.020/559/03
- (2) 20.030/310/01 (in whole) + 20.030/342/01 (in part) - 20.030/370/01 (in part)
- (3) 20.030/320/01 (in whole) + 20.030/344/01 (in part) - 20.030/380/01 (in part)
- (4) 20.020/010/01 + 22.020/450/41 - 22.020/559/01

In the above table, it should be noted that the “Normal variation” lines take only one line on the LIFE form, but three lines in the actuary’s report.

The definitions of the different types of variations are as follows:

i) *Net adjustment from prior fiscal years*

A variation in net contract liabilities due to a change in valuation method or a correction of a material error must be accounted for in prior fiscal years.

The improvement of systems, refining of methods and change from an approximation to an exact assumption should not normally have a material impact. If they do, it means that they were not appropriate. It would then be an error correction and the impact should be indicated under this point.

ii) *Net normal variation – due to the passage of time*

The net normal variation due to the passage of time includes, in addition to the variation in net contract liabilities from one year-end to another, variations caused by a decrease in contracts due to deaths, lapses, terminations, etc. **No new contract must be added in the calculation of this type of variation. The variation due to the issuance of new contracts or guarantees must be disclosed separately.**

The AMF expects this type of variation to be calculated with the same method year over year. The actuary must disclose the method he used and any change must be justified. Important amount variations for this type of variation from one year to another must be explained.

The actuary would have to show that the control measures in place are sufficient to ensure that this variation is due solely to the passage of time. The AMF would not accept that this variation be a balance element of the total variation in net contract liabilities.

iii) *Net normal variation – due to the issuance of new contracts or guarantees*

The net normal variation due to the issuance of new contracts or guarantees corresponds to the variation in net contract liabilities caused by new issuances in the valuation year. “New contracts” refers to contracts or guarantees that were not subject to actuarial valuation in the previous year.

iv) Net normal variation – due to assumptions update

The net normal variation due to assumptions update corresponds to the variation in net contract liabilities from one year-end to another, arising from the updating of best estimate assumptions following experience studies or from the natural changes in some of them, such as the evolution of interest rate.

For example, the AMF considers that variations in net contract liabilities due to the following elements must be considered an assumption update:

- a variation in market value of matched assets;
- a change in reinvestment rates;
- the changes resulting from new actuarial or accounting standards that the actuary is required to apply (except situations qualified as adjustments).

The impact of each of these elements must be disclosed separately.

v) Net basis change

A basis change is rare and unusual. It is the case for a new assumption arising from a different choice by the actuary or a deliberate action by the insurer. For example, the AMF considers that variations in net contract liabilities due to the following elements must be considered a basis change:

- a change in the level of MfADs not arising from a modification to actuarial standards of practice;
- a change in mortality table;
- the use of results covering a different number of years;
- a change in the organization's expense allocation method between acquisition and maintenance (e.g. floor area occupied by employees versus remuneration of employees);
- a different allocation of maintenance expenses among the following categories: per policy, per \$1,000, as a percentage of the premium (when the allocation is based on a choice and not a study);
- a change in policy: dividend scale, investment (or reinvestment) policy, adjustable product ratemaking, etc.;

- a change in level of risk covered by the provision for C-3 risk (i.e. the impact of a change of scenario or the use of a new scenario to determine net insurance contract liabilities according to CALM);
- a change in the CTE level for a valuation based on a stochastic model;
- a change made to a stochastic model when such change does not arise from modifications to actuarial standards of practice;
- the changes in reinsurance agreements;
- a variation arising from an improvement in valuation systems or a refinement of method (except situations qualified as adjustments);
- the changes resulting from new actuarial or accounting standards, when the actuary has the option of applying them or not (except situations qualified as adjustments);
- the correction of errors that do not have a material impact on the total, but that could be considered material in a specific segment of the analysis of sources of earnings.

vi) *Net miscellaneous variation*

All other types of variation that are not related to the methods, assumptions or corrections must be included under this point. Such types of variation do not require adjustment in prior fiscal years. The impact may be calculated at the start or end of the current fiscal year, depending on the type of variation.

For example, such variation may include the purchase (or sale) of an insurance portfolio or the reinsurance transfer (or recapture) of a portfolio.

8.2 By type of variation

For net normal variation due to assumptions update and net variation for basis changes, a table must be provided that includes the following information:

TYPE OF VARIATION				
	Assumption		Net impact (net of reinsurance assets) (\$000)	Justification
	Previous	Current		
Mortality				
Individual life, Non-participating				
• Non- consolidated business				
• Subsidiaries				
...				
Morbidity				
...				
Total				

This information must be provided by line of business even when the impact for a line of business is less than the materiality standard, but that the impact for all of the insurer's lines of business is greater than that standard. For each line of business, the information must be presented separately for non-consolidated business and for the business of subsidiaries. However, only the "Net impact" column must be filled out for the business of subsidiaries, since the justification is provided in the actuary's report of the subsidiaries. Note that all the columns must be presented and each net variation must be sufficiently justified to provide for a proper understanding thereof. In addition, the actuary may refer to section 4 of his report, where a detailed justification of the variations to assumptions must be provided.

Section 9 – Reinsurance

In this section of the report, we must first find a table containing the following information:

REINSURANCE							
Agreement indicator ⁽¹⁾	Type of agreement ⁽²⁾	Type of reinsurance ⁽³⁾	Products covered ⁽⁴⁾	Coverage period ⁽⁵⁾	Retention limits ⁽⁶⁾	Reinsurer ⁽⁷⁾	Agreement characteristics ⁽⁸⁾
1							
...							
Total							

- (1) Numbering of the reinsurance agreements, which is necessary for the next table.
- (2) Indicate whether the reinsurance agreement is automatic, optional or other.
- (3) Specify whether it is coinsurance, YRT, stop loss, etc.
- (4) Enter the type of product covered by referring to the numbering in section 4.2 of this Guide.
- (5) Enter the reinsurance agreement period covered (issuance years for policies covered).
- (6) Specify the retention limits. For example, indicate "\$X of retention," "stop loss of \$Z," "Y%, maximum of \$W."
- (7) Indicate the name of the reinsurer or retrocessionaire. Use "1" for unregistered reinsurance, and "2" for an affiliated reinsurer. Refer to chapter 10, "Credit for reinsurance," in the CARLI Guideline for a description of unregistered reinsurance.
- (8) Enter the characteristics of the agreement in this column, e.g. finite reinsurance, side agreements, minimal cessions, etc. Enter only a brief explanation. Detailed explanations must be provided in the text following the table.

In addition, the actuary must provide the following table for new reinsurance agreements and amendments to existing agreements (riders) that has been signed over the past year, **and for agreements/amendments that were not signed the previous year.**

New agreements and amendments						
Enforcement date and signatures						
Agreement indicator ⁽¹⁾	Agreement/ amendment (rider) ⁽²⁾	Enforcement date	Date of insurer's signature	Date of reinsurer's signature	Place of last signature	Description ⁽³⁾
1						
...						

- (1) Numbering of the reinsurance agreements in reference to the preceding table.
- (2) Indicate whether it is a new reinsurance agreement or an amendment (rider) to an existing agreement.
- (3) Specify the nature of the amendment (e.g. change in coverage, retention limit, reinsurer, etc.).

The actuary must also provide the following table on the concentration of reinsurance. The AMF requires that reinsurers be listed by corporate group and not by individual subsidiary of a reinsurance conglomerate. After the table, the actuary must discuss the aspects of the reinsurance policy concerning the maximum concentration by reinsurer. He must also discuss his study on the credit risk of the reinsurers with which he deals, as appropriate.

Concentration of reinsurance						
Reinsurer ⁽¹⁾	Line of business	Type of reinsurance ⁽²⁾	Insurance premiums ceded ⁽³⁾	Amount of insurance ceded ⁽³⁾	Reinsurance assets ⁽³⁾	Allocation of reinsurance assets ⁽⁴⁾
X	Individual life					
X	...					
Subtotal						
X						
Y						
...						
Total						

- (1) Indicate the reinsurer's name. Identify unregistered reinsurance with a superscript "1", and an affiliated reinsurer with a superscript "2". Refer to chapter 10, "Credit for reinsurance," in the CARLI Guideline for a description of unregistered reinsurance.
- (2) Specify whether it is coinsurance, YRT, stop loss, etc.
- (3) Calculated using the same method as that used to fill out page 45.060 of the LIFE form, but on a non-consolidated basis.
- (4) Corresponds to the proportion (as a %) of the reinsurance assets associated with the reinsurer/line of business in relation to total reinsurance assets.

The actuary must also provide precise and clear explanations of any non-traditional reinsurance contracts, such as agreements where there is no significant risk transfer (finite reinsurance agreements), back-to-back reinsurance contracts, as well as any side agreement that has an impact on an existing reinsurance agreement. The actuary must disclose, in particular, the pursued objectives by these types of contracts. In addition, he must ensure that his valuation of net policy liabilities adequately takes into account the impact of these contracts, and must describe how he provided therefor. Note that for transactions essentially constituting financing or primarily concerning the transfer of financial risk, the accounting of insurance contracts does not apply.

Additional disclosure is required for all catastrophe reinsurance treaties and their terrorism clauses. The items to be disclosed are as follows:

- the amounts of coverage in respect of terrorism (including the level of the deductible, the level of coinsurance, and the limits);
- the exclusions in respect of terrorism (risks and events not covered, etc.).

The actuary must describe the potential risks related to an act of terrorism according to the data at the date of his report and the impact on the insurer's results if such an act occurred. The actuary must also indicate whether these risks and their financial repercussions, have been disclosed to members of the insurer's board of directors in the past year.

For material reinsurance arrangements, a description should be provided for the rational for the actuarial assumptions that differ between net liabilities for insurance and investment contracts and the related reinsurance assets.

Section 10 – Segregated Funds

In this section of the report, the actuary must provide information about the valuation of general fund liabilities associated with segregated fund guarantees.

The actuary must provide the following tables for all contracts with guarantees for which the insurer bears the risk.

- For each of the guarantees specified, the in-the-money/out-of-the-money status is calculated through the difference between the guaranteed value and the market value of the assets held, and is calculated on the same level (by deposits, funds, contracts, holders, etc.) as the guaranteed value. The market values of the assets held are established at the date of calculation of the net insurance contract liabilities.
- Contracts offering several types of guarantees at the same time must be included in each of the corresponding tables.
- While the selection of “classes” appropriate to each of the guarantees is left to the actuary’s discretion, a number of classes corresponding to the different “characteristics” of the guarantees offered (e.g. 75% or 100%) is minimally required. No change to the presentation of information by guarantee, by time component (age/duration), and by in-the-money/out-of-the-money status, is permitted in the tables by type of guarantee.
- The adaptations and grouping deemed necessary for the table on capital and net insurance contract liabilities are permitted.
- The treatment of all other guarantees/options provided in the contract (e.g. reset) must be clearly described when used in any of the tables. To that end, the behaviours/choices/assumptions that are the most unfavourable for the insurer are generally presumed.

For guarantees at death (assuming immediate payment of any death guarantee):

Classes (Product family/product/ guarantee/etc.)	Age at current December 31	In-the-money		Out-of-the-money	
		Guaranteed value	Market value of assets held	Guaranteed value	Market value of assets held
	[0-69] [69-78] [78-84] [84-90] 90 and over				
	[0-69] [69-78] [78-84] [84-90] 90 and over				
	[0-69] [69-78] [78-84] [84-90] 90 and over				
TOTAL					

For amounts guaranteed at maturity (maturity at the first possible date):

Classes (Product family/product/ guarantee/etc.)	Minimum duration before maturity	In-the-money		Out-of-the-money	
		Guaranteed value	Market value of assets held	Guaranteed value	Market value of assets held
	[0-1] (1-2] (2-3] (3-5] Over 5				
	[0-1] (1-2] (2-3] (3-5] Over 5				
	[0-1] (1-2] (2-3] (3-5] Over 5				
TOTAL					

For minimum withdrawal guarantees (in the “accumulation” phase):

Classes (Product family/product/ guarantee/etc.)	Minimum duration before withdrawal	In-the-money		Out-of-the-money	
		Guaranteed value	Market value of assets held	Guaranteed value	Market value of assets held
	[0-1] (1-2] (2-3] (3-5] Over 5				
	[0-1] (1-2] (2-3] (3-5] Over 5				
	[0-1] (1-2] (2-3] (3-5] Over 5				
TOTAL					

For minimum withdrawal guarantees (in the payment phase):

Classes (Product family/product/ guarantee/etc.)	Age at current December 31	In-the-money		Out-of-the-money	
		Guaranteed value	Market value of assets held	Guaranteed value	Market value of assets held
	[0-69) [69-78) [78-84) [84-90) 90 and over				
	[0-69) [69-78) [78-84) [84-90) 90 and over				
	[0-69) [69-78) [78-84) [84-90) 90 and over				
TOTAL					

Required capital and net insurance contract liabilities*:

Classes (Product family/product/ guarantee/etc.)	Total Gross Calculated Requirements**	Credit for reinsurance assets**	Credit for hedging program**	Net insurance contract liabilities held**	Required capital according to CARLI**
TOTAL***					

* If applicable, the amounts relating to the use of deferred acquisition costs should be included in the table.

** According to the provisions of the *Capital Adequacy Requirements Guideline for Life and Health insurers* ("CARLI").

*** The total amounts should correspond to those on page 70.200 of the CARLI disclosure form (annual supplement).

The actuary must also provide information concerning the valuation method and assumptions used to determine the amount of net insurance contract liabilities for general fund commitments to segregated funds.

For each valuation class, the following must be provided:

- the years during which the products were sold;
- a description of the specific characteristics of the products included in the class, in particular, the level of guarantee and, if applicable, the reset option for the guaranteed amount, and the use of reinsurance;
- a description of the valuation method and a justification for the approach chosen;
- a description of the determination process for each of the valuation assumptions (best estimate assumption and MfADs), including the treatment of acquisition and maintenance expenses. The actuary must indicate the reasons why he deems the expected assumptions adequate, by referring to any supporting test, study or analysis. He must also justify the MfADs levels and their variation;
- a detailed description of the method used to determine the amount of deferred acquisition costs at policy issue (“DAC assets”), the justification for recoverability, and the amortization procedure from the initial amount to its total liquidation.

Concerning the valuation method used, the actuary must provide a detailed description of the method chosen. It is considered sound actuarial practice to use stochastic methods to calculate net insurance contract liabilities related to guarantee benefits. The actuary must cover the following topics:

- a description of the stochastic model;
- the random number generator;
- the number of scenarios;
- the frequency of the projection;
- the estimation of the stochastic model parameters;
- the selection of investment yield assumptions for specific funds;
- the model calibration results;
- the modelling of other components of net insurance contract liabilities:
 - the product characteristics;
 - the population in force;
 - the insured’s behaviour.

- all details concerning the hedging program taken into account in the valuation of net contract liabilities, including among other:
 - a description of the dynamic hedging strategy used and the appropriateness of the approximations used;
 - a description of the method for integrating the hedging program with CALM;
 - a description of the additional risks related to the use of hedging (basis risk, liquidity risk, transaction costs and commissions, counterparty risk, volatility risk, etc.) as well as unhedged or not modelled risks;
 - a discussion of the rebalancing frequency used in the model and in the actual application of the hedging program as well as the associated costs;
 - a discussion of the effectiveness of the hedging program and a presentation of the two effectiveness measures described in the ICA's Educational Note, *Reflection of Hedging in Segregated Fund Valuation* (document 212027), published in May 2012.
- the CTE percentage chosen and its justification according to investment yield, estimate of parameters and model risk;
- the MfADs of the other assumptions;
- any approximation used in the model or in the calculation of the net insurance contract liabilities;
- risk management practices;
- any other information deemed relevant by the actuary.

In the event that exposure to risk is not significant, a simplified approach is justifiable. In such a case, the actuary could use the factors based on a CTE (80) basis provided by the *Capital Adequacy Requirements Guideline for Life and Health insurers ("CARLI")*. The actuary must provide the following:

- a justification for using this approach;
- any interpretation required in the calculation;
- any other information deemed relevant by the actuary.

Section 11 – Asset/Liability Management (ALM)

In line with the insurer's investment policy, the actuary must discuss the asset/liability management process used for managing interest rate risk (mismatch risk). He must cover the following, in particular:

- the methodology used for segmentation of assets (reference to Appendix 3);
- the objective sought by the asset/liability management process (e.g. limiting sensitivity of earnings, surpluses, etc. to interest rates);
- the immunization strategy used (cash flow matching, duration matching, convexity matching, etc.) and the appropriate measures used to implement it. The actuary must provide at least the following table:

Asset-liability matching duration by segment			
Segment	Matching Assets Duration	Matching Liabilities Duration	Present Value of CALM Assets or Liabilities ('000\$)
[Segment 1]			
[Segment 2]			
[Segment ...]			
[Segment 99]			

- the calculation methods and underlying assumptions, for the measures used in this section, must be clearly defined, in particular, the discount interest rates and the way in which the cash flows from assets and liabilities were defined;
- the mismatch tolerance limits;
- the maximum maturity of the cash flows from liabilities for immunization against interest rate risk using fixed income securities;
- the investment strategies supporting cash flows from liabilities after the maximum duration, including an analysis of investments in non-fixed income securities;
- the hedging strategies used to manage mismatch risk;
- the insurer's policies concerning asset composition, including the way in which the insurer took into account the type, duration, quality and negotiability of assets;
- the rebalancing frequency of the matching positions for each segment;
- the monitoring frequency of the evolution in the matching positions for each segment;
- the use of inter-segment transactions must be described and justified.

All changes in respect of the insurer's practices must be disclosed.

Section 12 – Conclusion

i) *Compliance status*

The actuary must indicate his compliance status with the CIA's Standards of Practice. The reasons for non-compliance must be clearly explained and justified.

ii) *Restrictions*

Any restriction relating to the valuation performed by the actuary and resulting in a modification to the actuary's certificate must be explained in this section.

He must clearly describe the reasons therefor and indicate the impact on policy liabilities as well as the steps that have been or will be taken to rectify the situation.

Appendix 1 – Actuary’s certificate

In accordance with section 128 of the Act, the actuary’s report must be accompanied by a certificate.

The actuary must include in the report the wording of the actuary’s certificate above and reproduce it on page 20.085 of the LIFE form. The certificate wording corresponds to that recommended in the CIA’s Standards of Practice – Practice-Specific Standards for Insurance.

The language in square brackets is variable and may be adjusted to conform to the terminology and presentation in the financial statements. Other use of a different wording from that prescribed will be considered by the AMF as a qualified opinion. Any restriction concerning the certificate must be indicated in section 12 ii) of the report.

The actuary must sign his certificate and indicate his appointment date. This signing must be original in the report submitted to the AMF, as in the LIFE form.

To the policyholders [and shareholders] of [the ABC Insurance Company]:

I have valued the policy liabilities [and reinsurance recoverables] of [the Company] for its [consolidated] [statement of financial position] at [31 December XXXX] and their changes in the [consolidated] [statement of income] for the year then ended in accordance with accepted actuarial practice in Canada including selection of appropriate assumptions and methods.

In my opinion, the amount of policy liabilities [net of reinsurance recoverables], makes appropriate provision for all policy obligations and the [consolidated] financial statements fairly present the results of the valuation.

The valuation complied with the Quebec Insurers Act and the related regulation.

Signature

Name in molded characters

Date of nomination

Appendix 2 – Specific disclosure requirements

Disclosure of compensation

In light of the actuary's responsibilities conferred by the Act and under the CIA memo of January 26, 1993, an actuary who may receive incentive compensation tied to the company's net income or incentive compensation that could create conflicts of interest must disclose this fact in writing to the key users of his work. He must include this disclosure in the actuary's report submitted to the regulator.

Consequently, in this section of the report, the actuary must briefly discuss the method used to determine each portion of his compensation (in particular, salary, bonuses (cash and/or stock-based), employee benefits and other compensation) that is based on the insurer's net income or that could create conflicts of interest. In addition, the actuary must disclose, when applicable, any participation in a plan to purchase shares of the insurer or any holding of shares of the insurer or an affiliated insurer.

Annual presentation of the report to the Board or the audit committee

The actuary must disclose in this section of this report, the date on which he presented his report on the policy liabilities to the board or the audit committee of the board. Otherwise, he must indicate that the report has not been presented.

Continuing professional development requirements of the CIA

The actuary must disclose in his report his compliance with the Continuing Professional Development requirements of the CIA.

Reporting relationships of the appointed actuary

The appointed actuary must disclose its reporting relationships and dependencies.

The appointed actuary who is an employee of the company must disclose the name and position of the person (or persons) to whom he/she reports as well as any changes in this regard over the past year. This includes both direct and indirect re-ported relationships. Any anticipated change should also be disclosed.

The appointed actuary who is not an employee of the company must disclose the names and titles of key contacts with whom he exchanges. Thus, the information would include the name and title of the following:

- The person who has hired the appointed actuary; and
- The company employees with whom the appointed actuary discusses findings and reports.

Appendix 3 – Segmentation of assets and liabilities

The actuary must provide a table on a non-consolidated basis illustrating the segmentation of assets and liabilities according to the different segments used in the asset/liability management study. The table must include the following information at the valuation date:

SEGMENTATION OF ASSETS AND LIABILITIES (in \$000)				
	[Segment 1]	...	Equity (surplus)	Total
ASSETS				
Bonds				
Reinsurance assets				
Investment properties				
Total				
LIABILITIES AND EQUITY				
Insurance contract liabilities				
Other contract liabilities				
Other liabilities				
Equity (surplus)				
Total				

For each segment, the actuary must indicate the valuation classes included in the contract liabilities.

The totals in this table must correspond with pages 70.010 and 70.020, column 01, line 899 of the LIFE form.

Appendix 4 – New individual business issued

In this section of the report, we must find a detailed table of new individual business issued (life, annuity and accident/sickness) on a non-consolidated basis.

The actuary must provide the following information for each line of business:

LINE OF BUSINESS (in \$000)						
Valuation class	Gross			Net (net of reinsurance assets)		
	Annualized premiums	Amount in force	Contract liabilities	Annualized premiums	Amount in force	Contract liabilities

Appendix 5 – Lapse-supported products

The actuary must provide details on lapse-supported products, including level-cost of insurance universal life insurance products, in the form of the following table:

LAPSE-SUPPORTED PRODUCTS

PRODUCT (OR PLAN)	DESCRIPTION ⁽¹⁾	AMOUNT OF POLICIES IN FORCE (\$000)		CONTRACT LIABILITIES (\$000)		TYPE OF REINSURANCE	ULTIMATE DURATION	ULTIMATE LAPSE RATE ⁽²⁾ (BEA AND MfADs)	EXPERIENCE AS AT ULTIMATE DURATION ⁽³⁾ (actual)	POLICY ISSUANCE YEARS
		GROSS	NET	GROSS	NET					

- (1) Indicate the appropriate reference(s) from section 4.2.
- (2) Best estimate assumption (BEA) and MfADs indicated separately.
- (3) Specify whether experience is calculated in policy number or amount.

Appendix 6 - Sources of earnings and internal control over net policy liability analysis

Disclosure of the insurer's earnings according to its different sources is required. The items included in this disclosure will allow for reconciliation of earnings achieved during the current fiscal year and earnings expected following the completion of the best estimate assumptions used the previous year to determine net policy liabilities.

The terminology used in this analysis must be consistent with the latest CIA's publications related to this subject.

The actuary must provide the table of the following page for at least each of the lines of business shown. He is encouraged to provide a breakdown of the lines presented in order to specify the components thereof, and to add comments, clarifications and justifications to facilitate an understanding of his analysis, particularly with respect to the "Other" items.

Non-consolidated sources of earnings (in \$000) - Current year							
	Line of business ⁽²⁾						
	Individual life	Group life	Individual annuity	Group annuity	Individual accident/sickness	Group accident/sickness	Total
Expected profit on in-force operations							
+ Impact of new business							
Actuarial gains & losses							
+ Mortality							
+ Morbidity							
+ Lapse							
+ Expense							
+ Economic							
+ Other							
Changes in best estimate assumptions							
+ Mortality							
+ Morbidity							
+ Lapse							
+ Expense							
+ Economic							
+ Other							
+ Other							
= Earnings on operations before taxes							
+ Earnings on surplus							
= Net income before taxes							
- Taxes							
= Net income before attribution to participating policyholders							
- Income attributable to participating policyholders							
+ Subsidiaries ⁽¹⁾							
= Net income							

(1) Include the subsidiaries' share of net income (losses)

(2) The actuary must group participating and non-participating business in each line of business indicated.

The actuary must provide a brief description of the methodology used to produce the analysis. More specifically, the items “Expected profit on in-force operations,” “Impact of new business” and “Actuarial gains & losses” (for each of the assumptions) must be commented on. The AMF expects that the methodology used to produce the analysis will be consistent from one period to the next. Any change in method must be disclosed and justified.

In addition, the actuary must comment on and justify situations in which there are, for one line of business, both loss experience for a type of assumption (e.g. mortality, morbidity, etc.) and a decrease in net contract liabilities due to changes to such assumption.

The AMF expects that there is consistency between the total amount shown in "Gains and losses - Expense" line of the analysis of the sources of earnings and the amount of solvency or insolvency that can be calculated from the table "Maintenance expenses" presented in section 4.1.4. The amount of solvency or insolvency is defined, in this case, as the difference between the release of net contract liabilities (before MfADs) in the past year and the expenses to be funded, shown in the “Total – non-consolidated non-participating and participating” line. The actuary must justify any difference.

The following points are to be taken into account in carrying out the analysis of sources earnings:

- Separate groupings for mortality, morbidity, lapse, expense, and economic assumptions, should be at least used to clarify the items “Actuarial gains & losses” and “Changes in best estimate assumptions.” An insufficient materiality would be necessary to justify any omission or additional grouping.
- For validation and use by the AMF, it is essential that any change affecting the assumptions used in the production of the previous balance sheet be reported as “Changes in best estimate assumptions,” as defined in the CIA document.
- In this respect, any **non-consolidated** change in section 8, under “Net normal variation due to assumptions update” or “Net basis change” that could be attributed to one of the above-mentioned groupings of assumptions must be reported in the present analysis as “Changes in best estimate assumptions.”

- More specifically, the following items must be categorized as “Changes in best estimate assumptions - economic”:
 - the variations in the market value of assets matching net contract liabilities at the start of the period;
 - the variations in reinvestment rates;
 - the changes to the investment (reinvestment) policy;
 - the changes relating to investment expenses;
 - the change of asset default assumptions;
 - the change of scenario and/or use of a new scenario to determine the provision for adverse deviations for interest rate risk (C-3) according to CALM;
 - the change in the CTE level chosen when interest rates are stochastically modelled;
 - the change in the calibration of stochastic modelling parameters for interest rates or stock yields.
- Some of these items may be included in both “Actuarial gains & losses” and “Changes in best estimate assumptions.” Such items may, if necessary, be presented and commented on separately, for example, to mention the use of risk management tools (matching, hedging instruments, etc.) and specify their impact on the insurer’s earnings;
- The AMF does not accept the use of expected earnings in the last DCAT as expected earnings.

Appendix 7 - Life insurance products with interest rate guarantees

The actuary must provide information about life insurance products with interest rate guarantees in the table below.

These guarantees can take various forms within a life insurance policy. The most common forms are described below, without limitation:

- For universal life insurance products, the money invested in a guaranteed investment account with fixed term or on a portfolio's account;
- For products whose surrender values are measured dynamically i.e. based on an interest rate that varies in relation to the performance of an index or portfolio of underlying assets;
- For products in which the account of the customer generates a return, net of management fees, which may be negative and for which an implicit guarantee of 0% is integrated in the contract.

However, products offering guaranteed values on redemption or at maturity established at the issued date of the contract and segregated fund guarantees should not be included in this table.

The table below must be completed. The information should be presented for each guarantee:

- The product to which the guarantee relates to;
- The minimum interest rate to be credited on the account or on the product of the customer;
- The actual exposition in the product under the guarantee (e.g. the amount of funds invested in the fixed term investment subject to the guarantee);
- Amounts in other investment vehicles that could eventually be transferred in the vehicle with guarantee¹;
- The level of management fees².

¹ Inside a product, it could be simple for the insured to choose the investment vehicle (e.g. fixed term deposits or index funds) and transfer money between different investment vehicles.

² As the interest rate credited to the insured is often the rates achieved on the assets reduces by the management fees, a guaranteed minimum rate credited to the customer also means ensuring the level of management fees. For example, a product with a guaranteed minimum rate of 4% with 3% of management fees amounts to guarantee a return of 7%.

Product	Investment vehicle	Duration (years)	Guarantee offered	Management fees	Exposition (in M \$)	Actuarial liabilities (in thousand \$)

Appendix 8 – Projected Cash Flows

In the form of the following table, and for each of the segments selected in the asset/liability management (ALM) process, the actuary must provide the cash flows related to:

- Fixed income securities (“FI”);
- Non-fixed income securities (“NFI”);
- Net contract liabilities.

The cash flows presented must be those determined before the reinvestments necessary under the CALM calculation. They must be presented on an annual basis and after application of all applicable MfADs in respect of the assets and net contract liabilities.

The net contract liability cash flows must be those determined under the CALM base interest rate scenario (i.e. including all MfADs, except the interest rate risk MfAD).

The asset cash flows must be presented separately between FI and NFI. Where applicable, the derivative cash flows must be included in the FI or NFI cash flows according to the nature of these cash flows. A derivative could thus see part of its cash flows included in the FI cash flows and another part in the NFI cash flows.

The FI cash flows must include the cash flows for bonds, as well as those for preferred shares and in force building leases, where applicable. The cash flows of these securities must therefore include coupons and principal for bonds, as well as fixed dividends and principal for preferred shares and rents of leases, where applicable. The cash flows must be reduced for credit risk.

The NFI cash flows must include the cash flows for renewed building leases, where applicable, as well as the NFI cash flows at the time the insurer expects to dispose of them according to its ALM strategy.

The FI and NFI cash flows must be reduced for investment expenses.

Net cash flows represent what must be reinvested or borrowed at each duration.

Here is an example for a selected segment:

Projected Cash Flows (All amount in '000\$)						
Segment	Year	FI Cash Flows	Net Liability Cash Flows	Net Cash Flows	NFI Cash Flows	Total Net Cash Flows
		(1.)	(2.)	(1. - 2.)	(3.)	(1. + 3. - 2.)
1	t+1			0		0
1	t+2			0		0
1	...			0		0
1	t+100			0		0