



MEMORANDUM

TO: All Life Insurance Practitioners
FROM: Simon Curtis, Chairperson
Committee on Life Insurance Financial Reporting
DATE: November 8, 2000
SUBJECT: **Guidance for the 2000 Valuation of Life Policy Liabilities**

Document 20064

The purpose of this note is to provide guidance to the appointed actuary in several areas affecting the valuation of the 2000 life policy liabilities. The guidance provided addresses emerging issues and other topics where existing standards are unclear, incomplete or not effected.

The guidance in this letter represents a consensus view of members of the Committee on Life Insurance Financial Reporting (hereafter referred to as "CLIFR" in this note), and represents CLIFR's view of appropriate actuarial practice consistent with existing standards. However, it should be noted that the guidance in this letter has not been through due process and therefore does not represent standards of practice of the CIA.

It should also be noted that the June Exposure Draft of the Standards of Practice for the Valuation of Policy Liabilities of Life Insurers (hereafter referred to as "Life Valuation SOP") is currently in the final stages of due process to be adopted as a standard, and is expected to be adopted with a 2001 effective date, possibly as early as January 1, 2001. Guidance contained in this letter will refer to the Life Valuation SOP where relevant.

For completeness, we have repeated in this letter all guidance from previous years that continues to be appropriate.

Guidance Unchanged from Previous Years:

1. Mortality MAD on Reinsured Lapse-Supported Blocks
2. Valuation Technique Paper (VTP) 3 (Ultimate Reinvestment Rate and Treatment of Non-Fixed Income Assets Backing Liabilities)

Modified Guidance From Previous Years:

3. AIDS
4. Segregated Fund Guarantees
5. Preferred Underwriting

New Guidance

6. Standards of Practice for the Valuation of Policy Liabilities of Life Insurers
7. Income Taxes (Recognition of Tax vs Statement Basis Income Timing Differences, and Anticipation of Future Changes in Income Tax Rates)
8. Educational Note of the Valuation of Group Life and Health Policy Liabilities
9. Equity Indexed On-Balance Sheet Products

1. Mortality MAD on Reinsured Lapse-Supported Blocks

For lapse-supported products (particularly Term-to-100 and level COI UL plans), where a significant portion of the risk is ceded to reinsurers on a YRT basis, the application of a mortality MAD that increases the expected rate of mortality might reduce, rather than increase, the net actuarial liability.

This situation (“death-supported” business) can occur where the reinsurance arrangement uses the cash value as a proxy for the reserve in determining the net amount at risk to be covered under the treaty. This leads to the possibility on the reinsured portion of the death benefit that the ceding company is reinsuring more than 100% of the true net amount at risk because the reserves for these products are usually larger than the zero or very low cash values for these plans. Where there is substantial reinsurance and more than 100% of the true net amount at risk is reinsured on the reinsured portion of the death benefit, then a net death supported block of business might exist.

The actuary should consider whether a net death-supported block exists within the inforce business being valued, and should ensure that the application of mortality margins for adverse deviations results in an overall appropriate increase to the value of the liabilities. Notwithstanding the guidance in the Provision for Adverse Deviation paper, this could lead to situations where it is appropriate to apply a margin for adverse deviations on death-supported business that reduces the mortality assumption.

2. VTP 3

2.1 Ultimate Reinvestment Rate

VTP 3 charges CLIFR with the responsibility to review the Ultimate Re-investment Rate (“URR”) from time to time to ensure that it is reasonable in light of the circumstances. The URR is currently set at 5% for cash flows occurring 20 years or later from the valuation date. The URR is meant to be representative of a long-term, risk-free rate of return on Canadian investments.

The information in the July 2000 CIA Report on Economic Statistics 1924-1999 indicates that long-term interest rates in Canada have generally declined in the 1990s. However, a long-term, risk-free rate of 5% is still reasonably conservative given the historical Canadian experience and is lower than actual rates have been for 40 years. Therefore, the committee has decided not to revise the URR for the 2000 valuation. The URR is the maximum reinvestment rate allowed. The actuary should still use judgement to determine if a lower rate is appropriate under the circumstances. Some examples of where a lower rate may be appropriate are:

- (a) rates available on current investments are close to or lower than the URR; and
- (b) reinvestments are assumed to be made in shorter-term investments.

2.2 VTP 3 Treatment of Non-Fixed Income Assets Backing Liabilities

In recent years there has been increased use of non-fixed income assets by life insurers to back non-participating life insurance liabilities. An issue that has been raised is whether all trading of non-fixed income assets should be interpreted to be reinvestments under VTP 3, in particular for the restriction that reinvestments in the twentieth and later years are limited to normal coupon paying bonds. In CLIFR’s view, only trades that result in an overall divestiture of non-fixed income assets need to be treated as reinvestments under VTP 3. That is, trades that replace non-fixed income assets with other non-fixed income assets of equal market value need not be treated as reinvestments under VTP 3. The actuary should be confident that the portfolio mix of assets at all points in the future is consistent with the investment policy and practices of the insurer. The Life Valuation SOP provides guidance on establishing expected assumptions and appropriate MADS for non-fixed income assets.

3. AIDS

Current industry mortality studies partially include the effect of AIDS deaths. The percentage of AIDS deaths reflected in mortality studies is increasing each year, until it is anticipated to reach an ultimate level, when 100% of AIDS deaths would be reflected in the annual CIA mortality studies. VTP 8 is still a standard of practice but was developed at a time when very few AIDS deaths were reflected in base mortality tables and when the expected nature and incidence patterns of AIDS were different than they are today. Using a reducing percentage of the provision that results from applying VTP 8 avoids over-counting of AIDS deaths.

For 2000, either of the following options is appropriate:

- (a) If the expected mortality assumption is determined from the results of a study that has excluded AIDS deaths, then that mortality should be increased by 100% of the VTP 8 provision.
- (b) If the expected mortality assumption is determined from the results of a recent study that included AIDS deaths, then that mortality should be increased by an appropriate percentage of the VTP 8 provision. The actuary should be satisfied that the expected mortality assumption so adjusted includes an appropriate allowance for remaining AIDS deaths.

4. Segregated Fund Guarantees

For valuation of the general account liability associated with segregated fund guarantees, CLIFR believes that establishing the liability for the guarantee element using stochastic techniques, where the stochastic investment return modelling follows the criteria and methodology laid out in the August 1, 2000 Report of the Task Force on Segregated Fund Guarantees, represents good actuarial practice. The committee recommends that this approach be followed for year-end 2000 for insurers with a material volume of guarantee exposure. More specific recommendations are outlined at the end of this section.

CLIFR recognizes that there may be situations where the exposure to this risk is immaterial and a simpler approach is warranted. In such circumstances, CLIFR recommends determining the policy liability for this risk by taking percentages of the total balance sheet requirement resulting from the application of the factor-based method outlined in Appendix D of the August version of the task force report (posted on the CIA website and to be circulated this autumn in print). Please note that the factors in the August version are different from those contained in the draft version published on the CIA website in May of this year. They are also different from the factors being developed by OSFI for MCCSR capital at year-end 2000.

CLIFR has worked with the Segregated Fund Task Force to develop the following recommended percentages to use in such an approach.

$$\text{Policy Liabilities} = MV \times (F \times A \times B \times C + D) \times (1 - E)$$

Where A, B, C, D and E are defined in the task force report:

A = Basic factor

B = Status Factor (based on MV/GV Ratio and time to maturity)

C = MER Adjustment

D = Margin Offset

E = Credit for Risk Mitigation

Note that to take credit for risk mitigation (“E”), the actuary must be able to accurately model or quantify the impact of the mitigation strategies as described in the task force report, and the strategy must be in place and operational. Unless these conditions are met, zero credit should be assumed.

The factor F varies as follows by type of benefit and fund category, and corresponds to approximately a CTE(80) result assuming conservative MV/GV ratios for each fund category.

Guaranteed Minimum Death Benefits	F = 0.75 (all fund types)
Guaranteed Minimum Maturity Benefits	F = 0.45 (money market)
	F = 0.50 (bond)
	F = 0.55 (balanced)
	F = 0.65 (diversified equity)
	F = 0.70 (intermediate equity)
	F = 0.80 (aggressive equity)
Guaranteed Minimum Income Benefits	F = 0.50 (all but intermediate & aggressive equity)
	F = 0.65 (intermediate equity)
	F = 0.75 (aggressive equity)

With respect to year-end 2000, CLIFR also recognizes that there may be situations where the exposure to this risk is material, but for practical reasons the actuary is unable to introduce in time for year-end 2000, a stochastic method that meets the recommendations outlined in this section for application of such a methodology. In this situation, CLIFR recommends that the factor-based approximation method highlighted above be used, subject to supplemental analysis that shows that this adequately provides for the risk.

Specific recommendations for applying stochastic techniques in a manner consistent with the task force report are:

- a) The investment return model used to generate the investment return paths should follow the criteria and methodology laid out in Section 2.1 (Investment Return Models).
- b) Any modelling of hedges or other risk mitigation strategies should follow Section 2.3 (Modelling of Hedges) of the task force report.
- c) The methodology to establish the PFAD for investment return risk should follow the CTE (Conditional Tail Expectation) approach described in Section 3.3.3 of the task force report.
- d) In determining the amount of unitized fee income available as revenue to offset the benefit costs in the stochastic projection, the criteria laid out in Section 3.3.5 of the task force report should be followed.
- e) Unless there is clear intent and commitment to change, future total unitized revenues (management expense ratios) and the insurer's risk management strategies (do nothing, reinsure, hedge) should remain the same as those applicable on the valuation date.
- f) Future deposits should be included at a reasonable level whenever future deposits materially increase the risk (e.g., fixed maturity date contracts where subsequent deposits are fully guaranteed over a period of less than 10 years).
- g) Unless the actuary has reliable experience to indicate otherwise, where elective resets of the guaranteed amount are available, not less than 75% of the cohort of policyholders eligible to reset should be assumed to reset each year where such a reset would cause a material increase in the guaranteed amount. Material would be a 10% or greater increase.
- h) For contracts where a higher termination assumption reduces the guarantee cost, unless the actuary has reliable experience (i.e., credible and pertinent, such as experience on products with similar guarantees) to indicate otherwise, surrenders/lapses/withdrawals should not exceed a maximum rate of 8% per year at any duration. This 8% excludes any regular income withdrawals under payout features explicitly incorporated into the products (e.g., RRIF contracts income payouts).

- i) The projection period should extend to contract maturity, including the impact of renewals (automatic resets) and voluntary resets.
- j) The analysis should be done on a seriatim basis or on a basis that groups policies into cohorts having similar profiles with respect to nature of guarantee, time to maturity/expiry of the guarantee, and relationship of the starting unit value to the guaranteed unit value.

Once a liability for the segregated fund guarantee component of a policy/block of policies has been determined using the above methodology, the result should then be integrated with the valuation performed for the other elements of the policy/block of policies.

5. Preferred Underwriting

CLIFR is currently developing an educational note to provide guidance on issues impacting the determination of expected mortality assumptions in the valuation. In the absence of completion of this note, we continue to remind actuaries to review carefully and understand fully how recent moves to preferred underwriting and improved underwriting techniques (e.g., blood testing) are being reflected in the expected mortality assumption being used. With respect to preferred underwriting, CLIFR offers the following guidance.

It is reasonable to assume that mortality rates for preferred and non-preferred risks would revert over time towards overall standard regular underwriting mortality rates, with perhaps some residual differential (both positive and negative). In the absence of reliable experience, CLIFR recommends that the actuary use caution in the length of time that the effects of preferred underwriting are expected to persist. It would be reasonable to assume that the effects of preferred underwriting wear off by the end of 15 years. In determining the run-off pattern, CLIFR recommends that the effects of preferred underwriting be assumed to wear off linearly between the last duration for which the insurer has reliable experience and the duration at which the effects are expected to completely wear off.

According to the Provision for Adverse Deviation Paper (March 12, 1990), a high margin situation exists with respect to the potential for miss-estimation of the effects of preferred underwriting due to the absence of reliable company and industry experience. Therefore, the margin for adverse deviations must be at least as high as the average of the low and high margins. CLIFR also notes that the margin for adverse deviations would normally be higher than the margin for adverse deviations applied to the standard regular underwriting mortality assumption for the 15-year period during which the preferred mortality effects are present.

However, because there may be some residual effects of preferred underwriting that remain after 15 years, the assumption that the effects of preferred underwriting fully wear off over 15 years may lead to an inadequate mortality assumption for insurers whose emerging mix of business is more heavily weighted to classes with higher mortality than the standard regular underwritten mortality. Therefore, it may be appropriate that the higher margin for adverse deviations on preferred underwriting business continue to apply after 15 years.

6. Standards of Practice for the Valuation of Policy Liabilities of Life Insurers

The Exposure Draft of the Standards of Practice for the Valuation of Policy Liabilities of Life Insurers (Life Valuation SOP) is expected to be adopted by the Practice Standards Council this autumn to be effective in 2001 (possibly as early as January 1). CLIFR encourages actuaries to use the Life Valuation SOP as a guide in situations not covered by existing standards or guidance. Moreover, early implementation of the Life Valuation SOP for the year-end 2000 valuation is encouraged. It is expected that the terms of approval of the new standard will state that an actuary who complies with the Life Valuation SOP any time after it is approved by the Practice Standards Council will be considered in compliance with the standards of practice.

7. Income Taxes

7.1 Recognition of Tax vs Statement Basis Income Timing

Because there is very limited guidance in current standards and educational notes that deals explicitly with the treatment of income taxes in the valuation, CLIFR is frequently asked questions on the topic of treatment of tax timing differences in the valuation (i.e., differences in tax and GAAP timing of income). CLIFR would specifically like to refer actuaries to Section 7.2.8 of the Life Valuation SOP which deals with this topic, and represents CLIFR's consensus view of the general principles behind how income taxes should be treated in the Canadian GAAP valuation.

CLIFR expects to produce an Educational Note on Income Taxes in the Valuation during 2001. This note will address in more detail the issues of appropriate recognition of tax timing differences, and the issue of recoverability of future projected tax losses due to timing differences.

7.2 Anticipation of Future Changes in Income Tax Rates

The Canadian Government has announced its intentions to reduce corporate tax rates. Questions have been raised as to the appropriateness of recognizing tax rate reductions in the policy liabilities.

Section 3465 of the CICA Handbook states that income tax rates should be "substantively enacted" to be considered in the calculation of income tax assets or income tax liabilities. In CLIFR's view, this is a reasonable criterion to use in determining whether to recognize future changes in income tax rates in the valuation of policy liabilities. A recent CICA emerging issues bulletin stated that the reduction in federal income tax rates from 28% to 27% can be considered substantively enacted.

Therefore, for the 2000 year-end valuation, in CLIFR's view it is appropriate to recognize the reduction in federal income tax rates from 28% to 27%, but not to recognize the further intended reductions to 21%.

It would also be appropriate to apply a similar "substantively enacted" approach based on the CICA Handbook for announced changes to provincial tax rates.

8. Educational Note on Valuation of Group Life and Health Policy Liabilities

CLIFR has just completed an Educational Note on the Valuation of Group Life and Health Policy Liabilities. This educational note is a companion document to the Life Valuation SOP, and provides illustrative information on the application of the Life Valuation SOP to group life and health policies. In preparation for the year-end 2000 valuation, actuaries are encouraged to review and compare their practices to those outlined in this document.

9. Equity-Indexed On-Balance Sheet Products

Questions have been raised regarding the appropriate valuation techniques to apply to equity-indexed products, which are becoming increasingly popular in the Canadian insurance market. These are on-balance sheet products, where the investment return is linked to a published index of some form, usually an equity index. The common forms of such instruments are equity-linked Universal Life contracts, and equity-linked GICs.

For both product types, CLIFR believes an appropriate valuation result can be determined by valuing these products consistently with non-indexed, linked on-balance sheet contracts of similar design. Should the equity index introduce any additional "option risk" (i.e., book value withdrawals, maturity guarantees etc.) or basis risk (i.e., risk that the growth rates of the assets do not match the credited rates on the liabilities), these features may be assessed on a stand alone basis using stochastic techniques as described in this letter for segregated fund guarantees. CLIFR anticipates issuing a more detailed educational note on this topic in 2001.

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