NEW ZEALAND SOCIETY OF ACTUARIES

PROFESSIONAL STANDARD NO.3

DETERMINATION OF LIFE INSURANCE POLICY LIABILITIES

1. INTRODUCTION

STANDARD

1.1 This Professional Standard is effective from 21 December 1998 and applies for reporting periods ending on or after 31 December 1999.

1.2 This Standard concerns the determination of life insurance policy liabilities as required for general purpose financial reporting in conjunction with the Financial Reporting Standards issued by the New Zealand Society of Accountants.

1.3 This Standard applies to every member of the New Zealand Society of Actuaries (the Society) when determining liabilities using a margin on services methodology for the purpose set out in paragraph 1.2.

1.4 This Standard deals specifically with financial reporting, and must be read in conjunction with Professional Standard No. 1 (Reports and Advice To An Organisation Carrying On Long Term Insurance Business).

2. DEFINITIONS

STANDARD

Acquisition Costs: **Fixed and variable costs of acquiring new business.**

Actuary: **A Fellow of the New Zealand Society of Actuaries.**

Best Estimate Assumptions: **Assumptions about future experience which are made using professional judgement, training and experience and are neither deliberately overstated nor deliberately understated.**

Best Estimate Liability: **The liability calculated using the Best Estimate Assumptions.**

Bonus: **An amount added at the discretion of the company to the benefits due under a Discretionary Policy.**

Discretionary Policy: **A policy where the office has discretion over additions to policies that include investment earnings.**

Economic Assumptions: **Assumptions made in respect of factors influenced by the economy in which a life insurance company operates. In particular these include investment returns, discount rates and inflation.**

Experience Profit: **The profit arising in a period from the difference between actual experience during that period and expected experience on the basis of Best Estimate Assumptions at the beginning of the period.**

Investment Management Costs: **Fixed and variable costs of managing the investment funds.**

Maintenance Costs: **Fixed and variable costs of administering policies subsequent to the sale and recording of the policies and the fixed and variable costs of administering the general operations of the life insurance company. Maintenance Costs include all operating costs and expenses other than Acquisition Costs and Investment Management Costs.**

NZ Margin on Services Valuation Method: **A valuation approach which uses Best Estimate Assumptions and allows for the systematic release of Profit Margins as services are provided.**

Policy Liability: **A liability calculated in accordance with this Standard.**

Profit Margin: **The expected profit is the excess of future premium and investment income over benefit payments and expenses determined using Best Estimate Assumptions. One or more of the Profit Margins are included in a Policy Liability to enable a systematic release over the future life of a policy of the expected profit as it is earned through provision of services. The Profit Margin is expressed as a percentage of a financially measurable indicator of the provision of service (or related income).**

Related Group of Products: **A grouping of products that is grouped together for the purposes of loss recognition. Discretionary Policies shall be in a different Related Group of Products from other business for the purposes of this Standard. The business may be further subdivided into a greater number of Related Groups of Products.**

Servicing Costs: **The combination of Maintenance and Investment Management costs.**

Supportable Additions: **The level of future bonus or crediting rate which it is expected on Best Estimate Assumptions can be added to a Discretionary Policy over its future life without supplementary income from sources outside the policy and exclusive of the shareholders' profit and contribution to capital consistent with stated bonus/crediting rate philosophy.**

Supportable Liability: **The liability calculated for Discretionary Policies including the Supportable Additions and shareholder Profit Margin due on the current valuation date.**

Valuation (of Policy Liabilities): **A process which uses assumptions and calculation techniques to determine an estimate of the amount now required to meet the company's future obligations under policies currently in force.**

3. VALUATION METHOD

STANDARD

3.1 The Policy Liability will provide for both:

(i) Best Estimate Liabilities, and

(ii) the value of future expected Profit Margins, to be released as services are provided.

3.2 A "best estimate" Valuation of policy liabilities will be the amount expected on Best Estimate Assumptions to be required to the end of the benefit period to meet future benefits and costs for the business in force. The calculation process will take into account all known material factors. Material factors will include future investment earnings, taxation, any options under the policies and future premiums where relevant to the calculation.

3.3 Proper allowance must be made for reinsurance having regard to the nature of the arrangements and the materiality of such business.

COMMENTARY

3.4 The method should allow for the possibility of voluntary discontinuance before the end of the benefit period.

3.5 This method of calculating Policy Liabilities is known as the New Zealand Margin on Services method of valuation. The Policy Liability may be less than the current surrender value of the policy and may be negative.

3.6 Any earning rate incorporated in the calculations of Policy Liabilities should be determined in accordance with paragraph 6.2, and, if not allowed for explicitly in the projection, should be net of tax on investment earnings and net of expenses and Profit Margins expressed as a percentage of assets.

STANDARD

3.7 **The Policy Liability will usually be determined by a projection approach and hence will allow for both the Best Estimate Liability and the value of expected future profits. An approach of calculating the Policy Liability other than a prospective approach may be used providing that the profit emerging in each year will not be materially different from that using a prospective approach.**

COMMENTARY

3.8 An accumulation methodology may be appropriate where the benefit is in the nature of an accumulation starting from the currently accumulated value and where expected future benefit growth and expected future investment income occur in the same time pattern. A similar methodology may be appropriate for other policies where revenue and costs are matched in the same time period, as for example is normally the case for group life policies.

3.9 Under an accumulation approach, the Policy Liability is equal to the current benefit accumulation less an amount representing the recoverable unrecouped portion of any Acquisition Costs (net of tax relief), subject to a minimum of the Best Estimate Liability. In determining the recoverable unrecouped portion of Acquisition Costs it will be necessary to use projection techniques, so as to reflect the incidence and amount of ongoing fees, surrender penalties and any other elements of a benefit associated with the recovery of Acquisition Costs. The surrender value is not an appropriate basis for the Policy Liability unless the surrender penalty equals the recoverable unrecouped portion of Acquisition Costs.

3.10 An accumulation approach will cause Profit Margins to emerge as the excess of fee income over expenses and Acquisition Cost recovery amount in each period.

STANDARD

3.11 Where the basis of asset valuation used for the financial statements is not consistent with the basis of asset valuation implicit in the Valuation of the liabilities, the Actuary must make appropriate adjustments to the Policy Liability.

COMMENTARY

3.12 The basis of valuation of assets used for the financial statements is net market value. The Best Estimate Assumptions (particularly for investment earnings) underlying the Valuation of the liabilities can be considered to provide a consistent valuation approach. There may be circumstances, however, where this usual consistency would not apply without intervention from the Actuary.

3.13 For example, for investment-linked benefits, asset values shown in the financial statements may differ from the values implicit in the unit prices used in calculating the Policy Liability. This could arise from the use of discounted deferred tax rates in the calculation of unit prices. A compensating adjustment to the Policy Liability will be required.

4. EXPECTED PROFIT EMERGENCE

STANDARD

4.1 There will be explicit allowance for one or more margins for profit where a prospective approach is used for calculating Policy Liabilities.

4.2 The Profit Margins will relate to the services provided for the policyowner. The provision of capital to create reserves is not to be regarded as one of these services.

4.3 All expected profits are to be incorporated in the future Profit Margins so that there will be no release of any expected profits at inception, or on any change in assumptions, except as provided in sections 5 and 8.

4.4 A Profit Margin is to be incorporated in a Policy Liability to generate a systematic release of expected profit over the future life of a policy. This profit release should coincide with the provision of the relevant service under the policy.

COMMENTARY

4.5 The magnitude of Profit Margins is governed by the premium charged (ie. by what is available), not by what is considered appropriate to the risk borne or service provided. However the pattern of release of Profit Margins is related to the incidence of service.

A policy provides some or all of the following services:

a) insurance of mortality, morbidity and other similar risks
b) investment return
c) setting up the policy (sale or acquisition)
d) ongoing administration
e) investment management.

For Discretionary Policies the allocation of bonus/crediting rate may for simplicity be regarded as effectively an indication of provision of the above services. At the time of valuation of in force business, the service of setting up the policy has already happened, and therefore this service will not be the basis of a future Profit Margin.

4.6 To achieve the required timing of release, the Profit Margin can be expressed as a proportion of:

a) the expected cost of the service, eg -
- the claim payment
- the investment return to the policyholder
- the cost of ongoing administration
- fund management costs
- bonus allocated

or as an approximation -

b) the expected income item relating to the service, eg -

- the premium
- the investment income on the assets corresponding to the policy liability
- explicit expense charges specified in the policy.

4.7 The choice of the appropriate type of Profit Margin from the list in paragraph 4.6 will depend on:-

a) which services and income items are applicable to the policy;

b) the simpler alternative. It is generally simpler to adopt a single service or income item provided that this satisfies the requirements of paragraph 4.4. For instance, the one item of income (eg. premium) may cover several services (eg. insurance risk, administration) so it would be simpler as an approximation to adopt a single Profit Margin of a proportion of premiums rather than have two margins relating to cost of insurance and cost of administration.

4.8 If income items are used to approximate the provision of a service they should approximate the incidence of the service. In particular a contract which primarily provides investment service should use investment income and not premium income as the basis of a Profit Margin.

STANDARD

4.9 There will sometimes be several alternative Profit Margin structures available and it will be a matter of judgement as to which is selected. However, in order to provide consistent reporting from year to year, once a structure is chosen it must be retained for that block of business (subject to issues of materiality and error correction) unless in the judgement of the Actuary it is no longer appropriate to do so.

COMMENTARY

4.10 To determine initially the size of a Profit Margin, projected cash flows of premiums, commission and other (including tax expenses not covered elsewhere) expenses and claim or maturity payments can be generated using Best Estimate Assumptions for a new business case for each year until the expiry of the policy. The present value of each of the cash flows is then discounted to inception. The net total of these present values represents the present value at issue of expected future profits. The service/income item on which the Profit Margin is to be based is similarly projected and its present value calculated. The present value at issue of expected future profits is then divided by the present value of the appropriate service or income item to give a Profit Margin proportion.

4.11 When Policy Liabilities are first calculated in accordance with this Standard the Profit Margins and acquisition expense components for currently in force policies should be calculated having regard to the history of those policies. However where this is not practical Profit Margins may be determined such that the Policy Liability is equal to the current surrender value for policies at least 5 years in force other than purely risk business and immediate annuities. For policies less than 5 years in force, purely risk business and immediate annuities the Profit Margins and acquisition expense components may first be determined on a basis consistent with current new business and the Policy Liability then determined.

5. ACQUISITION COSTS

STANDARD

5.1 In setting Profit Margins (see section 4) allowance will be made for the Actuary's best estimate of Acquisition Costs.

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5.2 If required, a deduction will be made (as an identifiable item) in arriving at the Policy Liability in respect of the value of planned acquisition cost recovery components.

5.3 A Profit Margin shall not be negative for a Related Group of Products in aggregate.

5.4 Where expected establishment fee income exceeds the Actuary's best estimate of Acquisition Costs, the excess may emerge at outset as a planned profit.

COMMENTARY

5.5 The best estimate of Acquisition Costs should be determined having regard to the historical level of expenses, the company's business plan, expected volumes of new business and any other factors that may impact on the level of acquisition expenses in the year.

5.6 If actual Acquisition Costs are different from the best estimate then an experience profit or loss will emerge at inception in addition to any planned profit. Significant acquisition profits or losses will need to be explained in the Report to the Board.

5.7 Where a projection is used to calculate the Policy Liability then the income which is used to recover Acquisition Costs is already implicitly incorporated in the Policy Liability calculation. Consequently, the identification of the value of the unrecouped portion of Acquisition Costs is purely presentational and does not affect the Policy Liability. However, under the accumulation approach the value of the unrecouped portion of Acquisition Costs is central to the calculation of the Policy Liability.

5.8 When planned acquisition cost recovery components are required to be calculated, the planned acquisition cost recovery components of each premium or other income item (including surrender penalties) are determined to recover Acquisition Costs.

5.9 Appropriate adjustment to Acquisition Costs and the planned recovery components may be needed where Acquisition Costs (notably initial commission instalments and writebacks) are expected to be incurred in a year subsequent to the year of issue.

6. ASSUMPTIONS

6.1 ***General***

STANDARD

6.1.1 Best Estimate Assumptions must be made about the future cost of the risks accepted and services provided, including probabilities of occurrence, having regard to available statistical and other evidence subject to any requirements in this Standard.

6.1.2. The Actuary must review the assumptions at the time of each Valuation of Policy Liabilities.

COMMENTARY

6.1.3. The assumptions should be reviewed against the company's own experience and management practices, published information on industry experience and emerging trends (both in New Zealand and where relevant, overseas) and professional standards.

6.2 ***Investment Earnings***

6.2.1. The expected earning rates are those applicable to the assets backing the Policy Liabilities, having regard to the value of assets adopted in the financial statements (net market value). It should include an allowance for future capital appreciation or depreciation in addition to interest, dividends and rents.

6.2.2. The expected earning rate(s) should usually reflect the current mix of assets, and the expected earning rate on each category of relevant existing assets. The intended asset mix may be used in place of the actual asset mix and expected earning rates on reinvestment can be allowed for, so long as this is done consistently from year to year, is considered appropriate by the Actuary and is disclosed in the Report to the Board. The intended asset mix should only be used where the intended mix is likely to be achieved in the opinion of the Actuary.

6.3 ***Servicing Costs***

6.3.1 The servicing expense assumptions for maintenance and investment management expenses should be of sufficient level that in aggregate across all business assumed to be in force in the year following the valuation date they are sufficient to cover the estimated expenses required in that year to fully support the administration of that business as a going concern and to manage the assets representing the Policy Liabilities. It may be assumed (unless inappropriate) that the company will continue to write new business with consequent impact on projected volumes of business in force, but the assumed levels of new business must be considered realistic by the Actuary. The estimated servicing expenses may exclude expenses which the Actuary considers to be "one-off" in nature. For maintenance expenses beyond the coming year the assumption should incorporate the rates of inflation considered appropriate.

6.3.2 In determining the level of servicing costs as they apply to differing Related Groups of Products, or such other division as the actuary considers appropriate, the following principles should be applied unless considered inappropriate by the Actuary:

- Directly attributable expenses should be so allocated.
- Other expenses should ideally be allocated as a result of an analysis of the company's functional operations as they relate to various identified expense drivers, these expense drivers then being the basis of an allocation between Related Groups of Products. In undertaking this analysis regard should be had to the purpose of the company in incurring the expense as well as the contribution of the expense to the business of the company.

6.4 ***Taxation***

Assumptions relating to taxation should be based on current legislation together with any relevant rulings by the Inland Revenue Department. The Actuary should have regard to publicly announced future changes in legislation.

Calculations will need to be made to determine the appropriate tax basis on the projection to determine which taxation basis is appropriate.

6.5 **Mortality and morbidity**

Assumptions relating to mortality and morbidity should be based on, or have regard to, the company's own experience (where appropriate) and industry experience tables, making reasonable allowance for the estimated effects of factors relevant to the particular company (eg. underwriting practices).

6.6 ***Discontinuance***

In respect of discontinuance assumptions the Actuary should take account of any actual experience and where appropriate, the influence of product design, age, mode of premium payment and duration. Composite discontinuance rates may be used, provided that they are representative of the company's actual mix of business.

6.7 ***Policy Conditions***

6.7.1 The Actuary should assume paid up values and surrender values on future discontinuance are calculated on the company's current basis unless the actuary is aware that a change will be made.

6.7.2 Under certain types of policy, the company has the right to change the level of mortality, morbidity or management charges. For the purpose of determining the Policy Liabilities, the Actuary should assume the current level of charge including inflation allowances unless the Actuary is aware that a further change will be made.

6.7.3 The Actuary should allow for the actual frequency of premium payment and any experience of premium dormancy under the class of business where relevant and material, when projecting future premiums and the corresponding benefits.

6.7.4 In valuing any options the Actuary should have regard to materiality, given the expected take up rates and analysis of the company's own experience.

6.7.5 The Actuary should be aware of, and make appropriate allowance for, the outworkings of any elements within the conditions of policies, which are not explicitly addressed in this section.

7. DISCRETIONARY POLICIES

STANDARD

7.1 Calculations for the Policy Liabilities must include allowance for future Supportable Additions and associated shareholder Profit Margin and may include allowance for other Profit Margins. These Profit Margins are set for new business such that there is no planned profit emerging at issue from a calculation of the Best Estimate Liability.

COMMENTARY

7.2 Instead of retaining separate rates of supportable bonus for each year of issue, a uniform rate of bonus across all, or a selected cohort of, years of issue may be determined by equating Policy Liabilities.

7.3 The relationships between reversionary bonuses on sums insured and on previous reversionary bonuses, and terminal bonuses and shareholder transfers should be consistent with the company's philosophy and practice.

STANDARD

7.4 ***Recalculation***

For discretionary business the Supportable Additions, and shareholder Profit Margin, are recalculated at the time of each Valuation by equating the Supportable Liability using the assumptions applying at the valuation date with the value of supporting assets applicable to that business.

COMMENTARY

7.5 The recalculation is undertaken to ensure that the actual experience during the year regarding investment returns is properly factored into the determination of future years' Supportable Additions.

7.6 The Policy Liability is determined as the Supportable Liability, reduced by the "cost of Supportable Additions" and the associated shareholder Profit Margin due on the valuation date, but increased to allow for the cost of actual discretionary additions due on the valuation date. In this way the value of the Supportable Additions and associated shareholder Profit Margin attributable to the past year will emerge but is offset by actual discretionary additions to policies.

7.7 The relevant value of supporting assets is determined as follows:

(a) Determine the net of tax investment yield applicable to the relevant assets during the past year.

(b) Build up the value of assets at year end by applying this yield to the Policy Liability plus the cost of declared bonus or crediting rate at year start and policy related cash flows during the year less Profit Margins / contributions emerging during the year.

(c) Determine the experience profit on non investment functions (eg for expenses by comparing actual payments to those expected on the previous valuation assumptions).

(d) Adjust the year end value of assets in (b) by deducting the experience profits in (c).

7.8 For conventional business the absorption of a change in asset value may be straight into terminal bonus or be spread by changing the reversionary bonus, depending on the company's (stated) bonus philosophy. The spreading into reversionary bonus of an exceptional year's investment performance need not be on an "even across life time" basis if there is a structured bonus philosophy which designates a shorter spread period (eg 5 year smoothing).

8. CHANGE OF ASSUMPTIONS AND LOSS RECOGNITION

STANDARD

8.1 On a change in assumptions, Profit Margins (and Supportable Additions if applicable) are to be recalculated resulting in the amortisation of the effect of the change over the remaining policy term rather than immediately recognising the value of the change, except as provided below for changes to Economic Assumptions due to changed market conditions applicable to assets and loss recognition.

8.2 Where the assumptions made at the time of a Valuation establish that a Profit Margin would become negative for a Related Group of Products in aggregate owing to the expected generation of future losses, then the present value of those losses shall be recognised as a reduction in the total profits of

the company at that Valuation. When such a Profit Margin has previously had future losses recognised and at a subsequent Valuation the assumptions made establish that profits will eventuate then a reversal of the effect of the previously recognised value of future losses shall be recognised at that Valuation.

COMMENTARY

8.3 The impact of a change in assumptions (excluding a change to Economic Assumptions due to changed market conditions applicable to assets) on the Profit Margins for non-discretionary business is assessed by calculating:

(a) the Policy Liabilities using the previous assumptions (except that the new Economic Assumptions should be used to the extent that the changes in the Economic Assumptions have resulted from changed market conditions applicable to assets) and the previous Profit Margins;

(b) the Policy Liabilities using the new assumptions and the previous Profit Margins.

If the Policy Liabilities in aggregate from (b) are lower than (a) then the Profit Margins should be increased so that the Policy Liabilities using the new assumptions and the new Profit Margins give a result equal to (a).

Conversely, if in aggregate (b) is higher than (a) then the Profit Margins should be decreased so that the Policy Liabilities equal (a). If the new Profit Margins would become negative in aggregate for a Related Group of Products to satisfy this equation then the new Profit Margins will in aggregate be made equal to zero and the discounted value of the eliminated negative Profit Margins is determined. This value is the amount of the loss that will be recognised in the accounts (because the Policy Liabilities were larger having been determined using zero Profit Margins) and should be noted for future reference when reversal of previous loss recognition is applicable.

STANDARD

8.4 The impact of a change in Economic Assumptions, due to changed market conditions applicable to assets, on the Profit Margin for non-discretionary business is to flow directly to the Policy Liabilities.

COMMENTARY

8.5 Such changes are not to be treated in the manner described in paragraph 8.3. Changes to the Economic Assumptions for other reasons, where material, are treated in the manner described in paragraph 8.3.

8.6 Where for a Related Group of Products a loss from this procedure of using a zero Profit Margin has been recognised in a previous year and the recalculation of Profit Margin at this valuation date indicates a positive Profit Margin is required, then such Profit Margin will be reduced (subject to a minimum of zero) to reverse the previous loss recognition.

8.7 Where there is more than one Profit Margin for a policy and it is necessary to alter Profit Margins in accordance with paragraphs 8.3, 8.4 or 8.6 then the Profit Margin first to be altered will be that which relates to the reason for the change. For example if assumed mortality worsens then reduce the Profit Margin on the death claim service.

8.8 If a change in assumptions leads to a change in the taxation liability or taxation basis, this should not be capitalised (unless a loss). The Profit Margin should be recalculated and the impact of the change allowed to flow through into the Profit Margin. This reflects the fact that taxation is paid commensurate with profits earned (or services provided). There is no reason that a change in future taxation liabilities should be treated differently from other assumed changes in income/outgo.

9 MATERIALITY

STANDARD

9.1 The determination of Policy Liabilities is subject to the same materiality standards as apply to the overall financial statements.

COMMENTARY

9.2 The applicable principle is that values or information are material when their mis-statement or omission would cause the actuarial report or financial statements to mislead users when they make evaluations or decisions.

9.3 The above statement on materiality covers the situation regarding the acceptability of grouped data and modelled projections. The implication is that occasionally a full individual policy valuation has to be done to compare with an equivalent approximate calculation to demonstrate the extent of variation. This will not be mandated because different analytical methods may be developed to assess such variations.

10 STATEMENT BY THE ACTUARY

COMMENTARY

10.1 In respect of each Valuation of Policy Liabilities covered by this Standard the Actuary should provide a Report to the Board relating to that Valuation.

The Report by the Actuary should include:-

(a) a summary of the results;

(b) a description of the calculation methods adopted for determining the Policy Liabilities in respect of each type of policy;

(c) a description of the assumptions adopted for the determination of the Policy Liabilities for each type of policy, including:

- (i) the rates of interest and the asset mix from which they were derived;
- (ii) the future maintenance and investment costs;
- (iii) the rates of commission;
- (iv) the rate of inflation applicable to future expenses and any automatic indexation of benefits and premiums;
- (v) the rates of taxation and their legislative basis;
- (vi) the tables of mortality and morbidity;
- (vii) the rates of discontinuance;
- (viii) the surrender value basis applying or a sample of surrender values;
- (ix) the rates of growth of unit prices in respect of unit linked policies;
- (x) the basis of future discretionary additions in respect of Discretionary Policies;

(xi) the rates of future Supportable Additions used.

(d) an opinion regarding the data upon which the Valuation was conducted;

(e) a statement by the Actuary confirming that the value of the Policy Liabilities conforms with this Standard in all material respects.

The Report should indicate which types of policy have been classified as discretionary and which as non-discretionary. It should also indicate how products were grouped for purposes of calculating loss recognition and similar adjustments to Profit Margins and acquisition expense components.

It is expected that the Report to the Board will contain an analysis of profit broken down into the planned and experience components.

10.2 The Actuary will also provide a Statement for inclusion in the company's Financial Statements in accordance with the requirements of the Financial Reporting Standards applicable to Life Insurers.

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