# SEPARATE ACCOUNTS
## LR006

*Basis of Factors*

Separate Accounts With Guarantees
Guaranteed separate accounts are divided into two categories: indexed and non-indexed.

**Guaranteed indexed separate accounts may invest using various approaches which are grouped into Class I or Class II strategies. Additional information on these types of**

<u>Synthetic GICs</u>
Synthetic GICs are contracts with provisions similar to separate accounts with guarantees, except that the insurance company does not own the assets. For business of this type, the C-1 and C-3 risk-based capital is determined to be the same as if the insurance company owned the assets and provided the same guarantees as in a guaranteed separate account.

Surplus in Non-Guaranteed dolus ini9ccounts

**gradually phased out. For 30 months, actual experience is weighted by the square root of 30/60 and the 4% factor is weighted by one minus the square root of 30/60. For 31 months experience is weighted by the square root of 31/60 and the 4% factor is weighted by one minus the square root of 31/60. This pattern continues up to month 59 when experience is weighted by the square root of 59/60 and the 4% factor is weighted by 1 minus the square root of 59/60.**

5.  **The actual experience based calculation, under step (3) above, needs to be adjusted when there are less than 60 months of experience to gauge the 90 CTE. If the number of months divided by 10 is an integral number n, take the average of the first n values after the series is put in ascending order with positive values set to zero. If n is non integral, then set n to the next highest integral number and interpolate, using each average of the of the first n-1 and n values after the series is set in ascending order and positive values are set to zero. For example, if there are 37 values the idea is to identify the worst 3.7 of them. This is done by interpolating, taking 30% of the average of the first three values and 70% of the average of the first four values.**

6.  **The resulting RBC factor is subject to a minimum 0.4%.**

Lines (2) and (3)
The amounts to be reported for non-indexed Separate Accounts with guarantees [Line (2) and Line (3), Column (2)] must be calculated manually. Risk-based capital for these amounts should be calculated using the Life company formula; however, the RBC calculation for non-indexed separate accounts should not include the size factor for bonds, the experience adjustment for mortgages or the concentration factor.

Line (11)
Report the CRVM or CARVM expense allowance transfers where the current surrender charge is based on the fund balance or all other expense allowance transfers.

Line (12)
Report the CRVM or CARVM expense allowance transfers where the current surrender charge is based on fund contributions for each contract for which the fund balance exceeds the sum of the premiums less withdrawals.

Line (14)
The total assets of separate accounts with guarantees and separate accounts without guarantees of the formula should be equal to total separate account assets on Page 2, Line 25, Column 3 of the Annual Statement.

# INTEREST RATE RISK
## LR023

*Basis of Factors*

The interest rate risk is the risk of losses due to changes in interest rate levels. The factors chosen represent the surplus necessary to provide for a lack of synchronization of asset and liability cash flows.

The impact of interest rate changes will be greatest on those products where the guarantees are most in favor of the policyholder and where the policyholder is most likely to be responsive to changes in interest rates. Therefore, risk categories vary by withdrawal provision. Factors for each risk category were developed based on the assumption of well matched asset and liability durations. A loading of 50 percent was then added on to represent the extra risk of less well matched portfolios. Companies must submit an unqualified **actuarial** opinion **based on asset adequacy testing** to be eligible for a credit of one-third of the RBC otherwise needed.

Consideration is needed for products with credited rates tied to an index as the risk of synchronization of asset and liability cash flows is tied not only to changes in interest rates but also to changes in the underlying index. In particular, equity-indexed products have recently grown in popularity with many new product variations evolving. The same C-3 factors are to be applied for equity-indexed products as for their non-indexed counterparts, i.e., based on guaranteed values ignoring those related to the index.

In addition, some companies may be required to calculate part of the RBC on certain annuities and single premium life insurance under a method using cash flow testing techniques. Refer to **LR042** for determination of exemption from

The calculation for risk-based capital should not include unitized separate accounts w

Unitized separate account business with

# EXEMPTION TEST: CASH FLOW TESTING FOR C-3 RBC
## LR042

*Specific Instructions for Application of the Formula*

### Line (5)
Column (1) Line (5) will need to be manual entry if the company has any equity indexed product amounts included in the totals from the Interest Rate Risk Page LR023. Line (5) is calculated as LR023 Interest Rate Risk Column (3) Line (17) times 0.65 plus LR023 Interest Rate Risk Column (3) Line (16) times 0.65 minus any equity indexed product amounts included in these totals times 0.65.

### Line (6)
Column (1) Line (6) will also be manual entry if the company has any equity indexed product amounts subtracted from Line (5) above. Line (6) is calculated as LR023 Interest Rate Risk Column (3) (Line (22) + (27) + (29) + (30) + (31) ) x 0.65 plus any Equity Indexed amounts subtracted in the Line (5) calculation.

### Line (16)
Column (1) Line (16) will need to be manual entry if the company has any equity indexed product amounts included in the totals from the Interest Rate Risk Page LR023. Line (16) is calculated as LR023 Interest Rate Risk Column (3) Line (17) times 0.65 plus LR023 Interest Rate Risk Column (3) Line (16) times 0.65 minus any equity indexed product amounts included in these totals times 0.65.

### Line (17)
Column (1) Line (17) will need to be manual entry if the company has any equity indexed product amounts included in the totals from the Interest Rate Risk Page LR023. Line (17) is calculated as LR023 Interest Rate Risk Column (3) Line (17) times 6.5 times 0.65 minus any equity indexed product amounts included in these totals times 6.5 times 0.65.

### Line (18)
Column (1) Line (18) will also be manual entry if the company has any equity indexed product amounts subtracted from Line (16) above. Line (18) is calculated as LR023 Interest Rate Risk Column (3) (Line (22) + (27) + (29) + (30) + (31) ) x 0.65 plus any Equity Indexed amounts subtracted in the Line (5) calculation.

**Appendix 1 – Cash Flow Testing for C-3 RBC**

# Appendix 1a – Cash Flow Testing for C-3 RBC Methodology

General Approach

1.  The underlying asset and liability model(s) are those used for year-end Asset Adequacy Analysis cash flow testing, or a consistent model.

2.  Run the scenarios (12 or 50) produced from the interest-rate scenario generator.

3.  The statutory capital and surplus position, S(t), should be captured for every scenario for each calendar year-end of the testing horizon. The capital and surplus position is equal to statutory assets less statutory liabilities for the portfolio.

4.  For each scenario, the C-3 measure is the most negative of the series of present values S(t)*pv(t), where pv(t) is the accumulated discount factor for t years using 105 percent of the after-tax one-year Treasury rates for that scenario. In other words:

$$pv(t) = \prod_{1}^{t} 1/(1+i_t)$$

5.  Rank the scenario-specific C-3 measures in descending order, with scenario number 1's measure being the positive capital amount needed to equal the very worst present value measure.

6.  Taking the weighted average of a subset of the scenario specific C-3 scores derives the final C-3 after tax factor.

    (a)  For the 50 scenario set, the C-3 scores are multiplied by the following series of weights:

    ------------------------------------- Weighting Table -------------------------------------

| Scenario Rank: | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Weight: | 0.02 | 0.04 | 0.06 | 0.08 | 0.10 | 0.12 | 0.16 | 0.12 | 0.10 | 0.08 | 0.06 | 0.04 | 0.02 |

    The sum of these products is the C-3 charge for the product.

    (b)  For the 12 scenario set, the charge is calculated as the average of the C-3 scores ranked 2 and 3, but cannot be less than half the worst scenario score.

7.  If multiple asset/liability portfolios are tested and aggregated, an aggregate C-3 charge can be derived by first summing the S(t)'s from all the portfolios (by scenario) and then following steps 2. through 6. above. An alternative method is to calculate the C-3 score by scenario for each product, sum them by scenario, then order them by rank and apply the above weights.

Single Scenario C-3 Measurement Considerations

1. GENERAL METHOD - this approach incorporates interim values, consistent with the approach used for bond, mortgage and mortality RBC factor quantification. The approach establishes the risk measure in terms of an absolute level of risk (e.g., solvency) rather than volatility around an expected level of risk. It also recognizes reserve conservatism, to the degree that such conservatism hasn't been used elsewhere.

2. INITIAL ASSETS = RESERVES - consistent with Appointed Actuary practice, the cash flow models are run with initial assets equ

**SEPARATE ACCOUNTS**                                                                                                                     #REF!

|  | Annual Statement Source | (1)<br>Book / Adjusted<br>Carrying Value | (2)<br>Factor<br>or Calc | (3)<br>RBC<br>Requirement |
|---|---|---|---|---|
| Separate Accounts with Guarantees | | | | |
| (1) Guaranteed Indexed | Page 2 Column 3 Line 25 in part | | § | * |
| (2) Non-Indexed, Reserved at Book Value | Company records | | RBC x 1.000 | |
| (3) Non-Indexed, Reserved at Fair Value | Company records | | RBC x 1.000<br>(less "haircut") | |
| (4) Total Assets in Separate Accounts with Guarantees†<br>(pre-MODCO/Funds Withheld) | Lines (1) + (2) + (3) | | | |
| (5) Reduction in RBC for MODCO/Funds Withheld<br>Reinsurance Ceded Agreements | Company Records (enter a pre-tax amount) | | | |
| (6) Increase in RBC for MODCO/Funds Withheld<br>Reinsurance Assumed Agreements | Company Records (enter a pre-tax amount) | | | |
| (7) Total Assets in Separate Accounts with Guarantees<br>(including MODCO/Funds Withheld.) | Lines (4) - (5) + (6) | | | |
| Synthetic GIC's | | | | |
| (8) Synthetic GIC's C-1 Requirement | Company Records (enter a pre-tax amount) | | RBC x 1.000<br>(less "haircut") | |
| Surplus in Non-Guaranteed Separate Accounts | | | | |
| (9) Assets in Separate Accounts | Page 2 Column 3 Line 25 in part | | X      0.110      = | |
| (10) Less Liabilities in Separate Accounts | Page 3 Column 1 Line 27 in part | | X      0.110      = | |
| (11) Expense Allowance Transfers - All Other | Page 3 Column 1 Line 13‡ in part | | X      0.110      = | |
| (12) Expense Allowance Transfers - Surrender Charge Based | Page 3 Column 1 Line 13‡ in part | | X      0.024      = | |

**INTEREST RATE RISK**

|  |  | (1) |
|---|---|---|
| (1.1) | Unqualified Actuarial Opinion **Based on Asset Adequacy Testing**? | ["Yes" or "No" in Column (1)] |
| (1.2) | C-3 RBC Cash Flow Testing on Annuities or Single Premium Life? | ["Yes" or "No" in Column (1)] |
| (1.3) | If Line (1.2) is "Yes", is the Appointed Actuary C-3 Assumption Statement Attached? | ["Yes" or "No" in Column (1)] |

RESERVES ON CERTAIN ANNUITIES AND SINGLE PREMIUM LIFE INSURANCE THAT WERE CASH
FLOW TESTED FOR ASSET ADEQUACY (See Appendix 1 of the instructions for more details.)

Low Risk Category that were Cash Flow Tested for Asset Adequacy1)]

| Annual Statement Source | (2) Statement Value | Factor | (3) RBC Requirement |
|---|---|---|---|
|  |  |  |  |

**INTEREST RATE RISK (Continued)**

|  | | Annual Statement Source | (2)<br>Statement<br>Value | Factor | (3)<br>RBC<br>Requirement |
|---|---|---|---|---|---|
| | High Risk Category that were Cash Flow Tested for Asset Adequacy | | | | |
| (12) | Annuity Reserve at Book Value Without Adjustment (minimal or no charge or adjustment)* | Notes to Financial Statements Item 32 Line A5, in part‡ | ▮ | X  0.0462 or 0.0308†  = | |
| (13) | Debt with GIC-like Characteristics (see Appendix 1 & 1b instructions) | Company records (enter a pre-tax amount) | | | ▮ |
| (14) | Total High Risk | Line (12) + (13) | | | |
| | Synthetic GIC's | | | | |
| (15) | Synthetic GIC's C-3 Requirement | Company records (enter a pre-tax amount) | | | ▮ |
| | Callable/Pre-Payable Assets | | | | |
| (16) | Callable/Pre-Payable Assets Assigned to Products Categorized Above | Company records (enter a pre-tax amount) | | | ▮ |
| (17) | Subtotal of Factor Based RBC For Products Categorized Above | Lines (6) + (11) + (14) + (15) | | | |

ALL OTHER RESERVES (exclude statement amounts included in Lines (2) to (17) above)

| | Low Risk Category | | | | |
|---|---|---|---|---|---|
| (18) | Annuity Reserve with Market Value Adjustment (excluding unitized separate accounts and eligible experience rated pension and separate accounts with guarantees)* | Notes to Financial Statements Item 32 Line A1, in part‡ | ▮ | X  0.0115 or 0.0077†  = | |
| (19) | Annuity Reserve not Withdrawable (excluding structured settlements and eligible experience rated pension and separate accounts with guarantees)* | Notes to Financial Statements Item 32 Line B, in part‡ | ▮ | X  0.0115 or 0.0077†  = | |
| (20) | Guaranteed Investment Contract (GIC) Reserve within 1 Year of Maturity£ | Notes to Financial Statements Item 32 Various | ▮ | X  0.0115 or 0.0077†  = | |

**INTEREST RATE RISK (Continued)**

| | | Annual Statement Source | (2) Statement Value | Factor | (3) RBC Requirement |
|---|---|---|---|---|---|
| | Medium Risk Category | | | | |
| (23) | Annuity Reserve at Book Value Less Surrender Charge of 5 Percent or More* | Notes to Financial Statements Item 32 Line A2, in part‡ | | X 0.0231 or 0.0154† = | |
| (24) | Exhibit 7 Reserve not Included Elsewhere § | Exhibit 7 Line 14 amounts not included elsewhere in Interest Rate Risk (C-3)‡ | | X 0.0231 or 0.0154† = | |
| (25) | Structured Settlements | Notes to Financial Statements Item 32 Line B, in part‡ | | X 0.0231 or 0.0154† = | |
| (26) | Additional Actuarial Reserves - Asset/Liability Analysis | Exhibit 5 Column 2 Line 0799997, in part | | X 0.0231 or 0.0154† = | |
| (27) | Total Medium Risk | Sum of Lines (23) through (26) | | | |
| | High Risk Category | | | | |
| (28) | Annuity Reserve at Book Value Without Adjustment (minimal or no charge or adjustment)* | Notes to Financial Statements Item 32 Line A5, in part‡ | | X 0.0462 or 0.0308† = | |
| (29) | Total High Risk | Line (28) | | | |

**EXEMPTION TEST: CASH FLOW TESTING FOR C-3 RBC**

|  | C-3 Significance Test | Source | (1) Amount | (2) Yes/No Response |
|---|---|---|---|---|
| (1) | C-0 Asset Risk - Affiliated Amounts | LR027 Calculation of Total Authorized Control Level Capital Column (1) Line (11) | | |
| (2) | C-1cs Asset Risk - Unaffiliated Common Stock | LR027 Calculation of Total Authorized Control Level Capital Column (1) Line (20) | | |
| (3) | C-1o Asset Risk - All Other | LR027 Calculation of Total Authorized Control Level Capital Column (1) Line (42) | | |
| (4) | C-2 Insurance Risk | LR027 Calculation of Total Authorized Control Level Risk-Based Capital Column (1) Line (49) | | |
| (5) | C-3a Factor-Based Interest Rate Risk Single Premium and | LR023 Interest Rate Risk Column (3) Line (17) x 0.65 + LR023 Interest Rate Risk Column (3) | | |