AMERICAN ACADEMY *of* ACTUARIES

Recommendation of the American Academy of Actuaries' Life-Risk Based Capital Committee on Changes to the Covariance Treatment of Common Stock

Presented to the National Association of Insurance Commissioners' Life Risk-Based Capital Working Group

December 2000 – Boston, MA

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Recommendation to Change the Treatment of Common Stock in the Life Risk-Based Capital Formula

This paper presents an update of the American Academy of Actuaries Life Risk-Based Capital Committee (Academy Committee) recommendation to change the treatment of unaffiliated common stock and affiliated non-insurance stock in the life risk-based capital (RBC) formula. Specifically, we recommend that the Life Risk-Based Capital Working Group adopt the following changes effective for the 2001 filings:

- Split the current C-1 category for asset risk into two separate categories C-1 - common stock (C-1cs) and C-1 - other asset risk (C-1o). The C-1 - common stock element would constitute a new squared term in a revised covariance formula:

$$\text{RBC} = C0 + C4a + \sqrt{(C1o + C3a)^2 + C1cs^2 + C2^2 + C3b^2 + C4b^2}$$

- Include in the C-1-common stock category

    - unaffiliated common stock, including unaffiliated common stock held in Schedule BA partnerships, and

    - common and preferred stock of non-insurance affiliates.

- Include in the C-1 - other asset risk category all risks currently in the C-1 category other than those in the C-1 - common stock category enumerated above.

- Keep the current 30% factor for common stock in the C-1cs category, but adjust it by the weighted average *beta* of a company's portfolio of common stock in the C-1cs category subject to a minimum of 22.5% and a maximum of 45%. (Non-publicly traded common stock would be deemed to have a *beta* of 1.)

- Include in the C-1cs category, a new stock concentration calculation which would increase the factor applied to the largest five share holdings in the insurer's portfolio by 50% of the amount otherwise required for such holdings.

The last two elements of the recommendation were not part of the Academy Committee's original recommendation and have been introduced as a result of the Academy Committee's deliberations concerning the effect of diversification on the RBC requirements for common stock. The *beta* adjustment would adjust an insurer's requirements (up or down) if the stocks in its portfolio tended to move more or less sharply than the overall market. This adjustment is already made in the calculation of the Asset Valuation Reserve. The concentration adjustment accounts for the fact that there are dimensions to a portfolio's risk other than that associated with the overall market, and is similar to the already existing adjustment for asset concentration applicable to categories of assets other than common stock.

In most other respects the recommendation is unchanged from the Academy Committee's original recommendation in December of 1997. Reference should be made to that report for the studies underlying the Academy Committee's conclusion that the common stock

risk is independent of the interest rate risk as well as other categories of asset risk. A brief history of the common stock project is contained in Exhibit I.

The portion of the proposed change related to unaffiliated common stock, ignoring the impact of the beta and concentration adjustments, will result in an increase in the overall industry's aggregate RBC ratio from 281.0% to 315.7%, an increase of 35 points. This increase only reflects the impact of unaffiliated common stock and not the smaller expected impact from affiliated non-insurers. As is discussed more fully below, the impact of the change varies considerably by company.

Although the Academy is currently examining the tax implications of various RBC factors, the recommendation and analysis given herein have **not** been adjusted to reflect any modification of the tax treatment. (The tax treatment for RBC C-1 common stock factors has always been to assume that no losses are deductible.)

Non-Insurance Affiliates

Although most categories of affiliates have been excluded from the proposed C-1 common stock category on the theory that the underlying risk is being captured as part of the see-through treatment accorded to insurance and investment subsidiaries, such see-through does not apply to non-insurance affiliates. Given that there is no data readily available to quantify the covariance characteristics of non-insurance affiliates with other categories of asset risk, the Academy Committee made a judgement based on the observation of the general characteristics of such affiliates that they are more like unaffiliated common stock than the other categories of investment included in the C-1 other category. The Academy Committee therefore recommends that such subsidiaries be included in the C-1 common stock category.

Specifically, the Academy Committee recommends that preferred and common stock investments in "other subsidiaries," (i.e. subsidiaries with affiliate code 12 in the current life risk-based capital framework) and "holding company in excess of indirect subsidiaries," (i.e. subsidiaries with affiliate code 6) be included in the C-1 common stock category. Preferred stock is included since the formula has consistently treated preferred stock investments in subsidiaries in exactly the same manner as common stock investments. In this last respect the current recommendation differs from the one presented in December of 1997.

Beta Adjustment for Common Stock

The *beta* of a common stock measures the tendency of the common stock to move up or down with the movements of the overall stock market. A stock with a *beta* of 1.5 would be expected to produce a return of 150 basis points if the overall stock market (usually measured by the S&P 500 index) produced a 100 basis points return. Such behavior is usually associated with more speculative investments. On the other hand, stocks of mature companies in regulated markets typically have *betas* lower than 1.

The *beta* of a portfolio of stocks is simply the weighted average of the *betas* of the individual stocks in the portfolio. Thus, *beta* measures the nondiversifiable risk in a particular stock or portfolio of stocks, as even a large portfolio of high *beta* stocks will

have a high *beta,* and it is therefore appropriate to increase the risk factor associated with such a block.

Since there is already a *beta* adjustment incorporated into the AVR factor for publicly traded unaffiliated common stock, the Academy Committee recommends that the *beta* adjustment for RBC be calculated in a manner consistent with the AVR methodology, which is detailed in Exhibit II. In particular, this means that the *beta* adjustment will have a ceiling corresponding to a *beta* of 1.5 and a floor corresponding to a *beta* of 0.75. For RBC, the ceiling is equivalent to a RBC factor of 45% and the floor is equivalent to a RBC factor of 22.5%.

Unaffiliated Common Stock Concentration Factor

While the *beta* adjustment will capture the nondiversifiable risk in an insurer's portfolio, there remains the possibility that the portfolio is not diversified, and is concentrated in few large holdings. This risk is already captured by the concentration factor for most other types of asset risk, but common stock was excluded from that calculation. The Academy Committee notes that the risk from individual stock holdings can easily exceed that covered by a 30% factor, and therefore recommends that a new element is introduced into the RBC formula in order to quantify the risk.

Typically, only one-third of the variance of the return of a particular common stock is explained by movements in the overall stock market. This implies that the RBC factor for a single common stock ought to be roughly $\sqrt{3} = 1.73$ times the RBC factor covering the nondiversifiable risk. Since even a small amount of diversification will significantly reduce the risk, the Academy Committee recommends that the basic RBC factor be increased by 50% to cover the risk of concentration in particular common stock holdings. Since very little of the insurer's diversifiable risk will be contributed by its smaller holdings, the Academy Committee recommends that the concentration factor for common stock be restricted to the 5 largest holdings.

Following the procedures that are applicable to the asset concentration calculation, the Academy Committee recommends that the five largest common stock holdings be identified on a consolidated basis including the holdings of investment subsidiaries and insurance subsidiaries in addition to those of the parent. A credit would be given in the parent calculation for any common stock concentration requirements that are established at the subsidiary level to avoid double counting.

The Committee also recommends that certain types of common stock be excluded from the concentration calculation:

- investment companies (mutual funds) and common trust funds, that are diversified within the meaning of the Investment Company Act (for the obvious reason),

- FHLB common stock since there is very little risk attached to it, and

- affiliated investments other than those in non-insurance subsidiaries to be consistent with the types of investments included in the C-1 common stock category.

The exclusion of diversified mutual and common trust funds is similar to a proposal before the HORBC Working Group. It relies on the definition of "diversified company" contained in the Section 5(b)(1) of the Investment Company Act of 1940:

"Diversified company" means a management company which meets the following requirements: At least 75 per centum of the value of its total assets is represented by cash and cash items (including receivables), Government securities, securities of other investment companies, and other securities for the purposes of this calculation limited in respect of any one issuer to an amount not greater in value than 5 per centum of the value of the total assets of such management company and to not more that 10 per centum of the outstanding voting securities of such issuers.

Once calculated the Academy Committee recommends that the common stock concentration calculation be added to the common stock covariance component on the assumption that the risk associated with particular common stocks will be independent of the bond and mortgage loan defaults, real estate returns, and the C-2 and C-3 risks. While it is possible to find common stock investments with higher correlations to the other risk components, the Academy Committee sees little reason to believe that insurers would have any incentive to assemble such a portfolio.

RBC Report and Instructions

Attached, as the Exhibit III of this report, are revised instructions and worksheets necessary to implement to Academy Committee's recommendation.

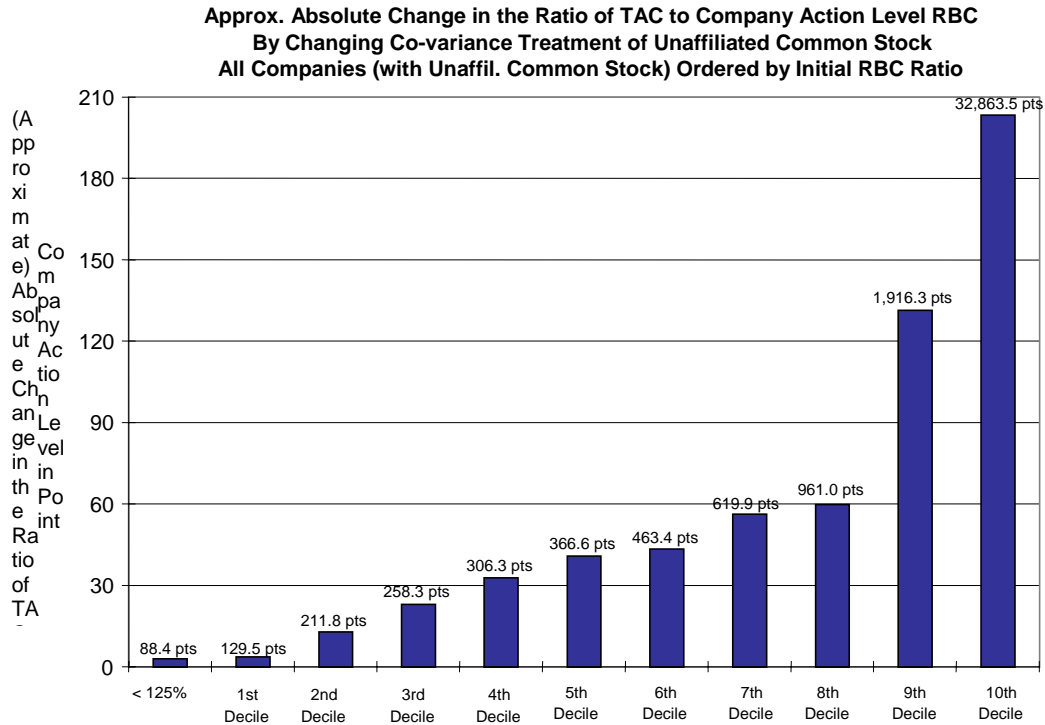**Impact of the Change in the Covariance Formula for Unaffiliated Common Stock**

The Academy Committee does not have at its disposal the details of the RBC calculation for individual insurers, since this data is filed on a confidential basis with the NAIC. However, the AVR worksheets are publicly available, and the Academy Committee has used these worksheets to develop an estimate of the effect of the proposed change in the covariance treatment of unaffiliated common stock. Unfortunately, the AVR worksheets do not allow a similar estimate to be prepared for any proposed change in the covariance treatment of affiliated non-insurers.

The AVR data, by asset category, was taken off One Source. Given the source, the estimates are at best an approximation to the actual RBC calculation for common stock and other assets. A few companies, based on the One Source data, had an estimated C-1 number, which was greater than their total Company Action Level RBC and therefore were excluded. Other companies were missing either RBC or asset data, and also had to be excluded. None of the companies excluded were large companies (based on total assets).

Because the AVR data does not contain any information on the C-0, C-2, C-3, and C-4 risks, the Academy Committee assumed that all of the risk arises from C-1 and C-3. For prior versions of these calculations, individual companies on the committee have verified that this assumption does not produce a material distortion in the estimates for their companies.
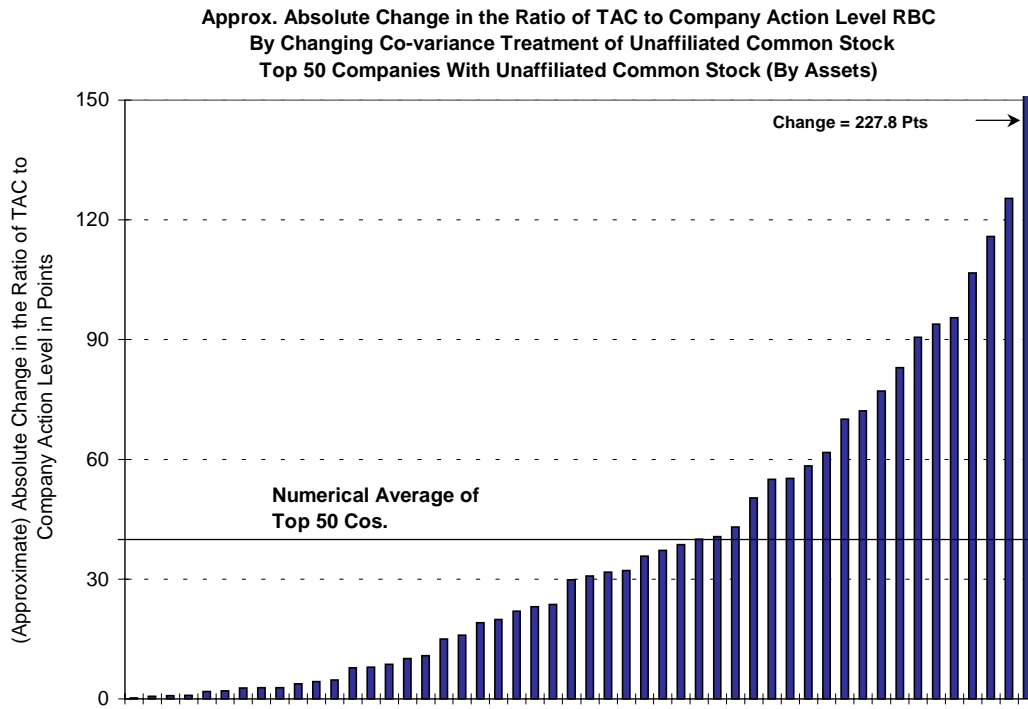
The first chart prepared by the Academy Committee shows the effect of the proposed change on the RBC ratio of insurers grouped by the level of their current RBC ratios. This format was chosen to highlight the effect of the proposal on weakly capitalized

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companies. As can be seen from the chart, companies with an RBC ratio of less than 125 points will see an increase in their average ratio of only 2.9 points. Of the 18 insurers with RBC ratios between 100 and 125, one will see its ratio increase to above 125, and of the 25 insurers with RBC ratios below 100, one will see a similar increase through 100 points. The more dramatic increases are confined to groups with average RBC ratios of 212 points or more.

Approx. Absolute Change in the Ratio of TAC to Company Action Level RBC
By Changing Co-variance Treatment of Unaffiliated Common Stock
All Companies (with Unaffil. Common Stock) Ordered by Initial RBC Ratio

Note that each bar is labeled with the average actual RBC ratio at year-end 1999. For companies in the top decile, this ratio is an amazing 32,864%. Such a ratio implies a company with high quality assets and few, if any liabilities. The projected increase of 203 points will hardly be noticeable.

The next chart shows the impact on individual companies for the top 50 insurers ranked by assets:

Approx. Absolute Change in the Ratio of TAC to Company Action Level RBC
By Changing Co-variance Treatment of Unaffiliated Common Stock
Top 50 Companies With Unaffiliated Common Stock (By Assets)

The average change in this group is an increase of 40 points in the RBC ratio. The change varies significantly between companies with some companies experiencing very little change, while one company will experience a change of 228 points. This is almost twice the increase of any other company in the top 50.

The next chart extends the universe of insurers to the top 200 companies by assets, while the last chart extends the analysis to the entire industry, excluding those insurers holding no unaffiliated common stock.

All the analysis shown here assumes unaffiliated stock will be subject to an RBC factor of exactly 30%. In other words, it does not make any adjustment for either the proposed beta adjustment or the proposed new stock concentration adjustment.
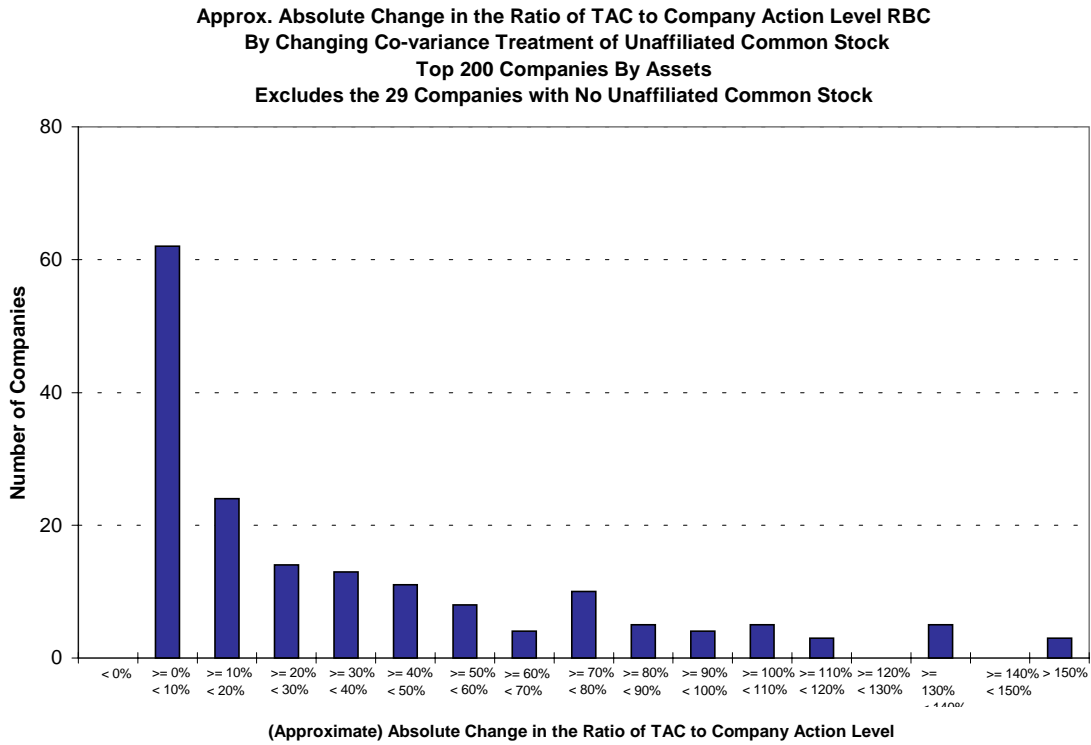
Approx. Absolute Change in the Ratio of TAC to Company Action Level RBC
By Changing Co-variance Treatment of Unaffiliated Common Stock
Top 200 Companies By Assets
Excludes the 29 Companies with No Unaffiliated Common Stock

(Approximate) Absolute Change in the Ratio of TAC to Company Action Level

Approx. Absolute Change In the Ratio of TAC to Company Action Level RBC
By Changing Co-variance Treatment of Unaffiliated Common Stock
All Companies with Unaffiliated Common Stock Investments

X-axis label: **(Approximate) Absolute Change in the Ratio of TAC to Company Action Level**

Y-axis label: **Number of Companies**

X-axis categories: < 0%; >= 0% < 10%; >= 10% < 20%; >= 20% < 30%; >= 30% < 40%; >= 40% < 50%; >= 50% < 60%; >= 60% < 70%; >= 70% < 80%; >= 80% < 90%; >= 90% < 100%; >= 100% < 110%; >= 110% < 120%; >= 120% < 130%; >= 130% < 140%; >= 140% < 150%; > 150%
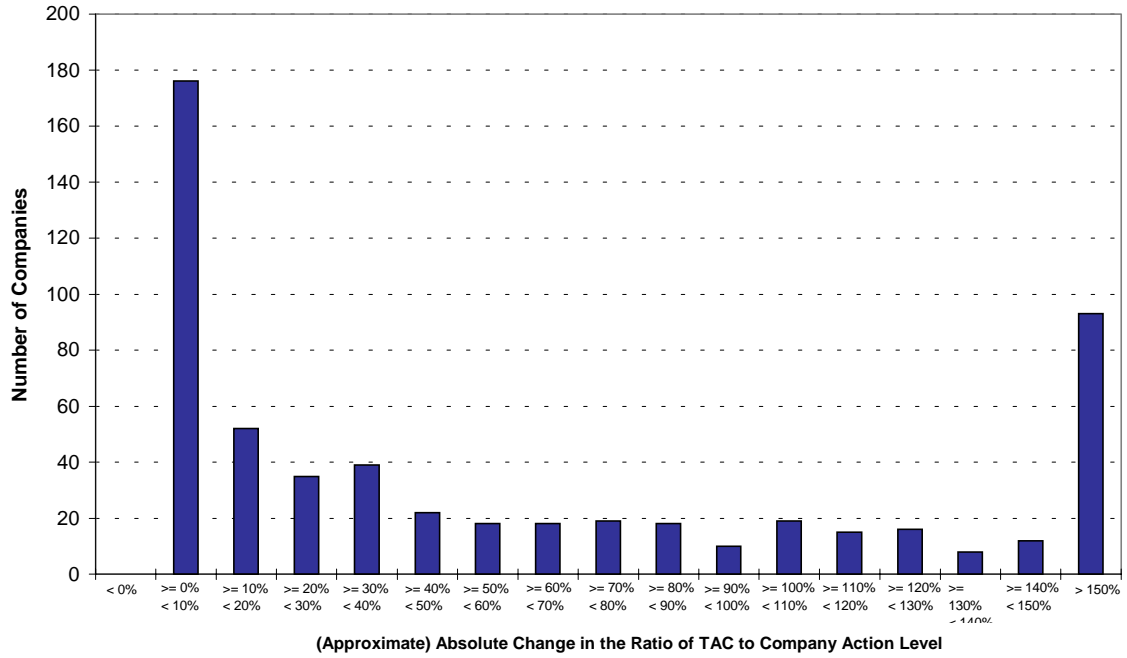
Exhibit I

Chronology

The following is a brief chronology of the actions taken by the American Academy of Actuaries' Life RBC Committee at the request of the NAIC's Life RBC Working Group (WG) with regard to the treatment of unaffiliated common stock in the life formula.

March 1997: The NAIC Risk-Based Capital Task Force approves a charge to the Life RBC WG to conduct a study comparing the assumptions regarding the treatment of common stock in the P/C and Life formulas, consider changes to harmonize the formulae, and research impacts. The Life RBC WG charges the Academy to conduct a study.

December 1997: The Academy LRBC Committee presents its recommendation to the Life RBC WG. Based on a review of the historical performance of common stock, the Academy committee recommends keeping the current common stock charge of 30% for life insurers, but changing the treatment of common stock in the covariance formula to treat the common stock risk as being independent of the other types of asset risk. This recommendation presupposes that the simplified model of either a perfect correlation, or independence is retained, i.e., that partial correlations will not be introduced into the RBC formula. During and shortly after the presentation, regulators ask several questions that require further research by the Academy.

March and June 1998: The Academy LRBC Committee responds to questions from the Life RBC WG Chair on data and methodology of the study. One of the questions asks about possible adjustments to the calculation of the correlation between common stock and bond defaults to account for the lag between movements in common stock and changes in bond default rates. While all of the potential adjustments suggested result in correlations that are closer to 0 than to 1, in certain versions the measured correlation is close to 0.5.

September 1998: The Academy LRBC Committee presents an analysis performed at the Life RBC WG's request on the effect of using a formula premised upon a partial correlation between common stock and other types of asset risk. The Academy Committee finds that there is no theoretical obstacle to using partial correlation in the RBC formula. However, the committee recommends that, if partial correlation is incorporated into the formula, then it should be incorporated systematically for all types of risk. The Academy Committee also observes that a systematic partial correlation change would result in a larger reduction in total risk-based capital requirements then the change recommended in December 1997, which adhered to the 0-1 framework.

December 1998: The NAIC Life RBC WG votes to remove this item from the working group's agenda and defer consideration until such time as a final proposal for the C-3 component regarding more comprehensive treatment of interest rate risk is presented to the working group and additional analysis is performed on other relevant asset-related risks.

March 2000: Having completed work on the revised C-3 component, the NAIC LRBC WG decides to resume discussions concerning the common stock component of the life risk-based capital formula.

Exhibit I

June 2000: The Academy Life RBC Committee recommends that action on the common stock covariance treatment be deferred to allow the Academy Committee time to examine three issues that arose during the committee's May, 2000 meeting:

1. Subsequent to the Academy's recommendation of the treatment of common stock, the covariance formula for life insurance companies was modified to make it consistent with the health organization formula. The Academy's proposal for the treatment of common stock in the formula will require slight changes to account for the health-related changes.

2. The possibility of adding a beta adjustment to the common stock factor analogous to the one already in place for the AVR should be revisited.

3. The level of diversification in an insurer's holdings affects the volatility and correlations between asset classes. The existing RBC formula and the Academy's recommendation on the covariance treatment of common stock both presume that an insurer's portfolio behaves like the S&P 500 index.

Exhibit II

2001 Annual Statement Instructions for AVR Treatment of Unaffiliated Common Stock

Line 1 –   Unaffiliated Common Stocks – Public

Report the book/adjusted carrying value of all publicly issued common stock, including money market funds and mutual funds (except those appropriately reported on Schedule DA) in unaffiliated companies in Columns 1 and 4. Multiply Column 4 by the reserve factor calculated for Columns 5, 7 and 9 and report the products in Columns 6, 8 and 10 respectively.

The Line 1, Column 7 and 9 reserve factors must be at least 15% but not more than 30%.

The reserve factor is equal to 20% times the company's weighted average portfolio beta. The weighted average portfolio beta is the market value weighted average of four (4) portfolio betas, one from the end of the prior year and the remaining from the first three (3) quarters of the current year. Calculation of this weighted average portfolio beta is illustrated in the following worksheet:

Calculation of Weighted Average Portfolio Beta

		Column 1 Market Value @ Quarter End	Column 2 Portfolio Beta*	Column 3 Col 1 x Col 2
Line 1	12/31/prior year	$ _____		$ _____
Line 2	03/31/current year	_____		_____
Line 3	06/30/current year	_____		_____
Line 4	09/30/current year	_____		_____
Line 5	Total	$ _____		$ _____
Line 6	Quarterly Portfolio Beta		X.XX	
	(Line 5, Column 3 above, divided by Line 5, Column 1 above)			

* Indicate whether the Individual or Aggregate Method is used.

The portfolio beta can be calculated using two methods; the Individual Method or the Aggregate Method. Beta factors for all unaffiliated common stock can be obtained from any of the nationally recognized pricing services if their Beta computation is in compliance with the guidelines set forth in the Appendix of the SVO *Purposes and Procedures* manual.

Individual Method

The portfolio beta at the end of a quarter is the market value weighted average of the betas as calculated against a broad average of the U.S. stock market (e.g., the Standard & Poor's 500 Stock Index) for each individual stock in the portfolio. The beta should be a simple linear regression using 5 years of monthly time-weighted rates of return. For stock

Exhibit II

with less than 5 years of pricing history, or where no beta is available, use a beta of 1.50 in determining the portfolio beta. A company shall use an appropriate foreign index. (TSE 300 index for Canadian stock portfolios, FT ALL SHARES index for U.K. stock portfolios, and the TOPIX index for Japanese stock portfolios) to calculate beta if it has identified common stock investments that support liabilities, both of which, are in the same foreign currency.

Aggregate Method

The portfolio beta at the end of a quarter is determined by a simple linear regression using 52 weeks of time-weighted rates of return for the entire unaffiliated common stock portfolio and for the Standard & Poor's 500 Stock Index. For non-U.S. stock portfolios, a company shall use an appropriate foreign index (TSE 300 index for Canadian stock portfolios, FT ALL SHARES index for U.K. stock portfolios, and the TOPIX index for Japanese stock portfolios) to calculate beta if it has identified common stock investments that support liabilities, both of which, are in the same foreign currency.

Companies, which do not want the extra administrative complexity of calculating the beta factor, may use the maximum AVR factor of 30%.

Exhibit III

UNAFFILIATED PREFERRED AND COMMON STOCK
LR005

Basis of Factors

Unaffiliated Preferred Stock
The preferred stock factors were changed in 1997 to reflect a recent study by Moody's of preferred stock cumulative dividend impairment rates (1980-94) and cumulative default rates on corporate bonds (1970-95). The risk for preferred stock is based on risk of default as well as the risk of passed dividends. The class 5 factor is based on judgement since data is not available.

Unaffiliated Common Stock
Non-government money market mutual funds are more like cash than common stock, therefore it is appropriate to use the same factor as for cash. Federal Home Loan Bank Stock has characteristics more like a fixed-income instrument rather than common stock. A 2.3 percent factor was chosen. The factor for other unaffiliated common stock is based on studies conducted at two large life insurance companies. Both of these studies focused on well diversified portfolios with characteristics similar to the Standard and Poors 500 and indicate that a 30 percent factor is needed to provide capital to cover approximately 95 percent of the greatest losses in common stock value over a two-year future period. This factor assumes capital losses are unrealized and not subject to favorable tax treatment at the time loss in market value occurs.

Two adjustments are made to the 30 percent factor to account for differences between the insurer's portfolio and the Standard and Poors 500: first, the factor for publicly traded unaffiliated common stock is adjusted up or down by the weighted average beta of the insurer's portfolio subject to a maximum of 45% and a minimum of 22.5%, and, second, a common stock concentration component is calculated, adding an additional requirement equal to 50% of the beta adjusted basic requirement for the five largest holdings of common stock in the insurer's portfolio.

Specific Instructions for Application of the Formula

Lines (1) through (6)
Column (1) amounts are from the Asset Valuation Reserve Default Component, Page 42, Column 1, Lines 10 through 15 of the Annual Statement. Since affiliated amounts are included for affiliated companies without an AVR in the Asset Valuation Reserve Default Component, Lines 10 through 15, these affiliated amounts should be deducted in Column (2). Affiliated companies with an AVR are reported on the Asset Valuation Reserve Default Component, Line 16 and should not be included in Column (2).

Line (7)
Column (1) should equal Annual Statement Assets, Page 2, Column 4, Line 2.1 less Asset Valuation Reserve Default Component Column 1 Line 16. Column (2) should equal Schedule D Summary by Country, Column 5, Line 39 less Asset Valuation Reserve Default Component, Column 1, Line 16.

Line (10)
Amounts should reflect only those money market mutual funds reported on Schedule D, Part 2, Section 2. Money market funds qualifying for Schedule DA treatment or reported on Schedule D, Part 1 should not be included on this line. Refer to the NAIC's *Purposes and Procedures of the Securities Valuation Office* for a discussion on those money market funds that qualify for Schedule DA treatment.

Line (11)
Federal Home Loan Bank common stock reported on Schedule D, Part 2, Section 2 of the Annual Statement should be reflected on this line.

Exhibit III

The factor for other unaffiliated common stock should be equal to 30% increased in the case of publicly traded stock by the weighted average beta for the insurers portfolio of common stock, subject to a minimum factor of 22.5% and a maximum factor of 45%. The calculation of the beta adjustment should follow the procedures laid out for the similar adjustment in the Asset Valuation Reserve calculation.

Column (1) should equal Annual Statement Schedule D Summary by Country, Column 2, Line 54 less Schedule D Summary by Country, Column 2, Line 53 less Line (10) money market funds less Line (11) Federal Home Loan Bank stock.

Exhibit III

COMMON STOCK CONCENTRATION FACTOR
LR010a

Basis of Factors

The purpose of the common stock concentration factor is to reflect the additional risk of high concentrations in single exposure of common stock. The common stock concentration factor increases by 50% the risk-based capital factor for the five largest common stock exposures. The 50% increase was chosen by comparing the total variance of particular holdings of common stock to the portion of the variance that can be explained by movements of the overall stock market. The risk-based capital of the assets included in the unaffiliated common stock concentration factor has already been counted once in the basic formula, this factor itself only serves to add in the additional risk-based capital required. The calculation is completed on a consolidated basis, however the common stock concentration factor is reduced by amounts already included in the concentration factors of subsidiaries to avoid double counting.

Specific Instructions for Application of the Formula

The five largest common stock exposures should be developed by consolidating the assets of the parent with the assets of the company's insurance and investment subsidiaries. The concentration factor component on any asset already reflected in the subsidiary's RBC for the concentration factor should be deducted from Column (4). This consolidation process effects higher tiered companies only. Companies on the lowest tier of the organizational chart will prepare the asset concentration on a "stand alone" basis.

The five largest holdings should exclude common stock in the FHLB, investment companies (mutual funds) and common trust funds, that are diversified with the meaning of the Investment Company Act, and affiliated investments other than investments in non-insurance subsidiaries. For non-insurance subsidiaries, i.e, those with affiliate code 6 on LR033 (the portion of holding companies in excess of indirect subsidiaries) and those with affiliate code 12 (other subsidiaries), the total stock investment including both preferred and common stock should be used.

Assets should be aggregated by issuer before determining the five largest exposures.

The statement value of each asset is listed in Column (2).

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Exhibit III

OTHER LONG-TERM ASSETS
LR008

Basis of Factors

Recognizing the diverse nature of Schedule BA assets, the RBC is calculated by assigning different risk factors according to the different type of assets. Assets with underlying characteristics of bonds and preferred stocks rated by the NAIC Securities Valuation Office (SVO) have different factors according to the SVO assigned classification. Unrated fixed-income securities will be treated the same as Other Schedule BA Assets and assessed a 30 percent charge. Rated surplus and capital notes have the same factors applied as Schedule BA assets with the characteristics of preferred stock. Where it is not possible to determine the RBC classification of an asset, a 30 percent factor is applied.

Specific Instructions for Application of the Formula

Line (42)
Total Schedule BA assets [LR008 Other Long-Term Assets Column (1) Line (39b) plus LR008 Other Long-Term Assets Column (1) Line (42) plus LR007 Real Estate Column (1) Line (20) plus LR009 Schedule BA Mortgages Column (1) Line (8)] should equal the total Schedule BA assets reported in the Annual Statement Page 2 Column 4 Line 8.

Exhibit III

CALCULATION OF AUTHORIZED CONTROL LEVEL RISK-BASED CAPITAL
LR025

Basis of Factors

The purpose of the formula is to estimate the risk-based capital levels required to manage losses that can be caused by a series of catastrophic financial events. However, it is remote that all such losses will occur simultaneously. The covariance adjustment states that the combined effect of the C–1o, C-1cs, C–2 and C–3 and a portion of the C-4 risks are not equal to their sum but are equal to the square root calculation described below. It is statistically assumed that the C–1o risk and a portion of the C–3 risk are correlated, while the C-1cs risk, the C–2 risk, the balance of the C-3 risk and a portion of the C-4 risk are independent of both. The split of the C-3 and C-4 risks allows for general consistency with the MCO-RBC formula. This assumption provides a reasonable approximation of the capital requirements needed at any particular level of losses.

Authorized Control Level Risk-Based Capital is 50 percent of the sum of the C-0 plus the C–4a risk-based capital and the square root of the sum of the C–1o and C–3a risk-based capital squared, the C-1cs risk capital squared, the C–2 risk-based capital squared, the C-3b risk-based capital squared and the C-4b risk-based capital squared.

Mandatory Control Level Risk-Based Capital is 70 percent of Authorized Control Level Risk-Based Capital.

Specific Instructions for Application of the Formula

All amounts reflected for the calculation of Authorized Control Level Risk-Based Capital will be calculated automatically by the software.

Exhibit III

UNAFFILIATED PREFERRED AND COMMON STOCK

		Annual Statement Source	(1) Statement Value	(2) Less Affiliated Preferred Stock Without AVR	(3) RBC Subtotal	Factor	(4) RBC Requirement
	Unaffiliated Preferred Stock						
(1)	Asset Class 1	AVR Default Component Column 1 Line 10				X 0.009 =	
(2)	Asset Class 2	AVR Default Component Column 1 Line 11				X 0.025 =	
(3)	Asset Class 3	AVR Default Component Column 1 Line 12				X 0.060 =	
(4)	Asset Class 4	AVR Default Component Column 1 Line 13				X 0.135 =	
(5)	Asset Class 5	AVR Default Component Column 1 Line 14				X 0.250 =	
(6)	Asset Class 6	AVR Default Component Column 1 Line 15				X 0.300 =	
(7)	Total Unaffiliated Preferred Stock	Sum of Lines (1) through (6)					

(Column (1) should equal Page 2 Column 4 Line 2.1 less Asset Valuation Reserve Default Component Column 1 Line 16.)

(Column (2) should equal Schedule D Summary Column 5 Line 39 less Asset Valuation Reserve Default Component Column 1 Line 16.)

(7a)	Reduction in RBC for MODCO/Funds Withheld Reinsurance Ceded Agreements	Company Records					
(7b)	Increase in RBC for MODCO/Funds Withheld Reinsurance Assumed Agreements	Company Records					
(7c)	Total Unaffiliated Preferred Stock (including MODCO/Funds Withheld.)	Lines (7) - (7a) + (7b)					
	Unaffiliated Common Stock						
(8)	Total Common Stock	Schedule D Summary Column 2 Line 54					
(9)	Less Affiliated Common Stock	Schedule D Summary Column 2 Line 53					
(10)	Less Money Market Funds	Included in Schedule D Part 2 Section 2				X 0.003 =	
(11)	Less Federal Home Loan Bank Common Stock	Included in Schedule D Part 2 Section 2				X 0.023 =	
(11a)	Less Unaffiliated Private Common Stock	AVR Equity Component Column 1 Line 2				X 0.300 =	
(12)	Net Other Unaffiliated Public Common Stock	Lines (8) - (9) - (10) - (11)				X †0.300 =	
(13)	Total Unaffiliated Common Stock	Lines (10) + (11) +(11a)+ (12)					

(Column 1 should equal Page 2 Column 4 Line 2.2 less Schedule D Summary by Country Column 2 Line 53)

(14)	~~Total Unaffiliated Preferred and Common Stock (pre-MODCO/Funds Withheld)~~	~~Line (7) + Line (13)~~					

Exhibit III

(15) Reduction in RBC for MODCO/Funds Withheld
      Reinsurance Ceded Agreements   Company Records

(16) Increase in RBC for MODCO/Funds Withheld
      Reinsurance Assumed Agreements   Company Records

(17) Total Unaffiliated ~~Preferred and~~ Common   Lines (~~14~~13) - (15) + (16)
      Stock (including MODCO/Funds Withheld.)

 † The factor for publicly traded common stock should equal 30% adjusted up or down by the weighted average beta for the publicly traded common stock portfolio subject to a minimum of 22.5% and a maximum of 45% in the same manner that the similar 20% factor for publicly traded common stock in the AVR calculation is adjusted up or down. The rules for calculating the beta adjustment are set forth in the AVR instructions.

Denotes items that must be manually entered on the filing software.

Exhibit III

OTHER LONG-TERM ASSETS

		Annual Statement Source	(1) Statement Value	(2) Unrated Items †	(3) RBC Subtotal ‡	Factor	(4) RBC Requirement
	Schedule BA - Fixed Income - Bonds						
(1)	Exempt Obligations	AVR Equity Component Column 1 Line 22				X 0.000 =	
(2)	Asset Class 1	AVR Equity Component Column 1 Line 23				X 0.003 =	
(3)	Asset Class 2	AVR Equity Component Column 1 Line 24				X 0.010 =	
(4)	Asset Class 3	AVR Equity Component Column 1 Line 25				X 0.040 =	
(5)	Asset Class 4	AVR Equity Component Column 1 Line 26				X 0.090 =	
(6)	Asset Class 5	AVR Equity Component Column 1 Line 27				X 0.200 =	
(7)	Asset Class 6	AVR Equity Component Column 1 Line 28				X 0.300 =	
(8)	Total Schedule BA Bonds (pre-MODCO/Funds Withheld)	Sum of Lines (1) through (7)					
(9)	Reduction in RBC for MODCO/Funds Withheld Reinsurance Ceded Agreements	Company Records					
(10)	Increase in RBC for MODCO/Funds Withheld Reinsurance Assumed Agreements	Company Records					
(11)	Total Schedule BA Bonds (including MODCO/Funds Withheld.)	Lines (8) - (9) + (10)					
	Schedule BA - Fixed Income - Preferred Stock						
(12.1)	Asset Class 1	AVR Equity Component Column 1 Line 30					
(12.2)	Less Rated Class 1 Surplus Notes and Capital Notes	Column (1) Line (22) + Column (1) Line (32)					
(12.3)	Net Asset Class 1	Line (12.1) - (12.2)				X 0.009 =	
(13)	Asset Class 2	AVR Equity Component Column 1 Line 31				X 0.025 =	
(14)	Asset Class 3	AVR Equity Component Column 1 Line 32				X 0.060 =	
(15)	Asset Class 4	AVR Equity Component Column 1 Line 33				X 0.135 =	
(16)	Asset Class 5	AVR Equity Component Column 1 Line 34				X 0.250 =	
(17)	Asset Class 6	AVR Equity Component Column 1 Line 35				X 0.300 =	
(18)	Total Schedule BA Preferred Stock (pre-MODCO/Funds Withheld)	Sum of Lines (12.3) through (17)					
(19)	Reduction in RBC for MODCO/Funds Withheld Reinsurance Ceded Agreements	Company Records					
(20)	Increase in RBC for MODCO/Funds Withheld Reinsurance Assumed Agreements	Company Records					
(21)	Total Schedule BA Preferred Stock (including MODCO/Funds Withheld.)	Lines (18) - (19) + (20)					

† Fixed income instruments and surplus notes rated by the NAIC Securities Valuation Office (SVO) should be reported in Column (3).

Exhibit III

‡   Column (2) is calculated as Column (1) less Column (3) for Lines (1) through (17). Column (2) equals Column (3) - Column (1) for Line (41.**3**).

    Denotes items that must be manually entered on the filing software.

Exhibit III

OTHER LONG-TERM ASSETS
(CONTINUED)

	Annual Statement Source	(1) Statement Value	(2) Unrated Items †	(3) RBC Subtotal ‡	Factor	(4) RBC Requirement
Rated Surplus Notes						
(22) Rated Class 1 Surplus Notes	Schedule BA Part 1 Column 10 Line 1199999, in part				X 0.009 =	
(23) Rated Class 2 Surplus Notes	Schedule BA Part 1 Column 10 Line 1199999, in part				X 0.025 =	
(24) Rated Class 3 Surplus Notes	Schedule BA Part 1 Column 10 Line 1199999, in part				X 0.060 =	
(25) Rated Class 4 Surplus Notes	Schedule BA Part 1 Column 10 Line 1199999, in part				X 0.135 =	
(26) Rated Class 5 Surplus Notes	Schedule BA Part 1 Column 10 Line 1199999, in part				X 0.250 =	
(27) Rated Class 6 Surplus Notes	Schedule BA Part 1 Column 10 Line 1199999, in part				X 0.300 =	
(28) Total Rated Surplus Notes (pre-MODCO/Funds Withheld)	Sum of Lines (22) through (27)					
(29) Reduction in RBC for MODCO/Funds Withheld Reinsurance Ceded Agreements	Company Records					
(30) Increase in RBC for MODCO/Funds Withheld Reinsurance Assumed Agreements	Company Records					
(31) Total Rated Surplus Notes (including MODCO/Funds Withheld.)	Lines (28) - (29) + (30)					
Rated Capital Notes						
(32) Rated Class 1 Capital Notes	Schedule BA Part 1 Column 10 Line 1399999, in part				X 0.009 =	
(33) Rated Class 2 Capital Notes	Schedule BA Part 1 Column 10 Line 1399999, in part				X 0.025 =	
(34) Rated Class 3 Capital Notes	Schedule BA Part 1 Column 10 Line 1399999, in part				X 0.060 =	
(35) Rated Class 4 Capital Notes	Schedule BA Part 1 Column 10 Line 1399999, in part				X 0.135 =	
(36) Rated Class 5 Capital Notes	Schedule BA Part 1 Column 10 Line 1399999, in part				X 0.250 =	
(37) Rated Class 6 Capital Notes	Schedule BA Part 1 Column 10 Line 1399999, in part				X 0.300 =	
(38) Total Rated Capital Notes	Sum of Lines (32) through (37)					
Schedule BA - All OtherUnaffiliated Common Stock						
(39) Schedule BA Unaffiliated Common Stock - Private	AVR Equity Component Column 1 Line 5660				X 0.300 =	
(39a) Schedule BA Unaffiliated Common Stock - Public	AVR Equity Component Column 1 Line 55				X †† =	
(39b) Total Schedule BA Unaffiliated Common Stock	Sum of Lines (39) and (39a)					
(39c) Reduction in RBC for MODCO/Funds Withheld Reinsurance Ceded Agreements	Company Records					
(39d) Increase in RBC for MODCO/Funds Withheld Reinsurance Assumed Agreements	Company Records					

Exhibit III

(39e) Total Schedule BA Unaffiliated Common
Stock
(including MODCO/Funds Withheld.)   Lines (39b) - (39c) + (39d)

Schedule BA – All other
(39f) Schedule BA Affiliated Common Stock   Sum of AVR Equity Component Column 1   X 0.300 =
                                             Lines 57 through 59
(40) Schedule BA Collateral Loans   Schedule BA Part 1 Column 10 Line 1299999 _____   X 0.050 = _____
(41.1) Other Schedule BA Assets   AVR Equity Component Column 1 Line 65   _____
(41.2) Less Class 2 thru 6 Rated Surplus   Column (1) Lines (23) through (27) + Column (1)
      Notes and Capital Notes   Lines (33) through (37)
(41.3) Net Other Schedule BA Assets   Line (41.1) less (41.2)   _____ _____ _____ X 0.300 = _____

(42) Total Schedule BA Assets other than   Lines (11) + (21) + (31) + (38) + (39f) + (40) + (41.3)
      Unaffiliated Common Stock

†   Fixed income instruments and surplus notes rated by the NAIC Securities Valuation Office (SVO) should be reported in Column (3).
‡   Column (2) is calculated as Column (1) less Column (3) for Lines (1) through (17). Column (2) equals Column (3) - Column (1) for Line (41.3).
††   The factor for Schedule BA publicly traded common stock should equal 30% adjusted up or down by the weighted average beta for the Schedule BA publicly traded common stock
     portfolio subject to a minimum of 22.5% and a maximum of 45% in the same manner that the similar 20% factor for Schedule BA publicly traded common stock in the AVR
     calculation is adjusted up or down. The rules for calculating the beta adjustment are set forth in the AVR instructions.
     Denotes items that must be manually entered on the filing software.

Exhibit III

COMMON STOCK CONCENTRATION FACTOR

(1) Issuer Name	(2) Statement Value	(3) Factor	(4) Additional RBC	(5) Adjustment/ Subsidiary RBC	(6) RBC Requirement
(1)		X ‡ =			
(2)		X ‡ =			
(3)		X ‡ =			
(4)		X ‡ =			
(5)		X ‡ =			

Total

‡   The factor for each common stock holding should equal 15% adjusted in the case of publicly traded common stock by the beta of particular holding subject to a minimum of 11.25% and a maximum of 22.5%. The rules for calculating the beta adjustment are set forth in the AVR instructions.

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Exhibit III

CALCULATION OF AUTHORIZED CONTROL LEVEL RISK-BASED CAPITAL

	Source	(1) RBC Requirement
Asset Risk - Affiliated Amounts (C-0)		
(1) Affiliated US Property-Casualty Insurers Directly Owned	LR033 Summary for Affiliated Investments Column (4) Line (1)	
(2) Affiliated US Life Insurers Directly Owned	LR033 Summary for Affiliated Investments Column (4) Line (2)	
(3) Affiliated US Property-Casualty Insurers Indirectly Owned	LR033 Summary for Affiliated Investments Column (4) Line (3)	
(4) Affiliated US Life Insurers Indirectly Owned	LR033 Summary for Affiliated Investments Column (4) Line (4)	
(5) Affiliated Alien Life Insurers - Canadian	LR033 Summary for Affiliated Investments Column (4) Line (7)	
(6) Affiliated Alien Life Insurers - All Others	LR033 Summary for Affiliated Investments Column (4) Line (8)	
(7) Off-Balance Sheet Items	LR014 Off-Balance Sheet Items Column (2) Line (23)	
(8) Total (C-0)	Sum of Lines (1) through (7)	
Asset Risk – Unaffiliated Common Stock and Affiliated Non-Insurance Stock (C-1cs)		
(8a) Schedule D Unaffiliated Common Stock	LR005 Unaffiliated Common Stock Column (4) Line (17)	
(8b) Schedule BA Unaffiliated Common Stock	LR008 Schedule BA Unaffiliated Common Stock Column (4) line (39f)	
(8c) Common Stock Concentration Factor	LR010a Total Column (6) Line (6)	
(8d) Affiliated Preferred Stock and Common Stock - Holding Company in Excess of Indirect Subsidiaries	LR033 Summary for Affiliated Investments Column (4) Line (6)	
(8e) Affiliated Preferred Stock and Common Stock - All Other	LR033 Summary for Affiliated Investments Column (4) Line (12)	
(8f) Total C-1cs		
Asset Risk - All Other (C-1o)		
(9) Bonds after Size Factor	LR002 Bonds Column (2) Line (26)	
(10) Mortgages (including past due and unpaid taxes)	LR004 Mortgages Column (6) Line (22)	
(11) Unaffiliated Preferred Stock and Common Stock	LR005 Unaffiliated Preferred and Common Stock Column (4) Line (177c)	
(12) Affiliated Preferred Stock and Common Stock - Investment Subsidiaries	LR033 Summary for Affiliated Investments Column (4) Line (5)	
(13) Affiliated Preferred Stock and Common Stock - Holding Company in Excess of Indirect Subsidiaries	LR033 Summary for Affiliated Investments Column (4) Line (6)	
(14) Affiliated Preferred Stock and Common Stock - Parent	LR033 Summary for Affiliated Investments Column (4) Line (9)	
(15) Affiliated Preferred Stock and Common Stock - Property and Casualty Insurers not Subject to Risk-Based Capital	LR033 Summary for Affiliated Investments Column (4) Line (10)	
(16) Affiliated Preferred Stock and Common Stock - Life Insurers not Subject to Risk-Based Capital	LR033 Summary for Affiliated Investments Column (4) Line (11)	
(17) Affiliated Preferred Stock and Common Stock - All Other	LR033 Summary for Affiliated Investments Column (4) Line (12)	

Exhibit III

(18) Affiliated Preferred Stock and Common Stock - Publicly Traded   **LR033 Summary for Affiliated Investments Column (4) Line (13)**
     Insurers Held at
     Market Value (excess of statement value over book value)

(19) Separate Accounts with Guarantees   LR006 Separate Accounts Column (2) Line (7)

(20) Synthetic GIC's (C-1)   LR006 Separate Accounts Column (2) Line (8)

(21) Surplus in Non-Guaranteed Separate Accounts   LR006 Separate Accounts Column (2) Line (13)

(22) Real Estate (gross of encumbrances)   LR007 Real Estate Column (3) Line (16)

(23) Schedule BA Real Estate (gross of encumbrances)   LR007 Real Estate Column (3) Line (23)

(24) Other Long-Term Assets   LR008 Other Long-Term Assets Column (4) Line (42)

(25) Schedule BA Mortgages   LR009 Schedule BA Mortgages Column (6) Line (11)

(26) Concentration Factor   LR010 Asset Concentration Factor Column (**6**) Line (**40**) **Grand Total Page**

(27) Miscellaneous   LR011 Miscellaneous Assets Column (2) Line (15)

(28) Replication Transactions **and Manditorily Convertible Securities**   LR012 Replication (Synthetic Asset) Transactions **and Mandatorily Convertible Securities** Column (6) Line (9999**999**)

(29) Reinsurance   LR013 Reinsurance Column (4) Line (17)

(30) Total (C-1)   Sum of Lines (9) through (**29**)

▢ Denotes items that must be manually entered on the filing software.

Exhibit III

CALCULATION OF AUTHORIZED CONTROL LEVEL RISK-BASED CAPITAL (CONTINUED)

	Source	(1) RBC Requirement
Insurance Risk (C-2)		
(31) Individual and Industrial Life Insurance	LR020 Life Insurance Column (2) Line (8)	
(32) Group and Credit Life Insurance and FEGI/SGLI	LR020 Life Insurance Column (2) Lines (19) and (20)	
(33) Total Health Insurance	LR019 Health Claim Reserves Column (2) Line (16)	
(34) Premium Stabilization Reserve Credit	LR021 Premium Stabilization Reserves Column (2) Line (10)	
(35) Total (C-2)	Sum of Lines **(31)** through **(34)**	
Interest Rate Risk (C-3a)		
(36) Total Interest Rate Risk	**LR022 Interest Rate Risk Column (3) Line (34)**	
Health Credit Risk (C-3b)		
(37) Total Health Credit Risk	LR023 Health Credit Risk Column (2) Line (7)	
Business Risk (C-4)		
(38) Premium Component	LR024 Business Risk Column (2) Lines (11) + (22) + (33)	
(39) Liability Component	LR024 Business Risk Column (2) Line (36)	
(40) Subtotal Business Risk (C-4a)	Lines **(38)** + **(39)**	
(41) Health Administrative Expense Component of Business Risk (C-4b)	LR024 Business Risk Column (2) Line (54)	
Total Risk-Based Capital After Covariance		
(42) C-0 + C-4a + Square Root of $[(C\text{-}1o + C\text{-}3a)^2 + (C\text{-}1cs)^2 + (C\text{-}2)^2 + (C\text{-}3b)^2 + (C\text{-}4b)^2]$	REPORT AMOUNT ON PARENT COMPANY'S RISK-BASED CAPITAL IF APPLICABLE	
Authorized Control Level Risk-Based Capital (After Covariance Adjustment)		
(43) Total Risk-Based Capital After Covariance Times Fifty Percent	Line **(42)** x 0.50	

Exhibit III

Denotes items that must be manually entered on the filing software.