AMERICAN ACADEMY of ACTUARIES

Letter on the Analysis of Reinsurance of Workers Compensation from the American Academy of Actuaries' Life Risk-Based Capital Task Force

Presented to the National Association of Insurance Commissioners' Life Risk-Based Capital Working Group
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August 31, 2000

Larry Gorski
Chair, NAIC Life RBC Working Group
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Re: Analysis of Reinsurance of Workers Compensation Carve-out

Dear Larry:

You have asked the Life Risk-Based Capital Task Force of the American Academy of Actuaries to provide a three part analysis of the implications of reinsurance by a Life & Health company of carve-out coverage from workers compensation coverage. The first part of the requested analysis would address the differences between the normal health type coverage generally written by L&H carriers and carve-out coverage of workers compensation. The second part would address the differences in the RBC when coverage is reinsured and/or retroceded to Property & Casualty versus L&H carriers. The last part would look at potential differences in "Total Adjusted Capital" from the same amount of workers comp premium. This letter responds to those requests.

In order to address variations in the reporting and RBC impact implications, we have relied upon a summary of the results of a survey developed by interested parties to the NAIC Underwriting and Reinsurance Pools Working Group to supply information about current practices. The survey was completed during the first half of 2000.

I. Comparing Group Health Coverage with Workers Comp Carve-out Coverage

A. Benefits Covered

Group Health - Generally, health service provided within the policy effective period. Co-pay generally required, either fixed dollar amount or percentage, with percentage more common for "indemnity" plans. May also include (limited) rehabilitation costs. Secondary to workers comp. Also subject to subrogation or coordination of benefits with any applicable Auto insurance medical coverage or other Group health.

Group Stop-Loss - Health reinsurance or coverage provided to self-insured plans for amounts due under a group health plan (see above) that exceed an attachment point related to a specific individual or the entire plan's liability during the policy effective period.

Group Short-Term Disability - Fixed percentage of pre-disability wages for duration of disability or shorter fixed period. Percentage contractually determined. Coverage will generally not cover a disability that is covered by Workers Comp insurance.

Group Long-Term Disability - Fixed percentage or fixed amount of pre-disability wages for specified period (may vary by reason for disability). Payment basis is contractually determined and is generally subject to offsets (e.g., Social Security). Coverage will generally not cover a disability that is covered by Workers Comp insurance.

Workers Comp Medical - Health services provided as a result of accident during the policy effective period, regardless of when the services are provided or the existence or number of gaps in the service. (Can be lifetime coverage for medical costs arising from the covered accident.) Generally, 100% coverage with no co-pay. Typically includes rehabilitation and in some cases retraining costs.

Workers Comp Indemnity - Fixed percentage of pre-accident wages for duration of disability, subject to maximum and minimum, with annual escalation in some states. May also include benefits to widows and dependents that are paid in the event of fatalities. The amount and length of benefits are determined by statute.

Workers Comp "Carve-out" Reinsurance - Reinsurance of a portion of the claims of Workers Comp (medical and/or indemnity which likely "becomes" disability reinsurance assumed in a life company). The reinsured portion is generally defined by attachment points. Originally, these were at very substantial amounts with few as low as $50,000. Recently, the attachment points have gone below $50,000 in some cases.

B. Limitations

Group Health - Varies by contract. Co-pay frequently varies by service provider used. Annual maximums are common. Rehabilitation benefits are capped at a number of visits per year.

Group Stop-Loss - Varies by contract, but generally requires claims to be reported within some fixed period and paid within a number of months of the end of the policy period.

Group Disability - For both Short Term and Long-Term coverage, disability is defined by contract. Definition of disability can vary depending on the length of the disability.

Workers Comp Medical - Few limitations. Vary by state. Many states have no limitations for medical costs arising from covered accident.

Workers Comp Indemnity - Disability defined by statute and/or state board. Definition consistent over length of disability. Disability must be arising from the scope of employment, as defined by statute and/or state board.

Workers Comp "Carve-Out" Reinsurance - Reporting of claims is generally required within seven years of the contract term. There are few or no limits on the period when covered claim payments must be made for these reported claims. Maximum payment is typically based on per occurrence or per person limits subject to an annual aggregate limit.

C. Benefit Payout Differences

Group Health - Nearly all payments made during policy effective period, plus 3-5 months thereafter - longer run-off is frequently related to recovery under subrogation or coordination of benefits.

Group Short and Long Term Disability - Payments made during length of disability.

Workers Comp Medical - Payments made during length of medical need, regardless of time lag since the injury. May last the length of disability. Minority of total payments made during policy effective period.

Workers Comp Indemnity - Payments made during length of disability. Minority of total payments made during policy effective period.

Workers Comp "Carve-Out" Reinsurance - These claims will result from workers comp claims involving more severe injuries (higher medical costs) and longer disabilities. Thus, the average payout period will be substantially longer than the average for any of the above.

D. Premiums

Group Health - For large groups, a monthly premium will be developed for a single employee, and per employee with various combinations of dependents based on either the historical experience of the group, the average demographics, or both, plus any changes in the benefits to be provided. Monthly reported premiums will be based on numbers of exposure units of each employee-type times the per unit premium. The enrollment, the existence of employee contributions and the desire of providers to be assured that a claimant has coverage prior to providing some services have forced a rapid reconciliation and updating of actual enrollment.   Reported premiums reflect only the modal premium (generally a monthly premium).

Where the group’s premium is adjusted partially or in full for its own experience, the company will establish reserves for experience rating refunds due to favorable experience and will offset unfavorable claims experience with additional amounts due from the insured. For smaller groups, the rating will more closely reflect the changing demographics (age, sex, etc.) of the enrollees during the year. As such, there are retroactive changes to the reported premiums but states do not generally allow experience adjustments for small groups.

Group Stop-Loss - The rating basis is similar to Group Health. However, to reduce administrative costs, the reporting is generally not as intense. The reported amounts include a greater reliance on estimates with reconciliation of several months changes occurring at one time.

Workers Comp Medical and Indemnity- Underlying policy premium combines Medical, Indemnity and Employers Liability for one indivisible premium. Annual premium is derived by multiplying payroll (by job classification) by a rate, summing the resulting products across all job classifications, then multiplying by size (expense-related) discounts and (prospective) experience rating factors.

Workers Comp "Carve-Out" Reinsurance - Reinsurance premiums for workers comp are generally based on a percentage of the calendar year reported earned premium. The percentage is negotiated to reflect the attachment point, deductibles, policy limits and other provisions of the reinsurance contract.

E. Reinsurance Issues

Reinsurance of group health may be quota-share, non-proportional after a small deductible or true excess where there is a substantial deductible. For true excess or stop-loss, the loss may be based on the aggregate experience of a group, the collective experience from a single accident or the cumulative claims liability related to an individual. The reinsurance coverage may be constrained by a limit on the time when services must be provided or when requests for reimbursement must be submitted (typically, a few months after the coverage year ends).

Reinsurance premiums for stop-loss or excess group health will generally be paid monthly with little or no unearned portion. Reinsurance premiums for Workers Comp Carve-out are paid as direct premiums are earned. Given the delays in the development of correct exposure information by the direct writer or TPA, the reinsurer will need to make estimates of a number of financial items for group medical reinsurance subject to later adjustments. No such adjustment is made for the Workers Comp Carve-out, as it is based on calendar period reported premium. The reinsurance premium is not revised for adjustments to direct premiums due to exposure audits. As such, the reinsurance premium includes some audit premium relating to exposures not covered by the reinsurance, and excludes some audit premium relating to exposures that are covered by the reinsurance.

Reinsurers of both types of excess coverage will generally obtain information on individuals whose claims have accumulated to some level around 50% of the actual deductible. This allows them to make a better estimate of the potential claims including approximation of the IBNR. Nearly all casualty reinsurance also has special reporting rules for large claims, regardless of attachment level.

II. RBC - Factors for Premium & Reserve Amounts of Workers Comp Coverage

A. Background

Historically, life insurers have participated in providing high level excess reinsurance for workers compensation. With the development of several reinsurance pools during 1997 or earlier, this changed and life insurers began to participate at levels as low as excess of $10,000. Other contracts that have shown up in the market over the past two years are designed as quota share contracts on policies in excess of a given premium size.

This lower level at which participation by life insurers begins changes the exposure to risk in providing Workers Compensation reinsurance as well as making the per contract potential risk more likely to be material, versus the reinsurance of high level excess in this line of business.

The P&C RBC formula has special factors for excess reinsurance. The Life RBC formula has no special rules for excess reinsurance and companies are required to allocate health premiums, claims and reserves (as reported in the statement) to appropriate factors based on the type of coverage provided.

The survey (mentioned in the opening of this letter) reported a variety of responses on how life companies did this allocation. Some reported the premium as Group Health while others reported it as Stop-Loss or Other Accident. The manner of reporting did not vary depending on the attachment point.

The next part of this section is designed to outline the specific differences in the Life and P/C RBC formulas, relative to Workers Compensation Carve-out business.

B. Treatment of Workers Comp Carve-out in the Life and P&C RBC Formulas

Life RBC Formula - The specific exposure values for most health coverage is not reported separately in the L&H Blank so the values are derived from company records. A factor (currently 25% but under study by the Academy Stop-Loss subgroup) is applied to the earned premium if a company reports it as Stop-Loss [LR015, line (5)]. Prior to 1999, there were no instructions as to when a premium was stop-loss versus other medical. The 1999 Instructions contain a definition that "Stop-Loss Coverage" includes "non-proportional reinsurance of a medical insurance product and the stop-loss carrier's risk begins after a minimum of at least $5,000 of claims for any one covered life has been covered by the direct writer." This would seem to include Workers Comp Medical Carve-out reinsurance.

Alternatively, if the Workers Comp Medical Carve-out reinsurance is reported as Comprehensive Medical the factor is effectively a composite percentage applied to incurred claims (based on 15% for the portion of premium under $25 million and 9% on the portion over $25 million) potentially reduced further by managed care credits (on any portion of the Comprehensive Medical claims) [1].

For Workers Comp Indemnity Carve-out reinsurance the premium could be included within the Group and Credit Disability lines [LR015, line (11)]. The factors[2] are tiered (25% of the first $50 million and 15% of premiums in excess of $50 million).

The survey did not provide any information about the manner in which premium is split. As such, we do not know whether it is typical to split the reinsurance assumed premium between the Medical and Indemnity portions, or not to split the premium into these components.

There is a factor of 5% applied to claim reserves reported in Exhibit 9 in LR019[3]. There is no risk charge for claim liabilities reported in Exhibit 11. The Life blank distinguishes between claim reserves and claim liabilities as follows:

A. Claim reserves - Services not yet rendered but for which the A&H insurer is liable. This is generally believed to be the result of medical treatment that began before the valuation date, but is ongoing and not yet completed, hence the insurer at the time of initial treatment is liable. This category also includes liability under disability insurance where the insured is receiving benefits and still disabled as of the valuation date. Disability reserves are discounted and are generally based on statutory tables and limited interest rates.

B. Claim liabilities - Services already rendered, but for which the resulting bill has not yet been paid (possibly due to late issuance of the bill or processing lags). For disability, this would include the monthly benefits unpaid through the valuation date.

Exhibit 11 includes a line labeled "Incurred but unreported" even though there are health claims unreported which also have claim reserves. Life & Health companies normally allocate the total claim reserve and claim liability for IBNR by type of coverage so the amount will vary for medical versus disability. Common terminology and reserving practice within the property/casualty industry would result in most of the ceded liabilities under workers comp carve-out being labeled as "IBNR" by the original ceding company. Thus, the claim reserve portion of IBNR should be a significant portion for Medical and Indemnity reinsurance - whether reported separately or combined.

It should be noted that estimation of IBNR for long-tail liabilities, such as Workers Compensation reinsurance, entails substantial risk not comparable to the risk inherent in

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[1] There are no MC credits on reinsurance assumed. However, the formula calculates an average factor that is applied to incurred claims (an average for Comprehensive Medical is the premiums, including reinsurance assumed times an average loss ratio). The managed care credit is a composite based on all claims -including claims that have a zero factor for themselves.
[2] These factors are under review by the Academy's Disability subgroup.
[3] These factors are under review by the Academy's Disability subgroup.

tabular disability reserves. Hence, the 5% risk factor currently used for tabular disability reserves may be inadequate for these carve-out liabilities.

The survey noted that amounts are reported in both Exhibits 9 and 11. In one case, it was noted that it was treated as "Underwriting Risk, Net Incurred Claims." We assume that this was done within the 1999 RBC framework where premium values are translated into incurred claims through the use of an aggregate loss ratio. The RBC factors are then applied to the product of the premiums times the loss ratio.

The survey reported that less than half of the companies reported using discounted claim reserves. There was no indication of the relative amounts of undiscounted and discounted reserves.

When a life company retrocedes this business, there is a RBC charge of 0.5% on the credit for reinsurance ceded reserves and liabilities as well as reinsurance recoverables included in C-1 [LR013, lines (1)-(7)].

Finally, the effect of covariance will depend upon the degree to which a Life company, that assumes Workers Comp Carve-out, has more or less C-2 risks (other health or life risks) than the "average." This would increase the C-2 component versus the typical Life company and reduce the "normal" dominance of the C-1 component. NAIC staff was able to provide us with data from RBC summaries. For the universe of Life companies, the C-2 risk was 18% of the sum of the RBC elements. Comparing the "net of covariance" value of the accumulated value of all companies elements as reported with the same value after the addition of $100 of C-2 RBC, the implied value of a small change in C-2 is 30% - i.e. Total RBC after covariance would be increased by only $30 when the C-2 value is increased by $100. We also looked at the 10% of Life companies with the largest Authorized Control Level (values are shown below) and the next 10% which had an implied value of $52 (values not shown). The results are:

	All Companies	Top 10% ACL
Sum of RBC Elements (Reported)	$89,638,050,052	$74,026,681,218
Sum of RBC After Cov (Reported)	79,958,074,301	66,826,872,346
RBC After Cov (calculated[4])	75,346,035,522	64,156,573,556
RBC After Cov (with $100 more C-2)	75,346,035,552	64,156,573,580
Implied Value of $100 More C-2	30	24

Property/Casualty RBC - The exposure values are generally specific amounts reported in the P&C Blank. Premiums are reported on the Underwriting and Investment Exhibit – Part 2B. The excess reinsurance is recorded on Line 30B – Reinsurance, Nonproportional Assumed Liability. The charge incurred on these premiums, prior to covariance and assuming no company offsets, and guaranteed cost business, is 38.1%. This assumes an expense ratio of 33.0%, the 1998 average expense ratio for the Professional Reinsurers

[4] Using the sum for each element for the group of companies in each 10% or the total.

composite in Best's Aggregates & Averages. This charge will vary based on the companies own expense ratio.

Loss Reserves, including both claim reserves and IBNR reserves are reported in Schedule P, Part 1, Column 24. The excess reinsurance is recorded in Part 1O, Reinsurance B, Non-proportional Assumed Liability. Reserves are adjusted to a gross of non-tabular basis prior to the application of the risk charge. The charge incurred on these reserves, prior to covariance and assuming no company offsets, is 34.7%.

Finally, if workers comp business is retroceded by a P&C reinsurer, there is an RBC charge of 10% applied to the ceded reinsurance balances prior to covariance.

The P&C RBC formula applies risk factors to net claim liabilities that vary as the company's historic track record for estimating these liabilities differ from the industry average levels. Both net and ceded amounts frequently require significant actuarial judgement to estimate. The RBC risk factors assume that the reported liability values are unbiased estimates. This assumption was discussed numerous times during the development of the formula, but it was deemed an acceptable assumption due to the requirement in P&C actuarial opinions for an evaluation of both the net and gross reserves. This assumes some review of the reasonableness of the ceded claim liability reserve in P&C annual statements. There is no similar requirement in the Life actuarial opinion.

The effects of covariance for the P&C formula were based on the impacts on the R1 through R5 factors for major Workers Comp group and major Reinsurer company averages:

	WC Group	Reinsurer
R-3	8.6%	10.8%
R-4	84.0	92.2
R-5	44.6	33.8

Note that when calculating the covariance impact of Reinsurance Ceded amounts, the average of the R-3 and R-4 factors has been used.

C. Impact of RBC Formula Differences

To obtain an idea of the impact of the differences when applied to a set of circumstances involving Workers Comp Carve-Out reinsurance, we prepared a spreadsheet which allows variations in most results except the base assumption that the reinsured incurred claims were equal to $1,000. The RBC impact is summarized[5] in the attachment from the following variations:

[5] To reduce the length of this document, only two complete examples are attached along with the summary. The other examples and assumptions used are available from the Academy upon request. Please call Steve English at 202-785-7880.

Loss Ratio: 80% or 150% (affects premium to incurred claims relationship)

Business: Initial Year or Stable State (affects reserve to incurred claims relationship)

Reinsurer: P&C carrier, L&H carrier using lower RBC factors or L&H carrier using higher RBC factors.

Intermediary: P&C carrier or L&H carrier

Reinsurance: Proportional/Quota share, Excess over $10,000, Excess over $100,000 or Excess over $1,000,000 (affects reserve level and RBC factors for P&C formula).

We also determined the RBC impact of the same $1000 of incurred claims on the Primary Insurer with and without reinsurance.

When workers comp is reinsured to a P&C carrier the sum of the companies RBC will always increase. For Excess of Loss reinsurance, the reinsurer's increase in RBC is always a larger amount than the decrease in the RBC for the same premium/claims ceded by the direct writer. These differences produce substantial multiples (5X to 7X) of the reduction in RBC from the cession. When there is a P&C intermediary, these increases are increased by approximately 1X. These results are driven by the use of higher RBC factors for excess reinsurance and the RBC for ceded reserves.

In general, the added RBC of a L&H reinsurer will be about the same as the reduction for the ceding company during the initial years (using the higher Stop-Loss factors) declining to 40 to 50% of the reduction as the reinsurance matures. When the lower factors are used by a L&H reinsurer, the amount starts at about 50% during the initial years and declines to fewer than 10% in the mature state. Life intermediaries do not add significant RBC as the factors applicable to reserves and ceded reserves in the Life RBC formula are not significant.

III. Impacts on Total Adjusted Capital

Without a good estimate of the potential effect of discounts on the reserves for reinsurance of Workers Comp Carve-out, we are not able to suggest any range. While discounted and undiscounted reserves for workers comp are now reported by P&C companies, these values are not a good indicator for the Workers Comp Carve-out reinsurance reserves since the payment patterns are likely to be very different. We can only say that, as noted previously, less than half of the Life companies surveyed used discounted reserves.

Backup calculations - Proportional

Initial Year loss ratio 80%

Marginal change in:	Primary No Cession	Primary Ceded	Reinsurer P&C	Reinsurer Life-1	Reinsurer Life-2	Intermediary P&C
Income Statement						
Incurred Losses	1,000.0	-1,000.0	1,000.0	1,000.0	1,000.0	0.0
Written Premiums	1,250.0	-1,250.0	1,250.0	1,250.0	1,250.0	0.0
Balance Sheet						
Claim reserves and liabilities	810.0	-810.0	810.0	810.0	810.0	0.0
Ceded balances	0.0	810.0	0.0	0.0	0.0	810.0
RBC formula						
Reinsurance Ceded (R3, R4, C1)						
Ceded balance	0.0	810.0	0.0	0.0	0.0	810.0
net risk factor		10.0%	10.0%	0.5%	0.5%	10.0%
charge before covariance		81.0	0.0	0.0	0.0	81.0
covariance impact		46.3%	51.5%	95.0%	95.0%	51.5%
Total after covariance	0.0	37.5	0.0	0.0	0.0	41.7
Claims reserves and liabilities (R4, C2)						
Claim reserves and liabilities	810.0	-810.0	810.0	810.0	810.0	0.0
raw risk factor	*0.273*	*0.273*	*0.273*			*0.273*
investment income offset	*0.872*	*0.872*	*0.872*			*0.872*
net risk factor	11.0%	11.0%	11.0%	0%	5%	11.0%
charge before covariance	89.1	-89.1	89.1	0.0	40.5	0.0
covariance impact	84.0%	84.0%	92.2%	30.0%	30.0%	92.2%
Total after covariance	74.9	-74.9	82.2	0.0	12.2	0.0
Written Premiums (R5, C2)						
Written Premiums	1,250.0	-1,250.0	1,250.0	1,250.0	1,250.0	0.0
RBC worst case loss ratio	*1.008*	*1.008*	*1.008*	*0.80*		***1.008***
investment income offset	*0.836*	*0.836*	*0.836*			***0.836***
company expense ratio	*0.28*	*0.28*	*0.33*			***0.330***
risk factor	12.3%	12.3%	17.3%	0.09	0.25	17.3%
charge before covariance	153.4	-153.4	215.9	90.0	312.5	0.0
covariance impact	44.6%	44.6%	33.8%	30.0%	30.0%	33.8%
Total after covariance	68.4	-68.4	73.0	27.0	93.8	0.0
RBC total	143.3	-105.8	155.2	27.0	105.9	41.7

Backup calculations - Proportional

Initial Year loss ratio 150%

	y reinsurer	No Reinsurance		Reinsurer		
Marginal change in:	Life	Primary	Primary	P&C	Life-1	Life-2
Income Statement						
Incurred Losses	0.0	1,000.0	-1,000.0	1,000.0	1,000.0	1,000.0
Written Premiums	0.0	666.7	-666.7	666.7	666.7	666.7
Balance Sheet						
Claim reserves and liabilities	0.0	810.0	-810.0	810.0	810.0	810.0
Ceded balances	810.0	0.0	810.0	0.0	0.0	0.0
RBC formula						
Reinsurance Ceded (R3, R4, C1)						
Ceded balance	810.0	0.0	810.0	0.0	0.0	0.0
net risk factor	0.5%		10.0%	10.0%	0.5%	0.5%
charge before covariance	4.1		81.0	0.0	0.0	0.0
covariance impact	95.0%		46.3%	51.5%	95.0%	95.0%
Total after covariance	3.8	0.0	37.5	0.0	0.0	0.0
Claims reserves and liabilities (R4, C2)						
Claim reserves and liabilities	0.0	810.0	-810.0	810.0	810.0	810.0
raw risk factor		*0.273*	*0.273*	*0.273*		
investment income offset		*0.872*	*0.872*	*0.872*		
net risk factor		11.0%	11.0%	11.0%	0%	5%
charge before covariance		89.1	-89.1	89.1	0.0	40.5
covariance impact	30.0%	84.0%	84.0%	92.2%	30.0%	30.0%
Total after covariance	0.0	74.9	-74.9	82.2	0.0	12.2
Written Premiums (R5, C2)						
Written Premiums	0.0	666.7	-666.7	666.7	666.7	666.7
RBC worst case loss ratio		*1.008*	*1.008*	*1.008*	*1.50*	
investment income offset		*0.836*	*0.836*	*0.836*		
company expense ratio		*0.28*	*0.28*	*0.33*		
risk factor		12.3%	12.3%	17.3%	0.09	0.25
charge before covariance		81.8	-81.8	115.1	90.0	166.7
covariance impact		44.6%	44.6%	33.8%	30.0%	30.0%
Total after covariance	0.0	36.5	-36.5	38.9	27.0	50.0
RBC total	3.8	111.4	-73.9	121.1	27.0	62.2

Backup calculations - Proportional

Steady State, growth rate of loss ratio 80%

Marginal change in:	Intermediary reinsurer P&C	Intermediary reinsurer Life	No Reinsurance Primary	Primary	Reinsurer P&C	Reinsurer Life-1
Income Statement						
Incurred Losses	0.0	0.0	1,000.0	-1,000.0	1,000.0	1,000.0
Written Premiums	0.0	0.0	1,250.0	-1,250.0	1,250.0	1,250.0
Balance Sheet						
Claim reserves and liabilities	0.0	0.0	4,875.3	-4,875.3	4,875.3	4,875.3
Ceded balances	810.0	810.0	0.0	4,875.3	0.0	0.0
RBC formula						
Reinsurance Ceded (R3, R4, C1)						
Ceded balance	810.0	810.0	0.0	4,875.3	0.0	0.0
net risk factor	10.0%	0.5%		10.0%	10.0%	0.5%
charge before covariance	81.0	4.1		487.5	0.0	0.0
covariance impact	51.5%	95.0%		46.3%	51.5%	95.0%
Total after covariance	41.7	3.8	0.0	225.7	0.0	0.0
Claims reserves and liabilities (R4, C2)						
Claim reserves and liabilities	0.0	0.0	4,875.3	-4,875.3	4,875.3	4,875.3
raw risk factor	*0.273*		*0.273*	*0.273*	*0.273*	
investment income offset	*0.872*		*0.872*	*0.872*	*0.872*	
net risk factor	11.0%		11.0%	11.0%	11.0%	0%
charge before covariance	0.0		536.6	-536.6	536.6	0.0
covariance impact	92.2%	30.0%	84.0%	84.0%	92.2%	30.0%
Total after covariance	0.0	0.0	450.9	-450.9	494.8	0.0
Written Premiums (R5, C2)						
Written Premiums	0.0	0.0	1,250.0	-1,250.0	1,250.0	1,250.0
RBC worst case loss ratio	***1.008***		*1.008*	*1.008*	*1.008*	*0.80*
investment income offset	***0.836***		*0.836*	*0.836*	*0.836*	
company expense ratio	***0.330***		*0.28*	*0.28*	*0.33*	
risk factor	17.3%		12.3%	12.3%	17.3%	0.09
charge before covariance	0.0		153.4	-153.4	215.9	90.0
covariance impact	33.8%		44.6%	44.6%	33.8%	30.0%
Total after covariance	0.0	0.0	68.4	-68.4	73.0	27.0
RBC total	41.7	3.8	519.3	-293.5	567.7	27.0

Backup calculations - Proportional	3.0%				Steady State, growth loss ratio 150%	
		Intermediary reinsurer		No Reinsurance		
Marginal change in:	Life-2	P&C	Life	Primary	Primary	P&C
Income Statement						
Incurred Losses	1,000.0	0.0	0.0	1,000.0	-1,000.0	1,000.0
Written Premiums	1,250.0	0.0	0.0	666.7	-666.7	666.7
Balance Sheet						
Claim reserves and liabilities	4,875.3	0.0	0.0	4,875.3	-4,875.3	4,875.3
Ceded balances	0.0	4,875.3	4,875.3	0.0	4,875.3	0.0
RBC formula						
Reinsurance Ceded (R3, R4, C1)						
Ceded balance	0.0	4,875.3	4,875.3	0.0	4,875.3	0.0
net risk factor	0.5%	10.0%	0.5%		10.0%	10.0%
charge before covariance	0.0	487.5	24.4		487.5	0.0
covariance impact	95.0%	51.5%	95.0%		46.3%	51.5%
Total after covariance	0.0	251.0	23.2	0.0	225.7	0.0
Claims reserves and liabilities (R4, C2)						
Claim reserves and liabilities	4,875.3	0.0	0.0	4,875.3	-4,875.3	4,875.3
raw risk factor		*0.273*		*0.273*	*0.273*	*0.273*
investment income offset		*0.872*		*0.872*	*0.872*	*0.872*
net risk factor	5%	11.0%		11.0%	11.0%	11.0%
charge before covariance	243.8	0.0		536.6	-536.6	536.6
covariance impact	30.0%	92.2%	30.0%	84.0%	84.0%	92.2%
Total after covariance	73.1	0.0	0.0	450.9	-450.9	494.8
Written Premiums (R5, C2)						
Written Premiums	1,250.0	0.0	0.0	666.7	-666.7	666.7
RBC worst case loss ratio		***1.008***		*1.008*	*1.008*	*1.008*
investment income offset		***0.836***		*0.836*	*0.836*	*0.836*
company expense ratio		***0.330***		*0.28*	*0.28*	*0.33*
risk factor	0.25	17.3%		12.3%	12.3%	17.3%
charge before covariance	312.5	0.0		81.8	-81.8	115.1
covariance impact	30.0%	33.8%		44.6%	44.6%	33.8%
Total after covariance	93.8	0.0	0.0	36.5	-36.5	38.9
RBC total	166.9	251.0	23.2	487.4	-261.6	533.7

rate of 3.0%

Backup calculations - Proportional

Marginal change in:	Reinsurer Life-1	Reinsurer Life-2	Intermediary reinsurer P&C	Intermediary reinsurer Life
Income Statement				
Incurred Losses	1,000.0	1,000.0	0.0	0.0
Written Premiums	666.7	666.7	0.0	0.0
Balance Sheet				
Claim reserves and liabilities	4,875.3	4,875.3	0.0	0.0
Ceded balances	0.0	0.0	4,875.3	4,875.3
RBC formula				
Reinsurance Ceded (R3, R4, C1)				
Ceded balance	0.0	0.0	4,875.3	4,875.3
net risk factor	0.5%	0.5%	10.0%	0.5%
charge before covariance	0.0	0.0	487.5	24.4
covariance impact	95.0%	95.0%	51.5%	95.0%
Total after covariance	0.0	0.0	251.0	23.2
Claims reserves and liabilities (R4, C2)				
Claim reserves and liabilities	4,875.3	4,875.3	0.0	0.0
raw risk factor			*0.273*	
investment income offset			*0.872*	
net risk factor	0%	5%	11.0%	
charge before covariance	0.0	243.8	0.0	
covariance impact	30.0%	30.0%	92.2%	30.0%
Total after covariance	0.0	73.1	0.0	0.0
Written Premiums (R5, C2)				
Written Premiums	666.7	666.7	0.0	0.0
RBC worst case loss ratio	*1.50*		***1.008***	
investment income offset			***0.836***	
company expense ratio			***0.330***	
risk factor	0.09	0.25	17.3%	
charge before covariance	90.0	166.7	0.0	
covariance impact	30.0%	30.0%	33.8%	
Total after covariance	27.0	50.0	0.0	0.0
RBC total	27.0	123.1	251.0	23.2