TITLE: **MEASURING R.O.E. FROM A FINANCIAL PLANNING PERSPECTIVE**

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ABSTRACT: As the array of products and services marketed by the financial services industry expands, competition among products for scarce surplus funds will increase. This paper proposes a method for assessing a financial product's performance in terms of return on equity that explicitly addresses the various elements of risk inherent in the product. To illustrate the concepts introduced, the various risk elements in a retrospectively-rated insurance product are discussed. These risk elements are then incorporated into a model that quantifies ROE as the internal rate of return of the flow of funds into and out of the surplus account.

In the past several years, we have seen a vast expansion of the number and range of financial products offered to consumers. To effectively manage a company competing on a broad product base, a financial planning model must capture and compare the earnings flow, cash flow, and risk surplus utilization of various product groups.

MEASURING RETURN ON EQUITY

Management assesses the performance of a financial product via the return on equity that it generates. A consistent measure of ROE that quantifies the return produced by any one of a wide range of financial products now marketed by insurers on a comparable basis is essential. Because of the diversity of insurance products now available, the best place to begin when attempting to quantify ROE is in the surplus account itself. For any financial product, regardless of its design, true performance is ultimately captured by changes in surplus. A reasonable approach to evaluating ROE is to isolate the changes in surplus over time resulting from the flow of dollars generated by an insurance contract through the insurer's financial results.

To isolate the changes in surplus, the various components of the insurance transaction which increase or decrease surplus must be identified. The most obvious element of the insurance transaction which affects surplus is the underwriting result. In the event of an underwriting gain, profit dollars move into the surplus account; on the other hand, in an underwriting loss

situation, surplus dollars must be used to support loss reserves which exceed the amount of premium collected to fund losses. Surplus decreases as dollars move from the surplus account into liability accounts.

While it is obvious that underwriting results affect surplus, the timing of the movements into or out of surplus is less apparent. If one views underwriting results as a consequence of facing insurance risk, then results should be realized uniformly over the period in which the policy is in-force. But the situation becomes more complex when an insurer reports discounted reserves in his financial results, a common practice among workers' compensation insurers. The actual, undiscounted underwriting result emerges over the life of the liabilities, and the impact of emerging underwriting results must be realized by transfers into or out of surplus until the liabilities are eliminated.

In order to protect the financial strength of an insurer, some amount of surplus must be allocated to an insurance agreement to protect the insurer from the various risks that he assumes. These risks will be discussed in detail in the following sections of this paper. Some risks emerge at the inception of the agreement while others persist until all liabilities incurred under the agreement are absolved. These surplus requirements necessary to protect the insurer from risk (which we will call "risk surplus") are direct depletions from surplus, and must be traced through life of the financial agreement in order to evaluate ROE.

Investment income is another part of the insurance mechanism that contributes directly to surplus. Investment income is earned on both the risk surplus and funds held as reserves. The most difficult aspect of quantifying the impact of investment income on surplus is determining the interest rate to be used in computing investment earnings. To determine investment income on risk surplus the yield of the investment portfolio of corporate surplus is appropriate; however, the choice of rates is more complicated for reserve funds which must be invested to fund expected liabilities for many years into the future. Historical yields on invested reserve funds may not be appropriate because of different taxable/non-taxable investment strategies, different asset/liability durations, and different prevailing yield rates. A more appropriate rate may be determined by examining new money rates and incorporating them into an investment strategy appropriate for the available reserve funds.

Federal Income Tax also directly affects surplus. The FIT liability or credit that the underwriting result generates must be incorporated into the surplus account as it is realized. In addition, the FIT payable on investment income must also be reflected in surplus. With the enactment of new FIT regulations for property/casualty insurers, the timing and amounts of FIT effects will change, having a direct effect on the ROE produced by most financial products.

The changes in surplus caused by all of these elements of the insurance transaction can be captured over time, resulting in a

surplus flow. Once the surplus flow is determined, the return generated by the financial product can be quantified by determining the internal rate of return of the surplus flow.

The internal rate is the earning power of the surplus dollars used by the financial product. The use of the internal rate of return as a measure of ROE implies that the cost of using surplus dollars to fund the insurance transaction is equal to the return generated by the transaction. ROE so evaluated is a consistent measure of the performance of any financial product.

RETROSPECTIVE RATING RISK CHARACTERISTICS

To appropriately examine the risk characteristics of a financial product, it is important to focus on the earning and cash flows as they differ from expected results. Unlike guaranteed cost products, retrospective rating plans by definition have premium elements that respond to the actual loss experience of the client. While the premium movement acts to offset loss cost deviations, risk is not eliminated from the net earning flow. The level, certainty, and timing of this premium response are a focus for analyzing risk elements introduced into the net earning and cash flows.

The ultimate level of premium response to adverse deviations from expected losses can be limited by two major features of the rating plans. First, retro plans have various options to limit the impact of a single occurrence for the premium computation. We will call this "excess of loss" exposure. The second limitation restricts the aggregate premium between some defined minimum and maximum amounts. We will call this risk the "over maximum" exposure. The client usually pays the insurer a fixed rate per unit of exposure to fund for losses that are expected to fall into these categories.

Both "excess of loss" and "over maximum" exposure can take a long period to fully impact the earning stream. The need for risk surplus to support these elements therefore must be of a longer duration than is normally expected for a given line of insurance. Financial deviations from expected results would normally occur

only when actual data contains enough information to evaluate the pricing assumptions of these components. In the financial planning models, the timing of bringing actual experience into result indications and the stability of that information as losses move to ultimate will therefore influence the R.O.E. indications.

To effectively review how a book of business will respond to various adverse scenarios, it is important to understand the specific profiles of "excess of loss" limits sold and the swing from expected profile for the "over maximum" exposure. Using severity and frequency distributions, some estimation of the possible adverse deviations from expected results can be determined.

"Excess of loss" coverage is often further complicated by additional reinsurance agreements. The analysis of this risk is beyond the scope of this paper.

The conventional retrospective programs typically can take 18-24 months from the effective date of the policy for the company to start reflecting the actual losses in the retrospective premiums received from the client. The risk to expected cash flows as a result of this delay can be substantial. Even the subsequent annual adjustments have higher net cash flow risk than most normal financial transactions. In the marketplace there has been considerable pressure to more closely link premium and loss cash flows by calculating premium on a more frequent and timely basis.

The risk associated with the expense revenue versus expense cost for the retrospective program can usually be evaluated fairly quickly. Commission percentages are set at policy inception and most internal cost deviations are known by the end of the policy term. For those expenses collected in the basic, the differences between revenues and costs normally emerge from differences in plan retentions of current business up for renewal, new business levels, and market pressures on plan levels for expense prices. There are, however, several key non-loss elements of exposure that are not within company control.

A couple of examples are the Workers' Compensation Involuntary Pools and loss responsive state assessments. The distribution of the involuntary market results are a function of state voluntary premium. The operating results of these state pools are highly volatile because pool volume and underwriting results fluctuate quickly based on perceived rate level needs of the state. Retro premium for a client could shift substantially from initial expectations when actual losses enter the premium computation. State assessments for various second injury funds and other revenue schemes are often collected from insurers as a function of loss. Because changes in these assessment rates are not linked to policy effective dates, deviations arise among revenue formulas between the client payments to the company versus the company payments to the state.

In guaranteed cost products the failure of the client to pay premium usually results in the cancellation of the insurance

contract. Thus by the expiry date of the policy, the premium is known except for the auditing process. However, in retrospectively-rated contracts there can be significant additional premium requirements after the end of the policy period. This creates a situation where the insurer is still required to execute the terms of the contract despite the failure of the client to remit the premium due.

This risk may be perceived as the credit risk of the client. There are three components to this risk: a) the amount of future payments owed, b) the ability of the client to pay, and c) the amount of collateral the insurer has to call upon if appropriate payments are not made.

While the specific premium schedule for each client may differ, the amount of future payments owed can always be viewed as the difference between the ultimate indicated retro premium and the payments made to date. The ultimate indicated retro premium would attempt to take current adjusters' estimates of claims to a fully reported and developed basis and apply the agreed upon premium computation.

For publicly traded companies there are various agencies which do evaluate the credit worthiness of these clients. Privately held corporations would require an examination of the financial statements to rank the client's ability to pay. The lower ratings would imply less certainty in the expected revenue flows.

Unlike guaranteed cost programs, credit risk can accumulate quickly across several successive retrospective policy terms. To reduce this exposure insurers will often secure collateral, usually in the form of a surety bond or a letter of credit. This collateral is intended to provide relief to the insurer when payments due to the insurer are not made. The assumption that this removes the risk of premium flows is false on at least three counts. First, the contract is seldom collateralized to the ultimate premium that emerges from the problem accounts. Second, the terms of the premium computations are not always free of different legal interpretations. Finally, accounts in financial difficulty due to regional economic problems often will arrange letters of credit with regional banks experiencing similar economic circumstances. Even if default does not occur, late payments become a likely result during tough economic times.

ELEMENTS OF RISK SURPLUS

To appropriately measure a product's performance within a corporation, a working definition of risk surplus must evolve. This definition must include the identification of the business risks to be considered for risk surplus requirements.

Measurements of the relative value of each business risk within each product have to be established. In this illustration we have developed a definition which would focus on a series of adverse probabilities for each business risk occurring at the same time. Within the definition a determination of the capital base would be established.

A working definition of risk surplus could include the following:

"Risk surplus is the amount that when added to GAAP reserves net of deferred acquisition costs is sufficient to protect the Corporation against the various business risks inherent in its products."[1]

Specific probability levels of the various business risks would be chosen to formulate surplus levels. The definition does not necessarily balance to the total surplus of the corporation. It may indicate either excess or deficient total corporate surplus levels.

While specific formulation of the calculations will not be made for this section, a very general overview of the considerations made will be provided.

[1] Travelers Required Equity Task Force

The major business risks to be considered are:

1) Pricing risk
2) Reserve risk
3) Asset-liability mismatch risk
4) Credit risk
5) Asset default risk

Pricing Risk

The amount of equity required would be sufficient to fund the 95% worst case of an underwriting cycle before any federal income tax credits. We will assume that this level would exist for 2 1/2 years. To quantify this adverse scenario, we would examine the variability of the frequency and severity levels of our loss forecasts to generate the aggregate variability for the total line results. We would also examine our expense and profit revenues relative to actual cost during the adverse market conditions. A portion of the adverse loss experience will generate additional premiums for the loss responsive programs. Examination of the occurrence limits sold and the profile of maximum retro premium related to expected levels would be made. This retrospective plan information forms the basis for establishing a recoverability ratio for adverse loss development.

Reserve Risk

We would determine mean and standard deviations of reserve movements in Schedules O and P to obtain at 95% adverse deviation. This would be offset by interest earned on the investable portion of these funds and the portion of these losses that would be recoverable through retrospective premium adjustments. We will assume that plan results would be replaced by reserve indications at 12 months after inception in the financial reporting process.

Asset - Liability Mismatch Risk

We would determine the relative duration difference between the asset and liability streams. As the weighted asset duration increases above the liability duration risk surplus is generated as a function of investable assets.

Credit Risk

An examination of the amount and quality of collateralization to ultimate premium would be made. Credit ratings of the clients would be obtained. The credit risk exposure on collateralized and uncollateralized premium receivables for a recessionary scenario would be evaluated.

Asset Default Risk

The asset quality of the various components of the investable portfolio would be evaluated. Risk surplus would be expressed as a percentage deviation from the investment income amounts for asset defaults and impairments.

SETTING UP THE ROE MODEL

We have developed a model that computes the ROE from a surplus flow perspective consistent with the ideas we have discussed. The model functions via an iterative process in which premiums, expenses, and the underwriting results (which in turn imply ultimate losses) are given. Different ROE rates are tested until the net present value of the surplus flow at the trial ROE rate is equal to zero. The trial ROE rate that satisfies this condition is by definition the internal rate of return of the surplus flow, i.e. our measure of ROE.

The model can also be used to solve for the underwriting result necessary to achieve a target ROE. In this case, iterations proceed on the underwriting result, which drives computations of ultimate discounted and undiscounted losses, until the net present value of the surplus flow at the target ROE is zero. This application of the model may be valuable for planning purposes.

The following exhibit shows the model used to evaluate the ROE produced by an annual, incurred, retrospectively-rated workers' compensation insurance policy commencing on January 1, 1987. The following paragraphs describe the key elements of the model.

Premium Premiums earned under the insurance agreement and premium payment patterns must be specified. In the example, earned premiums of $100,000 are collected under a common

incurred-retro arrangement: ultimate earned premium is collected in equal installments over the first 12 months (the policy period) and retro adjustments to bring earned premium to the incurred loss level at retrospective evaluations at 18, 30, 42, etc. months commence at 24 months and continue until the agreement is terminated. In this example, we assume incurred losses are at an ultimate value six years after the policy began.

Expense Incurred expenses and the flow of expense payments over time must be identified. In the example, $20,000 of expenses are incurred, with 50% of them paid at policy inception and the remaining 50% paid evenly over the policy period.

Losses As mentioned earlier, ultimate losses may be used as an input item in the model if the purpose of using the model is to determine the ROE produced by a given underwriting result. If the model is used to determine the necessary underwriting result to achieve a target ROE, then the ultimate losses are computed based on the resulting underwriting result. In either case, a loss payout pattern must be specified. If discounted losses are reported in financial results, the discounting procedure must also be specified. In our example, we seek the underwriting result given our premium and expense provisions necessary to achieve a target ROE of 15%. We assumed that the tabular ultimate losses were discounted at 5% annually. Tabular losses represented 20% of the initial loss payout, moving to 100% of the final loss payout in a linear pattern.

Reserves The unearned premium reserve is established at inception and decreases uniformly over the policy period to zero. The loss reserve emerges uniformly over the policy period. During the policy period, the underwriting results are fully realized, and any surplus necessary to support underwriting losses is transferred from surplus into the loss reserve. At the end of the policy period, the loss reserve is sufficient to fund the discounted future liability payments. As the discount emerges through actual loss payments, surplus funds must be transferred to the loss reserve to fund them. All movements into or out of surplus to support underwriting results and the emergence of ultimate undiscoutned loss payments on discounted reserves are recorded in the "Surplus Supporting Underwriting Result" column to be used in determining surplus flow.

Investable Funds Investable funds consist of the cumulative collected premiums less the cumulative paid losses and expenses plus any funds borrowed from surplus to support an underwriting loss or the emergence of the discount on discounted loss reserves. Investable funds are invested to yield either taxable or non-taxable income, depending on the investment strategy of the insurer. In our example, 70% of the funds are in taxable investments and 30% are in non-taxable. Investment income from investable funds is immediately transferred to surplus. The investment income is determined in our model based on the average investable amount during the semi-annual period and the interest rates used are specified in the heading of the exhibit.

Risk Surplus The risk surplus changes over time as the risks inherent in the insurance agreement change. In our example, the assumed risk surplus amounts and how they are computed are outlined in the heading of the exhibit. The incremental changes in risk surplus and the investment income earned on the risk surplus both represent surplus flows. Again, investment income is based on the mean investable amount in each semi-annual period.

Federal Income Tax The FIT effects are direct flows to surplus. In our example, we have incorporated the new tax regulations to become effective in 1987. 20% of the change in the unearned premium reserve is taxed at the full corporate rate. Taxable investment income is taxed at the full corporate rate, while 15% of the non-taxable investment income is taxed at the full corporate rate. Underwriting results are taxed at the full corporate rate, but the results are computed on a tax basis using loss reserves discounted at 7.2%.

Surplus flow Finally, the surplus flow is equal to the sum of the investment income on investable funds and risk surplus, less the surplus supporting the underwriting result, less the necessary risk surplus, less the federal income tax liabilities. The internal rate of return of the surplus flow is the product's ROE.

WORKERS' COMPENSATION INCURRED RETRO PROGRAM
EFFECTIVE DATE OF JANUARY 1, 1987 ANNUAL POLICY

PREMIUM:	$100,000.00
EXPENSE:	$20,000.00
UNDERWRITING GAIN OR LOSS:	$4,956.92
DISCOUNTED LOSSES (at time 0):	$75,043.08
SEMI-ANNUAL DISCOUNT RATE ON TABULAR RESERVES:	2.47%
ULTIMATE UNDISCOUNTED LOSSES:	$80,034.76
DISCOUNT:	$4,991.68
SEMI-ANNUAL CORPORATE RETURN ON SURPLUS (after-tax):	2.96%
SEMI-ANNUAL TAXABLE INTEREST RATE:	3.92%
SEMI-ANNUAL TAX-EXEMPT INTEREST RATE:	2.47%
INVESTMENT STRATEGY:	
TAXABLE:	70.00%
TAX-EXEMPT:	30.00%

RISK SURPLUS REQUIREMENTS:

PRICING:	20.00% OF WRITTEN PREM. THRU 12 MOS.
RESERVE:	15.00% OF O/S LOSS RES. AFTER MO. 12
MISMATCH:	4.00% OF INVESTABLE ASSETS
FINANCIAL:	0.50% OF UNPAID PREMIUM
DEFAULT:	4.00% OF INVESTMENT INCOME

FIT CONSIDERATIONS:

1987 RATE:	40.00%
1988 AND THEREAFTER RATE:	34.00%
% OF NON-TAX. INV. INC. SUBJ. TO TAX:	15.00%
% OF CHANGE IN UEP RESERVE SUBJ. TO TAX:	20.00%
DISCOUNT RATE FOR FIT LOSS RES.:	7.20%
RETURN ON EQUITY:	15.00%
NET PRESENT VALUE OF SURPLUS FLOW:	$.00

OPERATIONS CASH FLOW

6-MONTH PERIOD ENDING	INCREMENTAL PREMIUM COLLECTED	CUMULATIVE PREMIUM COLLECTED	EXPENSES PAID	CUMULATIVE EXPENSES PAID	PAYOUT %AGE	LOSSES PAID	CUMULATIVE LOSSES PAID	UNEARNED PREMIUM RESERVE	LOSS RESERVE
0	$0.00	$0.00	$10,000.00	$10,000.00	0	$0.00	$0.00	$100,000.00	0
6	$50,000.00	$50,000.00	$5,000.00	$15,000.00	9.09	$7,274.89	$7,274.89	$50,000.00	$26,788.84
12	$50,000.00	$100,000.00	$5,000.00	$20,000.00	19.53	$15,631.19	$22,906.09	$0.00	$53,577.68
18	$0.00	$100,000.00	$0.00	$20,000.00	17.72	$14,178.40	$37,084.48	$0.00	$40,051.03
24	($20,000.00)	$80,000.00	$0.00	$20,000.00	11.21	$8,968.00	$46,052.49	$0.00	$31,652.84
30	$0.00	$80,000.00	$0.00	$20,000.00	8.23	$6,586.73	$52,639.21	$0.00	$25,570.26
36	$10,000.00	$90,000.00	$0.00	$20,000.00	7.06	$5,647.33	$58,286.54	$0.00	$20,367.96
42	$0.00	$90,000.00	$0.00	$20,000.00	6.03	$4,828.08	$63,114.62	$0.00	$15,923.38
48	$5,000.00	$95,000.00	$0.00	$20,000.00	5.09	$4,074.38	$67,189.00	$0.00	$12,170.43
54	$0.00	$95,000.00	$0.00	$20,000.00	4.37	$3,495.44	$70,684.45	$0.00	$8,935.94
60	$3,500.00	$98,500.00	$0.00	$20,000.00	4.03	$3,222.36	$73,906.81	$0.00	$5,915.36
66	$0.00	$98,500.00	$0.00	$20,000.00	3.89	$3,113.13	$77,019.94	$0.00	$2,942.16
72	$1,500.00	$100,000.00	$0.00	$20,000.00	3.77	$3,014.82	$80,034.76	$0.00	$.00

WORKERS' COMPENSATION INCURRED RETRO PROGRAM
EFFECTIVE DATE OF JANUARY 1, 1987 ANNUAL POLICY

PREMIUM:	$100,000.00
EXPENSE:	$20,000.00
UNDERWRITING GAIN OR LOSS:	$4,956.92
DISCOUNTED LOSSES (at time 0):	$75,043.08
SEMI-ANNUAL DISCOUNT RATE ON TABULAR RESERVES:	2.47%
ULTIMATE UNDISCOUNTED LOSSES:	$80,034.76
DISCOUNT:	$4,991.68
SEMI-ANNUAL CORPORATE RETURN ON SURPLUS (after-tax):	2.96%
SEMI-ANNUAL TAXABLE INTEREST RATE:	3.92%
SEMI-ANNUAL TAX-EXEMPT INTEREST RATE:	2.47%
INVESTMENT STRATEGY:	
TAXABLE:	70.00%
TAX-EXEMPT:	30.00%

RISK SURPLUS REQUIREMENTS:

PRICING:	20.00% OF WRITTEN PREM. THRU 12 MOS.
RESERVE:	15.00% OF O/S LOSS RES. AFTER MO. 12
MISMATCH:	4.00% OF INVESTABLE ASSETS
FINANCIAL:	0.50% OF UNPAID PREMIUM
DEFAULT:	4.00% OF INVESTMENT INCOME

FIT CONSIDERATIONS:

1987 RATE:	40.00%
1988 AND THEREAFTER RATE:	34.00%
% OF NON-TAX. INV. INC. SUBJ. TO TAX:	15.00%
% OF CHANGE IN UEP RESERVE SUBJ. TO TAX:	20.00%
DISCOUNT RATE FOR FIT LOSS RES.:	7.20%
RETURN ON EQUITY:	15.00%
NET PRESENT VALUE OF SURPLUS FLOW:	$.00

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INVESTMENT INCOME AND SURPLUS SUPPORTING UNDERWRITING

6-MONTH PERIOD ENDING	CUMULATIVE PREMIUM COLLECTED	CUMULATIVE EXPENSES PAID	CUMULATIVE LOSSES PAID	EMERGING DISCOUNT	EMERGING UNDERWRITING RESULT	INVESTABLE FUNDS TOTAL	INVESTABLE FUNDS TAXABLE	INVESTABLE FUNDS NON-TAXABLE	INCOME ON INVESTABLE FUNDS	SURPLUS SUPPORTING UNDERWRITING RESULT
0	$0.00	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6	$50,000.00	$15,000.00	$7,274.89	($729.30)	$2,478.46	$25,975.95	$18,183.17	$7,792.79	$452.89	($1,749.16)
12	$100,000.00	$20,000.00	$22,906.09	($711.38)	$2,478.46	$53,577.68	$37,504.38	$16,073.30	$1,387.01	($1,767.08)
18	$100,000.00	$20,000.00	$37,084.48	($651.75)	$0.00	$40,051.03	$28,035.72	$12,015.31	$1,632.41	$651.75
24	$80,000.00	$20,000.00	$46,052.49	($569.81)	$0.00	$11,652.84	$8,156.99	$3,495.85	$901.45	$569.81
30	$80,000.00	$20,000.00	$52,639.21	($504.15)	$0.00	$5,570.26	$3,899.18	$1,671.08	$300.28	$504.15
36	$90,000.00	$20,000.00	$58,286.54	($445.03)	$0.00	$10,367.96	$7,257.57	$3,110.39	$277.88	$445.03
42	$90,000.00	$20,000.00	$63,114.62	($383.50)	$0.00	$5,923.38	$4,146.36	$1,777.01	$284.04	$383.50
48	$95,000.00	$20,000.00	$67,189.00	($321.43)	$0.00	$7,170.43	$5,019.30	$2,151.13	$228.29	$321.43
54	$95,000.00	$20,000.00	$70,684.45	($260.95)	$0.00	$3,935.94	$2,755.16	$1,180.78	$193.64	$260.95
60	$98,500.00	$20,000.00	$73,906.81	($201.79)	$0.00	$4,415.36	$3,090.76	$1,324.61	$145.60	$201.79
66	$98,500.00	$20,000.00	$77,019.94	($139.93)	$0.00	$1,442.16	$1,009.51	$432.65	$102.13	$139.93
72	$100,000.00	$20,000.00	$80,034.76	($72.66)	$0.00	($.00)	($.00)	($.00)	$25.14	$72.66

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DISCOUNT RATE FOR FIT LOSS RES.:	7.20%
RETURN ON EQUITY:	15.00%
NET PRESENT VALUE OF SURPLUS FLOW:	$.00

RISK SURPLUS

6-MONTH PERIOD ENDING	NECESSARY RISK SURPLUS: PRICING RISK	RESERVE RISK	MISMATCH RISK	FINANCIAL RISK	DEFAULT RISK	TOTAL	INCREMENTAL CHANGES	INVESTMENT INCOME ON RISK SURPLUS
0	$20,000.00	$0.00	$0.00	$500.00	$0.00	$20,500.00	$20,500.00	$0.00
6	$20,000.00	$0.00	$1,039.04	$250.00	$18.12	$21,307.15	$807.15	$617.97
12	$0.00	$8,036.65	$2,143.11	$0.00	$55.48	$10,235.24	($11,071.91)	$466.24
18	$0.00	$6,007.65	$1,602.04	$0.00	$65.30	$7,674.99	($2,560.25)	$264.74
24	$0.00	$4,747.93	$466.11	$100.00	$36.06	$5,350.10	($2,324.90)	$192.53
30	$0.00	$3,835.54	$222.81	$100.00	$12.01	$4,170.36	($1,179.74)	$140.73
36	$0.00	$3,055.19	$414.72	$50.00	$11.12	$3,531.03	($639.33)	$113.84
42	$0.00	$2,388.51	$236.94	$50.00	$11.36	$2,686.80	($844.22)	$91.91
48	$0.00	$1,825.56	$286.82	$25.00	$9.13	$2,146.51	($540.29)	$71.44
54	$0.00	$1,340.39	$157.44	$25.00	$7.75	$1,530.57	($615.94)	$54.35
60	$0.00	$887.30	$176.61	$7.50	$5.82	$1,077.24	($453.33)	$38.55
66	$0.00	$441.32	$57.69	$7.50	$4.09	$510.60	($566.65)	$23.47
72	$0.00	$.00	($.00)	$0.00	$1.01	$1.01	($509.59)	$7.56

WORKERS' COMPENSATION INCURRED RETRO PROGRAM
EFFECTIVE DATE OF JANUARY 1, 1987 ANNUAL POLICY

PREMIUM:	$100,000.00
EXPENSE:	$20,000.00
UNDERWRITING GAIN OR LOSS:	$4,956.92
DISCOUNTED LOSSES (at time 0):	$75,043.08
SEMI-ANNUAL DISCOUNT RATE ON TABULAR RESERVES:	2.47%
ULTIMATE UNDISCOUNTED LOSSES:	$80,034.76
DISCOUNT:	$4,991.68
SEMI-ANNUAL CORPORATE RETURN ON SURPLUS (after-tax):	2.96%
SEMI-ANNUAL TAXABLE INTEREST RATE:	3.92%
SEMI-ANNUAL TAX-EXEMPT INTEREST RATE:	2.47%
INVESTMENT STRATEGY:	
TAXABLE:	70.00%
TAX-EXEMPT:	30.00%

RISK SURPLUS REQUIREMENTS:

PRICING:	20.00% OF WRITTEN PREM. THRU 12 MOS.
RESERVE:	15.00% OF O/S LOSS RES. AFTER MO. 12
MISMATCH:	4.00% OF INVESTABLE ASSETS
FINANCIAL:	0.50% OF UNPAID PREMIUM
DEFAULT:	4.00% OF INVESTMENT INCOME

FIT CONSIDERATIONS:

1987 RATE:	40.00%
1988 AND THEREAFTER RATE:	34.00%
% OF NON-TAX. INV. INC. SUBJ. TO TAX:	15.00%
% OF CHANGE IN UEP RESERVE SUBJ. TO TAX:	20.00%
DISCOUNT RATE FOR FIT LOSS RES.:	7.20%
RETURN ON EQUITY:	15.00%
NET PRESENT VALUE OF SURPLUS FLOW:	$.00

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FEDERAL INCOME TAX AND SURPLUS FLOW

6-MONTH PERIOD ENDING	FEDERAL INCOME TAX LIABILITY: TAXABLE INCOME	NON-TAXABLE INCOME	UNDERWRITING RESULTS	UNEARNED PREMIUM RESERVE	TOTAL	SURPLUS SUPPORTING UNDERWRITING RESULT	RISK SURPLUS FLOW	TOTAL INVESTMENT INCOME	FIT LIABILITY FLOW	SURPLUS FLOW
0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$20,500.00	$0.00	$0.00	($20,500.00)
6	$142.67	$5.77	$1,894.26	$4,000.00	$6,042.70	($1,749.16)	$807.15	$1,070.86	$6,042.70	($4,029.84)
12	$436.93	$17.68	$1,894.26	($4,000.00)	($1,651.13)	($1,767.08)	($11,071.91)	$1,853.26	($1,651.13)	$16,343.37
18	$437.10	$17.69	($1,329.05)	$0.00	($874.26)	$651.75	($2,560.25)	$1,897.15	($874.26)	$4,679.91
24	$241.38	$9.77	($599.68)	$0.00	($348.54)	$569.81	($2,324.90)	$1,093.98	($348.54)	$3,197.61
30	$80.40	$3.25	($450.37)	$0.00	($366.71)	$504.15	($1,179.74)	$441.01	($366.71)	$1,483.31
36	$74.41	$3.01	($358.44)	$0.00	($281.02)	$446.03	($639.33)	$391.72	($281.02)	$867.04
42	$76.05	$3.08	($291.90)	$0.00	($212.77)	$383.50	($844.22)	$375.95	($212.77)	$1,049.44
48	$61.13	$2.47	($234.30)	$0.00	($170.70)	$321.43	($540.29)	$299.73	($170.70)	$689.29
54	$51.85	$2.10	($184.52)	$0.00	($130.57)	$260.95	($615.94)	$247.99	($130.57)	$733.55
60	$38.99	$1.58	($142.04)	$0.00	($101.48)	$201.79	($453.33)	$184.15	($101.48)	$537.17
66	$27.35	$1.11	($105.03)	$0.00	($76.58)	$139.93	($566.65)	$125.60	($76.58)	$628.89
72	$6.73	$0.27	($69.99)	$0.00	($62.98)	$72.66	($509.59)	$32.71	($62.98)	$532.62