REPORT TO

THE NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

HEALTH ORGANIZATIONS RISK BASED CAPITAL WORKING GROUP

AMERICAN ACADEMY OF ACTUARIES

HEALTH ORGANIZATIONS RISK BASED CAPITAL TASK FORCE

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(revised)

The American Academy of Actuaries (Academy) is a national organization that was formed in 1965 to bring together, into a single entity, actuaries of all specialties in the United States. In addition to setting qualification standards and standards for actuarial practice, a major purpose of the Academy is to act as the public information voice of the profession.

This report was prepared for the National Association of Insurance Commissioners at the request of Commissioner Robert Wilcox, Chairman of the Health Organizations Risk Based Capital Working Group. The composition of this task force was dictated by the nature of this project and its importance to the insurance industry. The Task Force comprises representatives from the entire range of health actuarial practice, including consultants, and not-for-profit and for-profit insurance company actuaries. The Task Force also obtained assistance from representatives from the Society of Actuaries and staff for national health associations. In addition, the Task Force received guidance from staff and regulators from the National Association of Insurance Commissioners.

AMERICAN ACADEMY OF ACTUARIES
HEALTH ORGANIZATIONS RISK BASED CAPITAL TASK FORCE

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   * Not included in report. Available from the Academy Office.

I. Executive Summary

Robert Wilcox, Commissioner of Insurance for the State of Utah, and Chairman of the National Association of Insurance Commissioners' (NAIC's) Health Organizations Risk Based Capital Working Group, requested assistance form the American Academy of Actuaries State Health Committee on several issues related to Risk Based Capital (RBC), including identifying risks that health organizations encounter and recommending an RBC formula reflecting the risks that would apply to all types of health organizations. The State Health Committee created a task force, The Health Organizations Risk Based Capital Task Force, in response to that request. This report is the work product of that task force.

There are a number of RBC formulas that are applied to health organizations. It was determined that modifications to the Life and Health RBC formula would be the best approach for the Task Force to take, in order to reflect the unique aspects of health insurance. A related goal of this approach is to begin the process to make consistent the various regulatory capital measures being applied to different types of health organizations.

There are many considerations and issues that are specific to health organizations that were discussed or reflected in the development of the formula modifications. These issues generally relate to the variety of benefits included in the health coverages, the coverages' pricing and funding, the various means of providing the care covered, and the regulation of the coverages.

The formula modifications reflect the wide scope of health coverages, including the prevalence of managed care in many health coverages. It also recognizes the large number of funding approaches health organizations offer their customers as well as the complexities introduced by the use of various reinsurance and corporate structures. Additionally, the wide range of existing premium and valuation regulations was considered and reflected in the formula modifications.

The range of health coverages encompasses simple indemnity products as well as coverages that provide medical care and loss of income protection. This wide variety of products creates a challenge to ensure the consistent assessment of the probability of financial ruin, which is essential for establishing RBC levels that provide adequate monitoring of potential financial difficulties.

To achieve this consistency, a single model of the variability inherent in health coverages was created. The model was developed to illustrate the impact of statistical and pricing uncertainties associated with health coverages. The model uses claim and loss ratio variability data submitted by carriers providing health coverage. Additionally,

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assumptions as to profit and surplus targets and pricing responsiveness were identified and used in the model for the various health coverages.

The formula modifications take the form of factors for specific health coverages to be applied to premiums, claims, liabilities or reserves that reflect the risks underlying those coverages. There are credits to the factors where the nature of the coverages or actions taken by the health organization serve to reduce risk. There are also loads to the factors where the coverage is structured or sold in a way that would increase the risk being assumed by a health organization.

There may also be issues related to the implementation of this formula when it is applied to the various types of carriers to be covered.

This report represents our recommendations within the context of the direction given to us by Commissioner Wilcox throughout the process. In particular, we are not, except for certain coverages, recommending the overall level of risk based capital for any given regulatory response, but rather the relative levels of risk based capital within the formula. The levels that are shown in the formula represent the particular probability of ruin we modeled, but can not and do not reflect the other considerations which the NAIC will have to address in choosing the final level.

II. Introduction

On November 4, 1993, the National Association of Insurance Commissioners (NAIC) held a meeting to discuss risk based capital (RBC) for health organizations operating under some variation of federal health care reform. Subsequent to that meeting, Robert Wilcox, Commissioner of Insurance for the State of Utah and Chairman of the Health Organizations RBC Working Group, requested assistance from the American Academy of Actuaries State Health Committee on several issues related to RBC for health insurance organizations. (See Appendix G.)

The American Academy of Actuaries set up the Health Organizations Risk Based Capital Task Force according to its bylaws and under its direction through the Academy's State Health Committee in response to Commissioner Wilcox's request. This report represents the work of the Task Force and the State Health Committee.

The Commissioner's request included a very aggressive deadline for the development of a Health Organization RBC formula. This led to substantial effort being expended by the Task Force members to streamline and carry out their work. The goal for this rapid response to this significant and complex request was to provide the NAIC with the best technical input possible within the short time frame. This report thus represents a balance of time constraints with the detail and complexity possible in analyzing and measuring risk.

One item included the development of a glossary of terminology. It was believed that a common set of acronyms, terms and other jargon would facilitate the debate on this issue. This glossary is included as Appendix F. The NAIC also requested that the Academy identify the risks that health organizations encounter and recommend an RBC formula for all types of health organizations. These organizations include HMO's, dental plans, Blue Cross & Blue Shield Plans, commercial insurers, as well as new health organizations that might emerge after reforms are implemented.

As of early 1994, several RBC models were in place or proposed for some of the current organizations providing health coverage. Many of the formulas are similar in their structure in that they consider the four classes of risk defined by the Society of Actuaries; asset values, pricing and obligation risks, cash flow risks, and business risks, and they establish an RBC level as a function of some financial measure such as premiums, assets, or liabilities.

Specific formulas for health insurance capital levels have been developed by the NAIC (for application to Life and Health insurers and Property and Casualty insurers), by the Blue Cross & Blue Shield Association, by the Group Health Association of America (GHAA), and by the Commissioners of Insurance in various states.

These formulas do not produce the same absolute or relative RBC levels for a given health organization. This lack of consistency in RBC formulas creates different capital standards for organizations providing health coverage, depending on their corporate structure or often even the branch of state government under which they are regulated. Therefore, one of the primary goals established by Commissioner Wilcox for the RBC formula is to establish a consistent RBC measure applicable to the wide variety of organizations that are likely to provide health coverage in the future reformed environment.

The Task Force feels that risk based capital regulation should be viewed in conjunction with all other regulations in place. For example risk based capital and valuation regulations are focused on encouraging and monitoring financial strength. Conversely, loss ratio and rate regulations focus on encouraging lower premium levels. The conflict these regulations suggests that care be taken to coordinate them to insure that they create a viable regulatory environment.

The regulatory environment must also recognize that health plans compete for business and capital in various markets. The various regulations must also consider their impact on price and profitability to ensure a product remains affordable and allows for sufficient profit to provide a return that will allow a plan to attract capital.

This report represents our recommendations within the context of the direction given to us by Commissioner Wilcox throughout the process. In particular, that we are not, except for certain coverages (most disability income and long-term care coverages), recommending the overall level of risk based capital for any given regulatory response, but rather the relative levels of risk based capital within the formula. The levels shown in the formula represent the particular probability of ruin we modeled, but can not and do not reflect the other considerations which the NAIC will have to address in choosing the final level.

III. Considerations in Developing the Formula

Managed Care Credit

The C-2 risk for health coverages, in addition to being the risk of statistical fluctuation, is related to the degree of error in predicting and reacting to the trend in health care costs, utilization, intensity and technology. Traditionally all of these factors have been out of the control of the payor. Consequently, prediction has been largely a matter of extrapolation of past trends.

Some forms of managed care have had a significant impact on the degree of predictability of costs while others have not. Some examples of managed care which reduce risk include approaches which fix prices (e.g. negotiated fee schedules), provider risk sharing (e.g. withholds or bonuses, capitations), and restructure of the cost basis itself (salaries, negotiated budgets). While there is still risk due to the potential mismatch between the provider contracting period and the pricing period, the ability to negotiate arrangements with providers introduces improved control and predictability. On the other hand, basic utilization management and discounts off normal fees do little to improve the predictability of costs and therefore do little to reduce risk.

The Task Force did not provide managed care credits when providers are at risk for services beyond those that they provide directly. We have viewed them as comparable to an unregulated reinsurer in this regard.

Our approach was to establish the risk associated with traditional health coverages, and then to develop managed care credits to reflect the extent to which managed care arrangements are in place.

Alternate Funding Methods

There are a variety of funding arrangements in use for health insurance. These create unique risks, in that they affect both cash flows and a carrier's ability to reflect cost changes in rates. They also create reporting issues, in that carriers use many different terms and contract provisions to accomplish similar funding arrangements. The Task Force worked to model and establish RBC factors for the most common funding arrangements.

Reinsurance

When a health insurer cedes a portion of the risk it has assumed, it has clearly reduced its need for capital to support risk. However, issues arise due to the risk that the assuming reinsurer may not be able to make good on its risk assumption commitment. Additionally, reinsurance arrangements can be contingent on other actions or results

and thereby limit their true risk transfer. Recognizing this, the formula requires that, before an RBC credit is taken, the reinsurance arrangement reflect true transfer of risk and that the reinsurer have a reasonable likelihood of meeting its risk assumption commitment.

General Regulatory Factors

A company's regulatory environment affects the risks it takes, its response time to a deviation of actual results from expectations, and its management decisions regarding risk-taking. Regulation varies from state to state. States have instituted a variety of solvency and guarantee fund regulations. Federal actions, such as ERISA exemptions, the HMO Act, and Medicare/Medicaid cost shifting, have significantly altered the financial arrangements and risk characteristics of the insured medical market. One of the largest financial disruptions occurred following the release of wage-price controls in the 1970's.

The RBC formula reflects the impact of rate regulation, solvency regulation and other aspects of the environment in which health carriers operate.

Rate Regulation Environment

The Task Force discussed the breadth of regulatory environments and their impact. There are jurisdictions that do not have the authority to approve rates. Other jurisdictions have the ability to review rate filings, hold public hearings and ultimately approve a rate action different than that proposed by the health insurer. The impact of this regulation is to delay or reduce a health insurer's ability to reflect cost changes in premiums. The impact of this is to put a health insurer's surplus at risk to absorb any premium inadequacy that results.

The model reflected this phenomena by assuming delays in determining cost changes and in reflecting those changes in premiums.

Other Coverages

Health benefit coverage includes a wide variety of risks. The most familiar are medical, dental and disability coverages. However there a number of less familiar coverages that are in place. These include long term care, hospital indemnity and cancer policies.

The Task Force grouped these coverages by their risk of cost and utilization variability. For example, coverages with a schedule of benefits will experience a different pattern of financial results than coverages subject to the inflation forces of unscheduled benefits.

Claim Reserves and Liabilities

There is a strong relationship between the adequacy of claim reserves and liabilities and solvency. The Task Force discussed the issue of whether a health insurer with reserves in excess of minimum requirements might reduce RBC. This was not adopted by the Task Force.

No objective measure of reserves' relative adequacy was identified.

There are some health coverages, such as Long-Term Care and Disability Income Coverages, for which claims or premiums are not an adequate measure of the risk assumed for those coverages. These coverages often have claims being paid for long periods of time and beyond the time that premiums are paid. For these coverages, the reserves and liabilities are used in addition to claims or premium to establish a complete measure of the risk assumed by an insurer.

The Task Force did agree that some recognition should be made of companies that obtain a statement of actuarial opinion based on an asset adequacy analysis or that obtain a statement by a member of the American Academy of Actuaries that claim reserves and liabilities are good and sufficient to meet the underlying obligations. The presence of opinions of this type suggest a reduced risk of insolvency that should be recognized.

Rate Stabilization Reserve

Many carriers establish funding arrangements intended to avoid large fluctuations in premium levels by maintaining a special reserve which may be legally claimed by a covered group but is held by the carrier and available to cover fluctuations in claim experience. These funds are usually accounted for separately for each employer group. Since these reserves are held to moderate future rate fluctuations, they serve to stabilize financial results and in that way are analogous to RBC. Therefore, they are considered as an offset to RBC.

This treatment differs from the Life RBC formula in that the credit is limited to the RBC of the policyholder to which the reserve is attached.

Affiliated Companies

The Task Force discussed the issues that result from companies that operate in the health insurance market and are related to other companies that may or may not also operate in the market. The issues include to what extent related companies' assets can be considered to support risks of each company. Also, companies that are affiliat

ed with health insurers but are involved in unregulated businesses create an issue in that their assets are used in the unregulated business and therefore, may not be available to support the health insurance business.

Covariance

The Life and Health Risk Based Capital formula utilizes a covariance adjustment to reflect the fact that many of the risks modeled and reflected in the RBC formula are independent of each other. That is, the probability that all of the risks would have an unfavorable result at the same time is very small. The Life and Health formula based its covariance adjustment on the technical assumption that the probability of ruin mirrored a normal distribution and that the key statistic regarding variability would be the standard deviation. As such, it recognized that the standard deviation of the sum of two independent variables is the square root of the sum of the squares of this standard deviation of each of these independent variables.

The life formula further assumed that the correlation factor between C-4 risk and all other risks was one and the correlation between C-2 risk and C-1 and C-3 risks was zero.

Recognizing the inflation sensitivity of the C-2 risk of certain health products, the task force considered whether these assumptions remained valid for health products. It was determined that insufficient data was available to substantiate any correlation between C-2 and C-1 or C-3 risks. It was perceived that a positive correlation existed between C-2 and C-3 risks and an additional term in the covariance formula recognizing that correlation was contemplated. However, the magnitude of C-3 risk regarding health products is minimal and that additional term would have little influence on the overall result. As such , it was decided to not recommend any changes to the Life formula covariance adjustment at this time.

However, the Task Force recommends continued research regarding both the appropriateness of the normal distribution assumption regarding probabilities of ruin as well as further research regarding any correlation between the various types of risk.

The Task Force also discussed recognizing the less than full correlation of C-2 risks from different product lines in a form similar to the Property and Casualty RBC formula. Again, insufficient research existed to provide a viable adjustment within the time frame constraints of this report. As such, although no specific recommendation is proposed, we would recommend the NAIC continue research regarding the appropriateness of such an adjustment and a similar adjustment regarding potentially independent C-1 risks.

Density Functions

The Task Force examined fluctuations in actual historical experience of carriers for major segments of business to determine the probability of extensive losses in a particular segment. Similarly, the Task Force selected density functions which essentially are a stochastic probability model which closely reflects the distribution of claim experience in a particular business segment. These distributions are formed out of actual experience of one or more carriers. In some cases no carrier information was available. In these situations distributions from relatively similar coverages were used. Basic information was solicited from a variety of health insurers. This information was used to establish the distributions for the various benefits, networks and business segments. These distributions were then used in the financial modeling.

Probability of Ruin

The starting point of the Task Force was the group medical factor from the NAIC Life and Health RBC formula.

The relativities were originally calculated to produce a five percent probability of ruin (over the modeled five year period) under the Task Force model's assumptions. This definition of probability of ruin was not consistent, however, with the definitions of ruin used by the life and property & casualty RBC groups. The capital levels should be set with a probability of ruin in mind.

Target and Action Levels

In developing and later implementing the RBC formula, a great deal of additional testing will be required to establish the Authorized Control Level. This is the level at which a state regulator may take action upon a company. The setting of this level should use the models employed in developing the formula thus far, and determine what is an acceptable probability of financial failure. The levels should also take into account the current capital levels of those providing health coverages, since the industry operates under the free market risk and return constraints of the capital markets.

Beyond the Authorized Control Level, other levels can be established such that they provide ongoing information to regulators and management on the capital levels and, therefore, solvency risks. These levels are in the current Life and Health RBC regulation and are a function of the Authorized Control Level. Management may use a different level as a target against which performance can be measured.

Tax Considerations

Tax laws allow for financial losses to be carried forward and applied as tax credits in years with financial gains. This serves to dampen swings in after-tax financial gains

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and losses. If losses and gains are favorably timed, the probability of financial ruin is lessened. The model underlying the formula assumed a 35% tax rate and allowed for gains to be carried forward three years to bring a tax credit to future negative losses. Losses were allowed to be carried forward indefinitely to reduce taxes on gains.

Items Omitted

In quantifying risk, there are innumerable ways to categorize the business, with varying degrees of overlap in terms of risk assessment. For the purposes of RBC, the risk element should be: (1) representative of an underlying risk characteristic; (2) relatively independent of other elements; (3) material in terms of its relative effect on the total risk measure; (4) capable of being clearly defined and; (5) auditable.

As a result many more "risk measures" were discussed than were actually included in the formula. For example, in the development of medical risk distinctions, the group medical universe can be sliced as new business versus renewal, by group size, by type of financial arrangement, by product, by growth of business, etc. Many of these measures are not currently accounted for by companies internally or in published financial statements and many involve subjective or company specific definitions. Further, the measures overlap and would not be additive. Therefore, the factors representing the apparent best balance were selected by the Task Force.

Practical Aspects of Modeling

Standard actuarial practice used in assessing risk is to develop a model that imitates and projects financial results of an economic system (a product, a company, an industry...). These models are developed by gathering and analyzing past financial results and isolating independent and dependent variables. The models are employed by inputting underlying data and assumptions, the independent variables, and applying statistical formulas to produce the results being assessed.

The Academy RBC model, therefore, represents a simplification of a complex economic system. Simplification occurs in nearly every step of this process. For example, the data represents a summary of a limited period's financial results. Another simplification is that the model can only reflect a finite number of variables in both input and output. These are chosen for their materiality but still clearly represent a simplification.

Thus, it should be understood that the underlying basis for the HORBC formula is a simplification of a complex system. This suggests that many differences can be noted between the model and real life. However, they should be assessed in terms of their materiality to the report's conclusion. Small simplifications and differences are assumed to not impact the conclusions of our report.

There were many issues discussed and decisions made by the Task Force in developing the formula. Often compromises and disagreements were encountered as the group's work progressed. Therefore, the final report represents the work of the Task Force in total. However all members of the Task Force may not agree with all aspects of the report. The Appendix H provides a summary of some of the issues and disagreements surfaced to the Task Force.

In some cases, and where a review of the data confirmed their appropriateness and no further investigation was possible in the time available, the Task Force has recommended factors which may differ from the modeled outcomes. In each case, this report discloses the rationale for the recommended adjustment to the modeled outcome. This is summarized in Technical Appendix A.

IV. Discussion of Issues

An RBC formula is intended to establish a capital level that reflects the risks assumed by the organization promising to provide health coverage. The general risks assumed have been discussed in a variety of papers and proposals. There are several risks that, due to their unique impact on health coverage organizations, have been discussed by the Academy Health Organizations Risk Based Capital Task Force in detail. The discussions are summarized below.

Asset Segregation

A variety of entities may potentially be health coverage organizations in the future reformed health care market. They may include the current health providers, integrated health plans, HMO's, dental plans, Blue Cross & Blue Shield Plans, Life and Health insurers, Property and Casualty insurers, and self-funded employer plans. They may also include companies that have not previously been in the health coverage business, such as hospitals, physicians, and other non-insurance corporations.

Some believe this breadth of insuring organizations creates potential confusion. The confusion concerns what portion of their capital is in place to support the health coverage risk versus what portion is in place to support other businesses. The goal in avoiding confusion is to ensure that capital identified as supporting health coverage is only supporting health coverage and cannot be used to support other businesses.

To meet this goal, some form of asset segregation may be necessary. This might take the form of establishing separate asset accounts within the corporation, or establishing separate corporations, in order to clearly identify the assets that are associated with health coverage business. This segregation may be required when corporate ownership of a health coverage organization is above some percentage of equity, or when a parent company provides guarantees to a health coverage subsidiary.

Many believe that multi-line companies experience a greater spread of risk, and thus get greater protection from the same amount of capital as single line companies of comparable size.

This is discussed in more detail in the section on Parental Agreements and Cross Guarantees.

Cash Flow

Medical health coverage is a fairly short-term coverage. The contract of coverage is made for a year or less and claims are usually paid within a year of their incurral. Thus, cash flow concerns arise out of premium adequacy and expense levels, and not out of long-term payment promises as exist in life and annuity coverages.

The RBC level should include some assessment of cash flow risks that arise out of large expected cash payments in the near future and/or out of the impact of the loss of a large volume of coverage. The latter risk is greatest when a health organization has a significant portion of its revenue from a single group or several large groups and when its expenses are largely fixed. This risk has not been reflected in the current draft, however.

Other coverages, like long-term disability and long-term care are not of short term nature, and the cash flow for those coverages more closely resemble those for life coverages.

Corporate Alliances

In several health care reform proposals, there are provisions for large employers and others to provide coverage on a self-insured basis. Some proposals refer to these as Corporate Alliances. In providing health coverage, these organizations assume the same risks as the health coverage organizations that provide coverage on a prepaid or insured basis. Therefore, they should be subject to the same RBC capital requirements applied to other entities providing health coverage.

The asset and cash flow risks will also be present in a corporate alliances. However, unlike typical health carriers, the corporation's assets have not been accumulated for the purpose of supporting the provision of health coverage. Therefore, the value of the assets and their underlying risk may not be known.

Premium Limitation

Proposals to control health care cost increases may rely on the ability to limit premium increases. Ability to implement such increases might be based on actual or expected average cost increases for a health coverage organization or for a geographic area. A particular organization may have an unique accumulation of insureds and costs. Premium limits that ignore these distinctions create additional risk to the organization. These distinctions must be reflected in an RBC formula.

Currently, some health insurance markets' premiums are subject to prior approval by regulatory authorities. This frequently adds delay to the time to implement needed rate increases. Therefore, premiums may be limited not through explicit limitations, but through regulatory delays in approving or implementing rate changes.

Finally, a variety of rate restrictions are in place throughout the states. These restrictions include limits on rate distinctions for demographics or underwriting characteristics, pooling requirements for policy forms or blocks of business, loss ratio requirements, and rate guarantee requirements. All of these limit a health insurer's ability to re-

flect expected costs, or changes in costs, and, therefore, add to the carrier's risk, which must be reflected in its capital requirements.

Risk is increased if carriers are limited in their ability to raise rates. Carriers can contractually guarantee to limit rate increases (see Rate Guarantees). This has a similar effect as a regulation which limits changes in prices. This increases risk and they should be required to maintain a higher level of capital to cover the increased risk. The RBC level should also reflect the impact of multi-year rate guarantees.

Health Care Delivery Assets

Many HMOs' primary assets are real estate and equipment, which are used in the delivery of care. These assets are part of the health care product sold by the HMO, and are not being held as investments to support future cash payments. Therefore, the level of risk of deterioration of their value is less than assets held as investments.

Current asset valuation rules would not allow health care delivery assets to be admitted. However, recognizing their unique nature, they should be admitted and subject to RBC factors less than those applied to invested assets. After much discussion, it was determined that no change to the current Life and Health RBC formula would be made for this risk.

There is a need to differentiate a situation where assets used to support health care delivery are also used to support cash obligations of a health insurer. An example is where a hospital owns an IPA HMO which contracts with providers on a fee-for-service basis, and, as a parent company, pledges buildings and equipment as assets to the HMO.

Guarantee Funds

The primary risk associated with guarantee funds results from the assessments these funds make against health coverage organizations that continue to provide coverage after another organization defaults on its coverage promise. Since these assessments are unknown at the time premiums for health coverage are set, they represent a risk to be born by organizations providing coverage. Thus, where a guarantee fund is in place, some RBC recognition should be made of the added risk. This added risk is a function of the financial stability and number of health coverage organizations in the market covered by the fund.

An additional risk related to an organization becoming insolvent is that organization's inability to make risk adjustment transfer payments to other organizations. Some health care reform proposals contemplate a level community rate to be charged in the marketplace, with subsequent risk adjustment payments to be made among health coverage organizations based on their relative risk mix. Should an insolvent organiza-

tion not make their payments, other ongoing organizations may find their solvency impacted. This additional risk should be reflected in the RBC level determined for organizations operating in areas with risk adjustment in place.

Parental Agreements and Cross Guarantees

Entities that are in businesses in addition to providing health coverage may provide additional financial scale and diversification and, therefore, may be more financially resilient then entities that only operate in the health coverage business. Where there are legally enforceable and unrestricted guarantees among related regulated entities, RBC should be calculated and evaluated at a consolidated level for the related entities. Where there are no such guarantees, each related entity should stand on its own in the application of RBC standards.

Regardless of the presence of enforceable guarantees, the best reflection of the risk of a parent organization is to accumulate uniquely calculated RBC levels of the subsidiary rather than to treat the subsidiary only as the investment of the parent. In order to remain consistent with the theory of the covariance adjustment, and to avoid potential gaming of the system, the accumulation must be performed by accumulating each individual risk factor, C-1 through C-4, separately for the subsidiaries rather than in total as is prescribed by the NAIC Life and Health RBC formula. Appropriate adjustment should be made to reflect percentage ownership and to eliminate any threshold amount in the component charges which would otherwise be double counted.

Some affiliated entities included in a consolidated RBC calculation will be unregulated. As no full RBC formula exists for all such entities, they should be treated as investments through the asset risk portion of RBC for the parent.

Other Considerations

Additional factors have intentionally not been discussed here since earlier papers and formula have covered them. They were considered in the formula development. They include:

> Deterioration of Invested Asset Value
> Collectability of Receivables
> Inadequate Pricing
> Ability to Change Prices
> Unmatched Cash Flows In and Out
> General Business Uncertainties

V. Description of the Models and Data

A two phase model was employed to develop the health organizations RBC formula. One phase (referred to as the statistical model) depicted the statistical variability of health claims for portfolios of policies. The other phase (referred to as the financial model) depicted the variability of financial results associated with a health coverage organization. The statistical model is universal for all similar health coverages, in that it represents the underlying claim variability assumed by any organization. The financial results model builds off of the statistical model and represents all of the other factors that health coverage organization experiences and manages.

The confidential data received by the Academy was screened by Academy staff to remove all identifying information. The staff also compiled the data into summaries before distributing them to the members of the Task Force. The Task Force members working with the data agreed to keep the summary information received confidential and signed a document stating so. Additionally, the Task Force members agreed to use the data solely for the purposes of developing a Health Organization RBC formula.

Overview

The purpose of this model is to simulate the financial results of a block of business over a five year period. Currently, its principal use is in evaluating the probability of ruin of a portfolio of insurance over that five year time period given a surplus target. In other words, the model calculates the probability that the cumulative losses over that five year period, net of intermediate gains, will exceed the initial target surplus. The portfolio being modeled could be medical expense, dental, medicare supplement, long term care, disability income, accident-only coverage, disability income, or even life insurance.

The basic concept of the model is that the key variable that affects the probability of ruin is the difference between actual morbidity costs and expected morbidity costs. Increases in morbidity above expectations will lead to losses (if in excess of margins), that may lead to ruin.

Differences between actual and expected morbidity costs are assumed to vary reflecting two risks. The first is the purely random variation present in an insurance portfolio. This is called the statistical variance. The second is the sum of many risks that represent the difference between the variation that can be explained by the statistical (random) risk and the variation observed by examining historical data of many companies. This is called the historical variance, and is assumed to accumulate from year to year. Observed fluctuations in financial results are a function of these two items.

The model assumes that management will respond to unexpected changes in morbidity by improving the relationship between morbidity costs and premium levels and, per-

haps, by varying the target profit level. When costs go up, premiums will follow and vice-versa if the user has defined "phase-in factors" greater than zero. In addition, when costs go up, profit targets may go up to reflect the need to rebuild surplus. The target loss ratio will also go down to reflect this need. Premium adjustments are made in response to the unexpected change in costs observed by the company, and are phased in over time. Changes to the target profit level are determined based on the surplus level or accumulated historical variance at the end of the prior year.

The financial model itself assumes that, if the accumulated historical variance and statistical variance in a given year are equal to zero, the net gain would be equal to the profit target times premium. To the extent morbidity is higher than expectations, profits are reduced. If premiums increase in response to morbidity, or if costs have been reduced, profits will be increased.

Due to the large volume of material, the underlying detailed source data, portfolio distributions and historical variance distributions, and the detailed model results are being retained by the American Academy of Actuaries in their Washington, D.C. office.

Block of Business

The block of business that is simulated is assumed to represent a stationary population. This means that as old business lapses, new business is written, and the characteristics of the inforce remains steady over time. The stationary characteristics of the block, e.g., distribution by age, benefit level, etc., is based on input assumptions.

For coverages subject to trend, the stationary population assumption also implies a trend of zero. This was deemed appropriate by the Task Force, in that it could equivalently represent a non-zero trend, but where the size of the block was scaled down in future years to obtain a constant level of premium. This meets our objective of modeling the probability of ruin of a fixed premium level.

Financial Model

The financial model links accumulated surplus at one year end to that at the next year end by means of the net gain after dividends. This net gain is a function of the profit target, the premium level, the company's morbidity level relative to expectations, and its dividend level. All of these items are stated as a percentage of premium.

The pre-dividend net gain starts with the profit target. If the premium level matches the original assumptions and there is no accumulated uncorrected historical variance or statistical variance, the net gain will equal the profit target times the premium. As morbidity costs rise, profit will decline. As the premium level goes up in response to a

morbidity increase, profits will rebound. The formula for the pre-dividend net gain is profit target plus increase in premium level less accumulated uncorrected historical variance or statistical variance.

The profit target can vary according to performance of the line in one of two ways, as a function of the ratio of accumulated surplus to target surplus or as a function of accumulated historical variance. In either case, the profit target is obtained by looking up the appropriate value in a table of factors.

The premium level is adjusted by means of a set of phase-in factors. The model assumes management makes responses to unexpected changes in morbidity that are a function of the observed. This response could be either an increase in premium or a reduction in costs. However, management cannot make these changes instantly due to the time needed to recognize and analyze the changes, and due to regulatory, contractual, or administrative concerns. The phase-in factors reflect how rapidly changes in experience can be made to the relationship between claims and premiums.

The dividend amount is equal to the excess of accumulated surplus over a specified percentage of target surplus.

Morbidity Model

Morbidity results are simulated by means of two different random variables: statistical variation and historical variation. Statistical variation is a random variable that represents the degree to which claims experience in a given year differ from the expected. Historical variance consists of all the other factors that make variation in financial results greater than just the statistical variation. It is important to note that these variables represent differences between actual and expected results.

Statistical variance is the result of the random process itself. In any year, the members of the portfolio may or may not need health benefits. Or, if they do, the cost of that health care may vary. Statistical variance measures the result of these random processes. Statistical variance does not measure the degree to which the costs of health care vary from the expected in general, but only the degree to which they vary for the risk assuming entity. (For example, in the case of a capitation agreement, there would be no statistical variance.)

Historical variance is a measure of the variation in results that can be measured but is not due to the random process. For most lines, the observed variation in results is greater than what can be explained by statistical variation alone. The remainder is due to changes within the industry or the company. The industry changes occur regardless of the company's actions and will affect all companies. Additional variation is

introduced by company actions. These company actions are sometimes deliberate (e.g., reserve strengthening) and sometimes not. Historical variance is intended to measure fluctuations that were not deliberately caused by management.

Historical variance is represented by means of a variance from the mean. The key variable, therefore, is the amount of change in morbidity that was not the result of deliberate action.

The total morbidity miss, called observed trend movement, drives premium increases. This variable is a function of both the statistical and historical variance. It is, in effect, the change in morbidity, relative to expectations, that the company sees.

The model was repeated at least 5,000 times for each cell that we assessed.

The model results were normalized to duplicate the corresponding underlying historical variance. This was done through iterative running of the model using different premium phase in factors. (The approach was taken to remove any double counting of the impact of premium phase-in, since the historical variances already reflect this phenomena.)

The same basic model was used for all health products. Inputs of data and assumptions were representative and unique for the various health products. The Task Force felt using the same model is essential to the formula development, in that it is the only means to ensure that the measure of the probability of financial ruin is consistent across all health products subject to the RBC regulation.

The percentage of such iterations where the block of insurance became insolvent represents the probability of ruin under the model.

These probabilities of ruin for the various cells were compared to determine the relative RBC factors in the formula. The actual factors in the formula were based on these probabilities and the levels of surplus to which they were related.

Data

Historical claim distributions and loss ratio histories were requested from health carriers for the health product lines. Many carriers submitted data. The data was assessed for appropriateness and reasonableness. Companies were requested to remove aberrations in their experience for reserve method changes and similar management-created impacts on experience.

The historical variance distributions have been adjusted to scale out the statistical fluctuation resulting from smaller company data being included. As a result, the tails of the distributions are much smaller in most cases.

We believe it is appropriate to remove the statistical fluctuation from the historical variance. We used existing information by size from the historical variance distribution to do this. We have made further adjustments based on the evaluation of possible aberrations in the data developed from the questions we asked the suppliers of data. This included elimination of underlying industry trends from accidental death, Medicare supplement, disability income, long term care, hospital income, and cancer policies.

Quality Control

A number of checks, reviews and certifications were a part of the data and modeling processes. Data submitted by companies was certified by those companies as completed and submitted in accordance with the requests of the Task Force. Data manipulations made by the Task Force were independently cross checked. Similarly, modifications or decisions as to the inclusion of the data were reviewed and approved by members of the American Academy of Actuaries State Health Committee.

In the modeling process, calculations were checked at each step of the modeling procedure such as data and assumption input, data manipulations, and actual output of the model. This material and the calculations were then forwarded to another task force member for an independent check. Detailed description of the checking and review process can be found in the Instructions to Modelers included in the Technical Appendices.

VI. Formula Testing and Future Tasks

Testing

The formula will be tested by applying it to actual health insurers' books of business. In particular, the formula will be applied to companies with a variety of corporate structures and financial positions. The formula will also be applied to historical information from companies that have failed to see if it would have been useful in warning of the failure. This will help assess the reasonableness and adequacy of the formula. It will also help the NAIC in their determination of an appropriate RBC level for regulatory action.

Data is being gathered now and will continue throughout this process. The information will be used to test and validate the formula.

Tasks

The Task Force feels that risk based capital formulas should always be subject to review and improvement. The following are some items that we identified requiring further effort.

- The accounting treatment of assets used in the delivery of health care may need further study. In particular, the admission of these assets on statutory financial statements and the C-1 risk factor to be applied to them. Additionally, the underlying HMO accounting standards that result in different accounting treatments for similar assets across various health plan organizations.

- Simplification and aggregation of the formula will be considered as the formula is subject to public exposure and comment.

- Many laws and regulations are specific to type of carrier. This creates an uneven treatment of a number of aspects of the health coverage such as ability to adjust rates, valuation practices, and surplus accumulation. For HORBC to have an equitable effect on all health plans, other regulations should be adjusted to establish consistent regulatory for each health product regardless of the company providing the coverage.

- As long term care business matures and further experience becomes available, it may be worthwhile to reconsider the formula basis for long term care and express the C-2 factor as a combination of the premium and active life reserves rather than just premium.

- Additional comparison to the Life and Health RBC formula, via modeling life coverages with the health RBC model, will allow for the relative probabilities of ruin of that formula to be compared to those represented by the model. The complement to this test, modeling health coverages with the models used in developing the life formulas, is being pursued.

VII. Structure of Modifications of Life RBC Formula for Health Organizations

The Modifications in Section VIII are generally shown on a relative basis. The factors in the formula are amounts intended to show the relative risks associated with the various coverages. To establish RBC amounts, the Relative Values, RV, must be replaced by a factor. The level of this factor will establish the risk of ruin that the RBC factors recognize.

Ultimately, the NAIC must establish the factor to replace the RV. Considerations in establishing this factor include the risk of ruin that the NAIC would deem to be acceptable. This acceptance should reflect a balance between the amount of capital a company can attract and set aside and the desire to minimize the probability of company insolvency. Additional considerations include consistency with other RBC formulas.

VIII. Modifications of Life Risk Based Capital Formula
for Health Organizations

Risk based capital is calculated as in the Life RBC formula. The following are changes to be made to that formula. The changes are discussed as they relate to C-2 risk and C-4 risk, and some changes to the basis of reporting are suggested.

I. C-2 Calculations for A&H Morbidity

All premium values are direct earned premiums or earned subscriber revenue. Likewise, all incurred claims and cost of care provided figures are direct, before reinsurance. An index adjustment I is defined as: (CPI-M for July 1 of the year under discussion) divided by (CPI-M for July 1, 1994). "RV" in this formula represents relative value units, as described in Section VII of this report.

A. Medical Coverage

1. Risk Factor

   This section is intended to encompass all medical coverages not otherwise addressed in this formula. This includes medical coverage with deductibles up to $2,500. Coverages with higher deductibles are covered under stop-loss, if such deductibles form a substantial portion of the block of business. For individual coverage, "substantial" means that the ratio of premium for coverage with deductibles over $2,500 to premium for all individual medical coverage exceed 15%. For other than individual, any premium is considered substantial.

   > C-2 Risk Factor: C x I + (1.00 minus Total Managed Care Credit Factor, if any x RV) x (Incurred Claims or Cost of Medical Care Incurred), but not less than $500,000 x I,

   > Where C is the smaller of ($1.5 million) or (2 times the maximum retained risk after reinsurance on any single life.)

2. Managed Care Credit

   Payments made under managed care arrangements which meet the following definitions are subject to a C-2 credit. Credit can be made under only one category for each dollar of payment. If payments are eligible for more than one category of managed care credit, the carrier may choose which category to use for the calculation. Payments should be split according to the category in which they fall in the following table.

"Factor credits" (column f) in the following table are to be applied to the corresponding "$$ paid" (column e) by category of care.

	Category of Managed Care	$$ Paid	Factor Credit	Pro-duct
	(a)	(e)	(f)	(g)
1	Payments made at levels set by contractual agreements, as fixed fees per service, per inpatient day, or per episode of care, if not included in other categories.		15%	
2	Where withholds or bonuses have been paid, the lesser of (25%) or (5.56 RV times the prior year's total paid withholds and bonuses divided by the value in 2(e)).		0 to 25%[1]	
3	Capitation payments made to entities directly providing medical care, for care directly provided. Excludes capitations where retroactive adjustments in excess of 5% can be made to such capitations as a result of specific performance targets other than total corporate financial results of the health plan. Excludes capitations paid to an organization where any payments are made by that organization to another corporate entity for provision of care, unless such payments can be explicitly identified, in which case they should be used to reduce the credit otherwise allowed in this item. If such payments are demonstrably less than 5% of the total capitation payments, the full credit can be taken.		40%	
4	Non-contingent salaries or aggregate cost[2] payments, when paid directly to persons licensed to provide medical care. [3] Also, the portion of payments made to entities which is passed on to medical care personnel directly providing care, where all payments are non-contingent salaries.		50%	
5	None of the above. (Remaining claims not included in one of the categories above.)		0%	
6	Total		/////////	
7	Total Managed Care Credit: 6(g) divided by 6(e). (Apply to the underlying coverage C-2 RBC amount.)	///////		///////

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[1] A factor determined by the formula described in column (a).

[2] The "Aggregate Cost" method of reimbursement means where a health plan has a reimbursement plan with a corporate entity that directly provides care, where (1) the health plan is contractually required to pay the total operating costs of the corporate entity, less any income to the entity from other users of services, and (2) there are mutual unlimited guarantees of solvency between the entity and the health plan, which put their respective capital and surplus at risk in guaranteeing each other. The aggregate costs to be put in this chart equal the payments of the last year, less the largest deviation of actual cost from budgeted in the last five years.

[3] This item will include salaries paid to doctors and nurses whose sole corporate function is utilization review.

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[DRAFTING NOTE: The types of managed care in the table are generalizations of the many managed care arrangements which are possible. Any combination of facility, professional, drug, or other medical delivery component might be contracted for on any combination of a scheduled, capitated, salaried, or other basis. This complex and changing environment creates a challenge in establishing the managed care types for both creating an RBC formula and for a health plan completing an RBC calculation.]

B. Alternative Funding Methods

For calculations in B.1. and B.3., the managed care credit calculation under I.A.2. should be used. When applied to premium equivalents, self-insured claims should be included.

1. Direct Specific Stop-Loss for Medical Coverages

   This will include medical coverage with deductibles of $2,501 or more. Risk based capital is calculated as actual premium under these arrangements, times the following factors:

Attachment Point	Factor for Coverage with Hospital Benefits	Factor for Coverage without Hospital Benefits
Less than $100,000	1.67 RV	1.11 RV
Over $100,000	2.78 RV	1.85 RV

   The hospital factor is to be used whenever the stop-loss coverage includes coverage of hospital inpatient stays. For other coverages than those including hospital, the factor is the average of the hospital factor and 1.00 RV.

2. Direct Specific Stop-Loss for Coverages Other Than Medical Coverages

   Risk based capital is calculated as actual premium under these arrangements, multiplied by the following factors. The attachment point is expressed as a multiple of the average expected claims per member:

Attachment Point	Factor
Up to and including 10.00	1.11 RV
Over 10.00	1.85 RV

This section includes disability income and long-term care with elimination periods of greater than or equal to two years, except that Section H applies to claim reserves established for such policies.

3. Aggregate Stop-Loss and Minimum Premium

Except where noted, the C-2 element for such arrangements is calculated as actual premium or premium equivalents under these arrangements, times the following factors. For attachment points based on 12 months' accumulation of claims, the attachment point is expressed as a multiple of the total expected claims (net of expected stop-loss claims) per case.

If the company issues coverage with a variety of attachment points, the premium in each category should be separately calculated and applied to the factors. If the attachment point applies to periods greater than 12 months, the factor should be multiplied by the ratio of the number of months to 12. These factors assume specific stop-loss is sold in conjunction with aggregate stop-loss. When specific stop-loss is not sold, then the over $100,000 attachment point factors should be used.

Attachment Point	Factor for Groups with the Following Number of Employees:		
	< 50	From 50 to 1,000	>1,000
Up to 1.1	.85 RV	.85 RV	.85 RV
1.1 to 1.2	.85 RV	1.15 x direct specific stop-loss factors	1.05 x direct specific stop-loss factors
> 1.2	.85 RV	1.10 x direct specific stop-loss factors	1.00 x direct specific stop-loss factors

4. Administrative Service Contracts and Cost Plus Contracts

    The RBC factor for these types of coverages is .056 RV of the premium
    and premium equivalents, including self-insured claims.

*[DRAFTING NOTE: To provide a level playing field between licensed insurers
and third party administrators, it may be appropriate to adopt a comparable risk
based capital standard for such administrators.]*

5. Minimum Capital

    For coverages under B.1., B.2., and B.3., the calculation of C-2 charges are
    subject to a minimum of: the smaller of (1.5 million) or (2 times the
    maximum retained risk after reinsurance on any single life.) This only
    applies to business for which a minimum has not already been applied
    under Section I.A.1.

C. Adjustment for Environmental Factors

1. Health Alliance or Other Assessments

    The RBC factor for this element of risk is equal to (the highest percentage
    assessment in the prior three years as a percentage of premium, not
    including Guaranty Fund Assessments) minus (the lowest such percentage
    in the last three years) multiplied by premium equivalents. To the extent
    three years' experience is not available, the factor shall be set by the
    Commissioner.

2. Valuation Variations

    C-2 risk based capital from health insurance is multiplied by 1.20 if the
    company's annual statement does not include a statement of actuarial
    opinion that the company's premium, policy, and claim reserves and
    liabilities are reasonable, and that they include appropriate provision for all
    actuarial items that ought to be established.

*[DRAFTING NOTE: The Task Force believes that with current state regulation
of health insurance reserves, the possibility of inadequate but legal reserves
could be a significant risk. Therefore, a Section 7 opinion (of the NAIC model
valuation regulations) is not as comforting as the above opinions would be. It is
intended that a Section 8 opinion would be one way to meet the above
standard.]*

[DRAFTING NOTE: The Task Force believes that community rate laws and their parallel risk adjustment mechanisms can be a significant risk, particularly within the first few years of introduction. The level of such risk depends on the specific characteristics of the applicable mechanism and cannot be generalized enough to be in this formula.]

D. Other Health Coverages

Other health insurance coverages are subject to the following risk based capital levels. Factors, unless otherwise noted, are to be multiplied by the incurred claims for that coverage. Where factors are scaled by number of lives covered, premiums or claims should be allocated as an overall average amount per life.

[DRAFTING NOTE: The number of lives, this may be a difficult number to obtain directly. It is expected that reasonable estimates may be necessary.]

1. Dental Insurance

   a. $125 thousand x 1 + .78 RV x (incurred claims or cost of dental care incurred.)

   b. Managed Care Credit:
      The managed care credit calculation under I.A.2. should be applied to the RV factor above, but not to the flat amount.

2. Medicare Supplement:

   .855 RV for coverage of the first 5,000 lives; .684 RV for coverage of lives in excess of 5,000.

3. Disability Income and Long-Term Care with Elimination Periods Less Than Two Years.

   a. Coverage with a Maximum Benefit Period in Excess of Two Years:
      25% of earned premium on the first 25,000 lives, plus 10% of earned premium on the excess, subject to the minimum in d.

   b. Coverage with a Maximum Benefit Period of Two Years or Less:
      75% of a. above, subject to the minimum in d.

   c. When organizations have coverages of the type described in both a. and b. above, formula a. may optionally be used for both coverages, treating the coverage in b. as though it were coverage in a.

d. Minimum Level:

The application of formulae a. through c. above, is subject to a minimum RBC factor equal to three times the maximum benefit amount exposed per life, being the largest monthly income or benefit amount retained per life insured, net of reinsurance, multiplied by the longest benefit period in force, not to exceed 100 months.

This minimum level should be applied separately for long-term care and disability income coverages.

[DRAFTING NOTE: The Task Force applied substantial judgement in developing these factors and the claim reserve factors, which involved deviation from the raw modeling results. This reflected that we were not completely comfortable with the level of reduction which would be indicated by our modeling. The above factors were chosen relative to the absolute level of the current standards, rather than the level relative to other coverages. For this reason, we believe it is important that the results not be subject to the same scaling factor as other coverages, and are therefore not expressed as relative values.]

4. Accidental Death Coverage:

C + (.56 RV x earned premium on the first $6 million of premium) + (.11 RV x earned premium in excess of $6 million).

Where C is the smaller of ($300,000) or (3 times the maximum retained risk after reinsurance on any single life.)

This excludes FEGLI and SEGLI coverages.

5. Accident Only Coverage, Other Than Accidental Death:

.5 RV x earned premium.

6. Credit Disability Income:

1.26 RV x earned premium. For single premium credit disability, where unearned premium reserves exceed 50% of earned premium, a credit of .05 RV of such excess divided by total earned premium can be applied to reduce the factor otherwise applicable, to a limit where the net factor is not less than .8 RV.

[DRAFTING NOTE: The method of computing unearned premium reserves for single premium credit insurance is based on gross premiums. This reserve methodology results in a substantial overstatement of the liability for claims. This overstatement also represents a substantial margin for absorption of claim

fluctuations. Accordingly, the C-2 factor should be and has been adjusted by reducing the C-2 percent of premium factor by a percent of the excess unearned premium reserve. While a similar overstatement of unearned premiums exists for certain other health coverages, the magnitude is not nearly as significant as it is for single premium credit disability.]

7. Cancer and Other Specified Disease Coverages:

    1.65 RV on the first 5,000 lives, .78 RV on the excess.

8. Hospital and Intensive Care Indemnity:

    1.20 RV on the first 5,000 lives, .78 RV on the excess.

9. Other Health Coverages:

    For coverages where claims are subject to inflationary trends: 1.5 RV; For coverages where claims are not subject to inflationary trends: 1.25 RV.

[DRAFTING NOTE: The "subject to inflationary trends" language is intended to be consistent with the Life RBC formula. However, it is subject to substantial interpretation. Therefore, as products emerge as material to RBC, the Task Force believes the best regulatory approach is treat them explicitly in the formula as separate categories.]

E. Adjustment for Limits on Premium Movement

1. Rate Approval Adjustment

    This section does not apply to accident only, hospital indemnity, cancer, disability income, long-term care, Medicare supplement, and non-inflationary other coverages.

    The risk based capital corresponding to business where the premium rate level is subject to prior approval by regulatory authorities is to be multiplied by a factor of:

    1.25 where filed premiums include approved trend adjustments applicable for at least 18 months from the first effective date of the filing, and

    1.5 otherwise.

[DRAFTING NOTE: The Rate Approval Adjustment reflects the longer time frame needed to implement rate actions implicit in "prior approval" and public hearing situations. The Task Force understands this may be a controversial adjustment for the NAIC, but the Task Force also believes this to be an important and valid risk factor.

If this element is removed, further thoughts should be given to reflect that this factor includes most of the difference in risk between individual and group coverages.

The Task Force also felt that an adjustment for the risk of ill-defined "premium caps" discussed under various reform proposals might be appropriate, depending on the political environment as health care reform unfolds. However, more definition must take place before the risk can be modeled or evaluated.

The Task Force intends that Medicare risk contracts and coverage of Medicaid enrollees are coverages to be subject to the above rate approval adjustment, since most such rates require approval of state or federal authorities, even though perhaps not the Commissioner.]

2. Premium Guarantees

    a) The risk based capital corresponding to medical, dental, Medicare supplement, and other inflationary coverages where there are either (1) explicit or implicit premium rate guarantees or (2) premium rates implemented on policy anniversaries rather than premium due dates, are subject to the following factors applied to the C-2 RBC calculated above:

Policy Anniversaries:	Multiply by 1.00
Guarantees of 7-15 months:	Multiply by 1.00
Guarantees of 16-27 months:	Multiply by 1.25
Guarantees of 28-36 months:	Multiply by 1.67
Guarantees over 36 months:	1.67 plus .42 per full or partial multiple of 12 months

    b) For non-cancelable, non-medical coverage (with guaranteed premium levels): Multiply the C-2 RBC calculated above by 1.10.

3. Performance Guarantees

Where such guarantees exist outside of an insurance contract, there is an additional RBC factor of 30% of the amount at risk under the contract in the current contract year.

F. Reinsurance Credit

A credit is allowed for certain types of reinsurance.

1. Quota Share or Proportional Reinsurance

    The reinsurance credit is the percentage of risk reinsured multiplied by the C-2 RBC calculated above. This is subject to:

    a. For coinsurance of excess indemnity, where the reinsurance percentage varies for different policies depending on the amounts of insurance in force for those policies, the percentage of risk reinsured is the total reinsured amount divided by the total direct amount.

    b. The percentage of risk reinsured is applied after adjustments for managed care credits, rate approval and premium guarantees.

    c. Reinsurance credits under this section apply to percentage factors only, and not to flat amounts.

2. Non-Proportional Reinsurance

    This section will not apply to medical coverages. A reinsurance credit is determined as follows:

    a. For reinsurance of excess dollars per life of non-indemnity products (i.e., products where the size of the claim will depend on the size of the loss, and there is not a specified payment amount or amount of insurance in force): The credit is the RBC factors from B.1. and B.2. of this formula, multiplied by reinsurance premiums.

    b. For extended elimination period reinsurance, where indemnity products are reinsured after a specified number of payments or period of time: When reinsurance is a percentage after an extended elimination period, the reinsurance credit should be RBC calculated from Section D.3. for the reinsured portion of the benefit.

    c. For reinsurance of excess dollars per life on indemnity products: This is treated the same as extended elimination period reinsurance. For each block of policies so reinsured, the average extended elimination period is calculated by dividing the dollar limit by the average monthly indemnity.

d. For reinsurance of a block of policies on an "excess loss ratio" or "excess dollars per member," or other basis not specifically described in this section: A credit as approved by the Commissioner of Insurance of the state of domicile.

e. All credits in this section are subject to the same managed care, rate approval, and rate guarantee adjustments as are used in the direct calculation.

3. Qualifications for Credit

a. Reinsurance credits can be taken only where:

(1) the reinsurance arrangement meets the NAIC definition of reinsurance,

(2) there are no contractual limits, or terms, to diminish the losses of the reinsurer. If such limits to the reinsurer's losses do exist, any credit must be approved by the Commissioner of the direct writer's state of domicile, and

(3) the contract is renewable by the direct writer to the end of the underlying period of coverage on policies being reinsured.

b. Such credit can only be taken with respect to reinsurance premiums paid to an admitted reinsurer whose capital is greater than 200% of the Authorized Control Level RBC for that reinsurer. In determining the capital, a letter of credit in the same form as required for liabilities, or other instruments approved by the Commissioner of the state of domicile, is acceptable in lieu of the minimum capital level for this purpose. Such instrument should be for an amount equal to the lesser of (1) the amount needed to achieve 200% of ACL, and (2) the amount of RBC credit being claimed.

[DRAFTING NOTE: This paragraph is intended to restrict credits for reinsurance to only those arrangements that cede risk to reinsurers who, by virtue of their RBC level, appear to have the financial strength to assume that risk.]

G. *Application of Size Scales*

Coverages with a flat dollar minimum should have total C-2 risk reduced by 75% of the sum of all but the highest minimum.

H. Claim Reserves and Liabilities

For all disability income coverages, including credit disability and long-term care coverages, the exhibit 9 and exhibit 11 claim reserves and liabilities are subject to a factor of 10% of claims reserves on the first 300 disabled lives and 4% of on the excess.

[DRAFTING NOTE: For companies which do not regularly count the number of open claims, the number of monthly claim payments in December of the calculation year can be substituted. As noted in the drafting note to the Disability Income and Long-Term Care with Elimination Periods Less Than Two Years, these factors were chosen relative to the absolute level of the current standards, rather than the level relative to other coverages. For this reason, we believe it is important that the results not be subject to the same scaling factor as other coverages, and are therefore not expressed as relative values.]

I. Credit for Rate Stabilization Reserves[4], Retrospective Premiums and Dividends

Where a rate stabilization reserve is available for use by a health organization to cover losses from any policy in any line of business, a credit of 100% of the reserve can be taken.

Where a rate stabilization reserve is held for the benefit of a specific policy or group of policies, a credit of 100% of the reserve can be taken, but does not have to be taken, up to (1) the full amount of C-2 risk based capital attributed to that group of policies, less (2) P% of premium. (For this purpose, risk based capital attributed is calculated by calculating the total C-2 risk based capital with and without such policies, and taking their difference.)

Where the policyholder is an agency of the federal government, where that agency holds a rate stabilization reserve, and where there is contractual language which puts such a reserve totally at risk to pay for premium shortfalls, such reserve will be treated as though the insurer were holding the reserve.

[DRAFTING NOTE: The Task Force suggests that if the rate stabilization reserve credit is greater than some minimum level of materiality, an actuarial opinion be filed with the annual statement stating that the calculation has been

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[4]Rate stabilization reserves, for this purpose, include amounts which: (1) appear on the company's liability page, (2) are available for use by the company to offset unexpected losses and are not required to cover anticipated losses, and (3) are not required to be held in order to satisfy other statutory obligations such as a valuation law. They do not include reserves held for retired lives and gross premium valuation reserves.

done correctly. This is suggested so as to avoid requiring disclosure of proprietary information.]

Where (1) a contract exists requiring the policyholder to pay additional premiums to cover losses under an experience rated contract, and (2) the prospective premium for each policy (before application of the additional premiums) has been certified by a Member of the American Academy of Actuaries to be self-supporting, then a credit equal to the additional premium may be taken up to:

(1) the full amount of the C-2 risk based capital attributed to that policy, less

(2) P% of premium, with a minimum of 1%, if the amount of the retro is not secured by a letter of credit or funds on deposit with the health organization.

Where such a contract exists but prospective premiums are not self-supporting, then the contract should be treated as aggregate stop-loss coverage.

Dividends paid to policyholders are treated similarly to retrospective premiums with a credit equal to dividends paid up to (1) the full amount of C-2 risk based capital attributed to that group of policies, less (2) P% of premium. (For this purpose, risk based capital attributed is calculated by calculating the total C-2 risk based capital with and without such policies, and taking their difference.)

For purposes of this section, the value of P for "P% of premium" is (500+n)/n x .5, where n is the number of insured lives under a policy.

Credits for the RBC with respect to a particular policy can be eligible for only one of the adjustments described in this section.

J. Reinsurance Assumed

Assumed RBC amount is equal to ceding carrier's RBC credit.

Reinsurance assumed business will be included in the determination of the minimum.

II. C-4 Calculations

A. Adjustment for Increased Risk

The C-4 risk based capital for this element is 50% of the growth in C-2 risk based capital from the prior year in excess of 20%.

This calculation should be made separately with respect to each category of premium for which a unique set of factors and categories applies in this formula.

B. Guarantee Fund Assessment Risk

To the extent there are potential assessments by a guarantee fund, the corresponding risk based capital is a function of the capital levels of other health plans in the service or license area. The risk based capital from this source is the product of (1) the total capital shortfall in the state (i.e., the dollar amount by which insurers aren't meeting 200% of the Authorized Control Level), divided by the total health premium in the state, multiplied by (2) the company's health premium. In calculating the shortfall, only the proportion which would be assessable to health insurers should be counted.

To the extent the assessments are offset by premium taxes in the state, this risk factor should be offset.

[DRAFTING NOTE: The Life and Casualty Risk Based Capital formulas do not currently recognize this risk. It may be appropriate for those coverages, as well as health. Note also that this risk factor assumes that Commissioner's office will provide a value each year for use in this formula, based on the relative financial health of the insurers operating in that jurisdiction. This calculation could be done as follows:

Each geographic jurisdiction must establish a risk factor that reflects the relative solvency risk of the competitors in that area. The factor represents the capital shortfall of all competitors in the area. It will be determined as follows:

THP = total health premium for the area
TP = total premium for an area
TC = total capital for all competitors in the area
AC = total authorized control capital levels for all competitors in the area

The greater of {(THP/TP) x (2AC-TC)]/THP} or 0]

III. Modification to Basis of Reporting

A. Guarantees from Affiliated Companies

Where the contracts providing such guarantees made by other regulated insurance carriers or health plans, where the company has an unencumbered call on the assets of such other entities in the case of imminent insolvency, reporting for risk-based capital purposes can be made on a consolidated basis including all such carriers, at the insurer's option.

In other cases, recognition in this formula of such guarantees shall be made on a case-by-case basis, and only with the approval of the Commissioner in the state of domicile.

[DRAFTING NOTE: The Task Force's reasoning behind this section of the formula stemmed from the full guarantees extended between HMOs that are part of other organizations. The Task Force felt that some recognition of these guarantees was warranted. This is an attempt to address current practices but is not necessarily intended to encourage new affiliate guarantees.]

B. Investments in Subsidiary Health Carriers

The RBC for subsidiary health carriers should be accumulated into the parental entity through separately accumulating the C-1, C-2, C-3, and C-4 risks prior to the application of the covariance formula. Appropriate adjustments should be made to reflect percentage ownership and to eliminate any threshold amounts in the component charges which would otherwise be double-counted. After combining the risks of the parental entity and subsidiary entities, the covariance formula should then be applied.

In those cases where accounting practices would require the reporting of premium equivalents for the same business in both a subsidiary and parent company, adjustments should be made to ensure that the corresponding RBC amounts should be held only in the company which is directly providing the insurance guarantee or services.

APPENDIX A

Instructions for Modeling-- for the Report.

Here is the set of instructions I used, as corrected by Gary Hickman, but not including Regina's instructions. (The additional instructions are in Appendix D.)

1. Checking Formalities

    a. Each stage of the calculations should be checked.

    b. Each modeler is assigned a checker.

    c. Certain checking which is described herein as "should be checked by checkers" was assigned to specified people, for specified coverages, during our meeting. *It is still the responsibility of the assigned checkers to verify that all checking has been done by someone other than the modeler doing the original work.*

2. Initial Data

    a. The premium and claims data from each company should be accompanied by a certification from the company actuary attesting to its completeness and accuracy. (Mailing and verification of this will be handled by Christine.)

    b. The deletion or adjustment of any data must be approved by the D&A subcommittee chair, after written justification (which can be used for documentation) is provided.

    c. Each company's data should be entered into spreadsheets and loss ratios should be calculated from the data. These loss ratios should include changes in additional reserves and tabular interest adjustments, according to the request for data. This should be checked by assigned checkers.

    d. For the coverage categories outlined in the meeting, all company data for each calendar year is combined, and a coverage-specific trend line is fit to it according to the methodology devised by the subgroup, which will be documented within a few days and approved by the D&A subcommittee.

    e. Each company's loss ratios are adjusted to remove the industry-wide trend identified in d, according to separate instructions. This should be checked by assigned checkers.

f. Adjusted loss ratios are combined to a single distribution as follows:

   i. Each company's unweighted average loss ratio is calculated, and each data point is calculated by taking the loss ratio data point, dividing by the average loss ratio, and subtracting one. For example, if the unweighted average loss ratio is 50%, and the adjusted data point loss ratio is 60%, the final data point for the distribution is (60%/50% - 1)=+20%.

   ii. The collection of such numbers represents the distribution of deviations. Call this distribution D1. This distribution should have a mean of zero.

g. This entire section should be checked by assigned checkers.

3. Assumptions

a. Assumptions chosen for each cell must be documented and approved by the D&A committee, which will prepare a blank for that purpose. I suggest that if the assumptions are to be understood by the D&A committee, some explanation or reasoning would be in order-- perhaps a memorandum describing the source of them could accompany the form. This is particularly important with respect to profit targets and phase-in factors. Also: Please number your cells, following your initials. For example: Dave Libbey's cells should be numbered DL1, DL2, and so forth. A brief description of each would be worthwhile-- and help in understanding the mapping.

b. We will assume a mature, stable block. This assumption especially holds in the choice of portfolio size for section 4's phase-in factors.

c. Target Profits for every cell will vary by: 100% of baseline for surplus >=90% of target, 125% of baseline if between 70% and 90% of baseline, and 150% of baseline if <70% of target.

d. All runs will have a reset of surplus at year 3.

4. Removing Statistical Variance

a. Steps a-e are done for each contributing company.

b. Let Θ_i be the values of the portfolio distribution corresponding to the size of the company. Verify that $\bar{\Theta}$ is zero, and find the variance of the statistical distribution:

$$S_{1+\theta}^2 = \sum_{i=1}^{N} \frac{(\theta_i - \bar{\theta})^2}{N-1}$$

The program has been changed to automatically calculate this variance.

c. Let Y_i be the historical variance values from step 2.ii. Verify $\bar{Y}$ is zero, and calculate the variance:

$$S_Y^2 = \sum_{i=1}^{N} \frac{(Y_i - \bar{Y})^2}{N-1} = \sum_{i=1}^{N} \frac{Y_i^2}{N-1}$$

d. Find the variance of Z, where Z is the underlying claim distribution, net of historical variance:

$$VAR(Z) = \frac{S_Y^2 - S_{(1+\theta)}^2}{S_{(1+\theta)}^2 + 1}$$

Replace each historical variance data entry Yi with:

$$Z_i = \bar{Y} + (Y_i - \bar{Y}) \cdot \sqrt{\frac{VAR(Z)}{S_Y^2}} = Y_i \cdot \sqrt{\frac{VAR(Z)}{S_Y^2}}$$

e. Combine ZI for all companies in the historical variance distribution. Verify the mean of the resulting distribution is zero, and calculate the variance of the distribution, V1:

$$V1 = \sum_{All\ Z_i} \frac{(Z_i - \bar{Z})^2}{N-1} = \sum_{All\ Z_i} \frac{Z_i^2}{N-1}$$

f. All steps in this section should be checked by assigned checkers.

5. Running the Model

a. All runs of the model should use the greater of 5,000 iterations and the number of iterations needed to produce 30 or more ruins.
b. We are targeting a 5% probability of ruin. Target surplus values should be chosen so that this value lies between two of the targets.
c. As a one-time check on the formulae: Running the model with D1, and a uniform statistical distribution of zero, with zero tax effects, phase-in factors of 0,1,1,...., and absolute profit target of zero should produce a distribution of resulting loss ratios with the same variance, and mean equal to the expected loss ratio. (The target surplus in this calculation is irrelevant.)
d. Run the model with actual phase-in factors. This gives a distribution of loss ratios, D2, with a variance of V2 (using the n-1 definition). These phase-in

factors represent the best estimate by the modeler (and should be documented) of the phase-in factors implicit in the historical variance data.

e. Rerunning the model with actual phase-ins, zero taxes, and using a leveraging factor of $L=$ (Square Root of $(V1/V2)$) should produce a loss ratio distribution with a variance of about V1. This is a first approximation. Keep rerunning the model, using finer adjustments of L, until the variance V1 is reproduced. This should be documented for the checkers, and values of L will be needed as part of the output.

f. Final running of the model: Use real phase-ins, real tax effects, leveraging factor of L, and distribution D1. Results should be documented and checked.

g. Resulting sets of target surpluses, with corresponding probabilities of ruin, should be interpolated to find the target surplus corresponding to 5% ruin, and included in the results worksheet. This should be checked by assigned checkers.

6. Mapping
_____

a. Each factor in the formula should be mapped to a specific model cell or combination of cells, according to a documented mapping. This mapping should be produced by November 1, for review by the Task Force.

Cell Num	Description	Definition					Surplus			
		Exp Units	Portfolio Size	Ind Dist	Portfolio Dist	Historical Variance Dist	Low Surp Target	Corres Prob'ty	Hi Surp Target	Corres Prob'ty

Medical

Ancillary

A 1	Group Dental	Grps of 50	2,000	DEN	DEN-100K	JS-1				
A 1A	Group Dental	Grps of 50	2,000	DEN	DEN-100K	DEN-1				
A 2	Hospital Income Protection	Individual	10,000	MJRHIP	MJRHIP-100K	HIP-1				
A 3	Medicare Supplement Standard	Individual	10,000	MEDSUP	MJRHIP-10K	MEDSUP-10K	MS-1			
A 4	Cancer (Model for all dread diseases)	Individual	10,000	CAN	CAN-100K	CAN-1				
A 6A	Cancer (Model for all dread diseases)	Individual	10,000	CAN	CAN-10K	CAN-1				
A 7	Accidental Death	Individual	10,000	CAN	ICAN-100K					
A 7A	Accidental Death	Individual	100,000	AD	AD-100K	CAN-LG				
A 8	Accidental Death	Individual	100,000	AD	AD-10K	AD-1				
A 9	Limit Accident Cover (NCI/all Accid-Dis)	Individual	5,000	AD	AD-100K	ACC-1				
A 10	Limit Accident Cover (GR/all Accid-Dis)	Individual	10,000	LM1	LM1-100K	ACC-1				
A 11	Limit Accdnt Cover NCI/hosp Inc Acc Only	Individual	10,000	LM2	LM2-10K	ACC-1				
A 3-A	LIC - Greater than 5 Yr Benfit Period	Individual	100,000	LIC8	LIC8-100K	LIC-4				

Disability

Disabled Life Reserve

| D R2 | Disability - Disabled Lives (250 Clms) | Individual | 250 | DRCLM | DRCLMS-2 | IDR-2 | | | | |
| D R3 | Disability - Disabled Lives (1000 Clms) | Individual | 1,000 | DRCLM | DRCLMS-3 | IDR-3 | | | | |

Probability of ruin reflects the percentage of failures in 1,000 simulations unless otherwise noted.

Ancillary

Definition					Phase In Factor								Results		Profit Target Information				Distributions		
				Target	Year										Function	Ratio of Actual/Target		Profit			Historical
Cell Num	Description	Exp Units	Portfolio Size	Loss Ratio	1	2	3	4	5	6	7		Surplus Target	Prob Ruin	of:	GT/EQ	but LT	Target	Individual	Portfolio	Variance
A 1	Group Dental	Grps of 50	2,000	85.4%	0.300	0.800	1.000	1.000	1.000	1.000	1.000		4.50%	2.72%	Surplus	90.0%	100.0%	2.700%	DDPA1	DDPA1	JS-1
													4.00%	5.04%		70.0%	90.0%	3.375%			
													3.50%	6.46%		0.0%	70.0%	4.050%			

FORM A
CELL ASSUMPTIONS

COVERAGE: Group Dental   CELL NUMBER   A 1

DESCRIPTION:

EXPERIENCE UNITS Groups of 50   PORTFOLIO SIZE   2000

Number of Iterations   5,000   Target Loss Ratio   85.4%

Profit Target   2.7%   Function of   Surplus

Reset Actual to Target at BOY   3

Phase In Factors Year   1   0.3
                         2   0.8
                         3   1
                         4   1
                         5   1
                         6   1
                         7   1

Difference Statutory/Tax Reserves   N/A

Other (Describe)

Results

Surplus Target		Prob Ruin	
4.5%		2.72%	
4.0%		5.04%	
3.5%		6.46%	

Prepared by: Jerome F Seaman   Date: 11/11/94
Checked by: Dave Libbey   Date: To be completed

FORM B
DATA DESCRIPTION

COVERAGE   _DENTAL_

DISTRIBUTION NAME   _____

TYPE

    Individual   _DDPA1_
    Historic Variance   _JS1_
    Portfolio   Result of DDPA1

DESCRIPTION:

SOURCE OF DATA: _Individual_: a large midwestern group (150,000 lives) for the period 1991-1992. _Historic Variance_: all Delta Dental Plan Association members for each year 1983-1992. Original data: 40 plans with a total of 271 plan years.

MODIFICATIONS TO DATA: _Historical Variance_: any data with less than $3 Million of premium was eliminated. after elimination: 35 plans with a total of 282 plan years.

TREND LINE USED: NONE

Prepared by: Jerome F. Seaman   Date: 11/11/94
Checked by: Dave Libbey   Date: To be completed

APPLICATION OF MODEL RESULTS TO HEALTH ORGANIZATION RBC FORMULA

FORMULA ELEMENT	MODEL CELLS	COMMENTS
Medical Coverage	DNF28, 33, 35, 39, 41, 45	1*
Medical Coverage Managed Care Credit	DNC 16, 26	2*
Direct Stop Loss for Medical Coverages	STOP LOSS 1 - 26	3*
Direct Stop Loss for Coverages Other than Medical Coverages		Targeted to be consistent with 3 above.
Aggregate Stop-Loss and Minimum Premium		Judgment and reference to a carrier's risk manual
Administrative Service Contracts and Cost Plus Contracts		Relied on industry recommendation & judgement
Health Alliance or Other Assessments		Judgement
Valuation Variations		Judgement
Dental Insurance	A1	Testing of model cells
Medicare Supplement	WJB13 - 30	Testing of model cells
Long Term Care	BY1 - 16	11*
Disability Income & Long Term Care with a Maximum Benefit Period of 2 Years or Less	Individual Disability Income Cells 1 - 3	12*
Disability Income & Long Term Care with a Maximum Benefit Period in excess of 2 Years	Individual Disability Income Cells 1 - 3	13*
Accidental Death Coverage	Four Accidental Death Cells	Testing of model cells
Accident Only Coverage	- 19	Testing of model cells
Credit Disability Insurance	SL1 - 5	Testing of model cells
Cancer & Other Specified Disease Coverage	WJB1 - 6	Testing of model cells
Hospital & Intensive Care Indemnity	WJB7 - 12	Testing of model cells

Other Health Coverage		Judgement to be consistent with other coverages
Rate Approval Adjustment	DNC26	19*
Premium Guarantees	DNC 16, 26	20*
Performance Guarantees		Relied on industry recommendation & judgement
Quota Share or Proportional Reinsurance Credit		Operates on underlying coverages
Non-Proportional Reinsurance Credit		Operates on underlying coverages
Minimum Capital Adjustment for Medical & Dental		Testing of model cells and judgement applied to fit probability curve to block sizes
Application of Size Scales		Logic
Claim Reserves and Liabilities	Individual Disability Income Cells 1 - 3	25*
Credit For Rate Stabilization Reserves		Judgement and logic were applied to reflect impact on underlying coverages
FORMULA ELEMENT	MODEL CELLS	COMMENTS
Credit For Retrospective Premiums		Judgement and logic were applied to reflect impact on underlying coverages
Credit For Dividends		Judgement and logic were applied to reflect impact on underlying coverages
Reinsurance Assumed		Logic
C-4 Calculation: Adjustment For Increased Risk		Judgement
C-4 Calculation: Guarantee Fund Assessment Risk		Judgement
Guarantees From Affiliated Companies		Judgement
Investments in Subsidiary Health Centers		Judgement and the goals of consistency and avoiding gaming through corporate structures

* COMMENTS:

1. *Medical Coverage*

Cells DNF33, DNF39, and DNF45 indicated a factor of 8.44% to 10.51% of claims for carriers with large portfolio sizes (25,000 lives and over). Cells DNF28, DNF35, and DNF41 indicated a factor of 10.63% to 12.49% of claims for carriers with small portfolio sizes. It was decided that, in order to reflect the larger capital needs for smaller carriers, a dollar amount plus a percent of claims would be used. The final recommendation was $1.5 million dollars or 2 times the maximum retention on a single life, whichever was less plus 9% of claims. The absolute minimum RBC for medical was recommended to be $500,000.

2. *Medical Coverage Managed Care*

a. Scheduled Fees

We determined that these arrangements would reduce capital requirements by 1.5% to 2.5% of claims. At the 1.5% level, this equated to about 15% of the 9% base for medical.

b. Withholds

One method of modifying the variance of the historic distribution for withholds was recommended, but it was not used. Rather, it was decided that the use of withholds was similar, but less effective, than capital arrangements. If a credit of 40% was being given to capitation amounts, 25% was selected for withholds.

c. Capitated

Cells DNC16 and DNC26 indicated a capitated factor of 5.6% to 6.5% of claims. It was recommended to translate this to a 40% credit against the 9% medical factor for capitated payments made.

d. Staff Model HMOs

We could not determine the phase-in factors actually represented by the data provided for staff model historic distributions. We, therefore, could not

use this data without making arbitrary assumptions which produced large swings in the results. It was logical that the Staff factor be lower than the Capitated and, therefore, a 50% credit was recommended.

3. Medical Stop Loss

Stop loss cells 1, 6, and 10 indicated a factor of 12.11% to 19.2% of premium for large portfolios and attachment points under $100,000. Fifteen percent was recommended along with the $1.5 million base that would cover stop loss and medical coverages together.

Stop loss cells 14 and 15 indicated a factor of 22.42% to 26.76% of premium for large portfolios and attachment points over $100,000. Twenty-five percent was recommended.

To develop the individual coverage factor as compared to the group, a number of relationships were looked at. Stop loss cells 19 to 26 showed the factors for group versus individual at $10,000 attachment points. Looking at these and other relationships, it was decided to make individual factors approximately two-thirds of group.

11. Long-Term Care

Data was limited so model results were not indicative of the risks. Factors were chosen from a coverage determined to be similar to LTC, Individual Disability Coverage.

12. Disability Income & Long Term Care with a Maximum Benefit Period of 2 Years or Less

The factor of 75% of the RBC formula for plans with a benefit period longer than two years, to be used as the formula for plans with a benefit period of two years or less, was based on judgement of the Task Force. Short-term benefit period experience had not been modeled, so no specific model results were available.

However, the Task Force felt that the shorter benefit period results were less volatile than longer-term benefit periods because claim termination fluctuations are limited to shorter periods of time. Also related is the fact that much of the shorter-term benefit period business also has shorter elimination period plans, making it more predictable and less volatile.

13. Disability Income & Long Term Care with a Maximum Benefit Period in Excess of 2 Years

The model results presented for individual disability income cells 1-3 incorporated the following assumptions:

- Two separate historical distributions were developed. One was based on experience of the four largest DI writers, and the other was based on experience of seven smaller DI writers. The underlying data was based on a combination of short-term benefit periods (two years and less) and longer-term benefit periods. All of the data was based on non-cancelable experience only.

- The large block historical variance distribution was not adjusted to remove the effect of underlying trend. Had this trend been removed, the resulting probabilities of ruin would have been lower. The small block historical variance distribution was constructed with and without trend removed and separately modeled.

- The target profit margin used in the models was 5% of premium. This figure is considerably less than the target profit margin employed by disability income carriers in their pricing. It is estimated that a more "typical" average target profit margin would be approximately 15% of premium. Had such a percentage been employed in the model, the probabilities of ruin would have been reduced considerably, in some cases to a probability of zero percent.

The Task Force decided that the separate historical variance distributions described above should be combined to produce a single historical variance distribution for the IDI industry. This would be consistent with the modeling performed for other coverages. In the absence of modeled results based on such a distribution, the Task Force employed judgement to combine the results based on the two separate distributions. For blocks of business of 100,000 lives, the model produced a required surplus amounts of 5% of premium based on a 5% probability of ruin, using the large block historical variance distribution. Substituting the small block historical variance distribution produced a model result of 17.5% of premium. Noting that the companies contributing the large block data comprise about 50% of the total individual disability industry, the weighted average model result would have been 11.3% (1/2* 5.0% +1/2*17.5%). The small block cell produced a model result using the small block historical variance distribution of 185% of premium based on a 5% probability of ruin. Although no testing was performed on this cell using the large block historical variance distribution, the Task Force believes that the modeled required surplus result would have been similar and slightly about that for the large block cell or 6%-7%. Using a combined industry historical variance

distribution for the small block cell would generate a result slightly above the 11.3% noted above.

These results indicated that the modeled required surplus factor should be 11.3% for an average block of business within the industry. Based on 1993 data, an average block would fall between 100,000 and 150,000 lives. The modeled results also indicate that the required surplus factor should be higher for small blocks than for large blocks, driven by differences in the historical variance distributions specific to the two block sizes. The modeled results would support required surplus factors of about 20% for intermediate size blocks (approx. 40,000 lives) grading down to as low as 5% for very large blocks (250,000 lives and over). The Task Force's judgements was that the factors should be higher for small blocks and should not grade as steeply as indicated by the modeling. This led directly to the formula indicated. The Task Force further adjusted the modeled results by deciding that they would be used for guaranteed renewable business and would be loaded an additional 10% for non-cancelable business. These adjustments were driven primarily by the level of the modeled results in comparison to the required surplus factors specified in the current regulation. Accordingly, the Task Force decided to recommend specific factors for disability income and to exclude this coverage from the relative value structure applicable to other coverage types. The recommended formula produces required surplus factors, assuming $1,000 of earned premium per life, as follows:

Number of Lives	Guar. Ren	Non-can
10,000	25.0%	27.5%
100,000	13.8%	15.1%
250,000	11.5%	12.7%

The Task Force also noted that the guaranteed renewable factors should apply to group disability income with benefit periods of two years or longer.

19. Rate Approval Adjustment

Cell DNC 26 was run with phase-in assumptions that would delay the reaction to a trend miss for 90 days due to the need for regulatory approval. The resulting relationship indicated an increase of 93% for regulatory approval. A compromise was reached at 50% increase if currently filed rates did not include increases for assumed trend and 25% if they did.

20. Premium Guarantees

Initially five cells were run with differing phase-in assumptions to simulate different rate guarantee periods and rate regulation. It was determined that

distribution for the small block cell would generate a result slightly above the 11.3% noted above.

These results indicated that the modeled required surplus factor should be 11.3% for an average block of business within the industry. Based on 1993 data, an average block would fall between 100,000 and 150,000 lives. The modeled results also indicate that the required surplus factor should be higher for small blocks than for large blocks, driven by differences in the historical variance distributions specific to the two block sizes. The modeled results would support required surplus factors of about 20% for intermediate size blocks (approx. 40,000 lives) grading down to as low as 5% for very large blocks (250,000 lives and over). The Task Force's judgements was that the factors should be higher for small blocks and should not grade as steeply as indicated by the modeling. This led directly to the formula indicated. The Task Force further adjusted the modeled results by deciding that they would be used for guaranteed renewable business and would be loaded an additional 10% for non-cancelable business. These adjustments were driven primarily by the level of the modeled results in comparison to the required surplus factors specified in the current regulation. Accordingly, the Task Force decided to recommend specific factors for disability income and to exclude this coverage from the relative value structure applicable to other coverage types. The recommended formula produces required surplus factors, assuming $1,000 of earned premium per life, as follows:

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20. Premium Guarantees

Initially five cells were run with differing phase-in assumptions to simulate different rate guarantee periods and rate regulation. It was determined that

cells with low first year phase in factors did not allow for enough variation in phase in delay to be valid in determining relationships. Cells DNC16 and DNC26 were used to determine a relationship between one-year and two-year rate guarantees. Due to the modifying effect, profit margins were not increased when surplus fell below target surplus levels for these runs. It was determined that the surplus requirements rose from 27% to 65% for two-year rate guarantees. It was decided that this modeling was so susceptible to the assumptions used that a lower increase of 25% would be used.

25. Claim Reserves and Liabilities

The model results showed a RBC requirement of approximately 10% of claim reserves for a 310 disabled life portfolio and 3% of reserves for a 3,000 disabled life portfolio. Both results were based on a 5% probability of ruin and both anticipate that the claim reserves have a 5% margin over most likely values and produce an annual profit of 1.06% of reserves. This is the same profit assumption as was used for group long-term disability.

The resulting formula of 10% of reserves for the first 300 claims and 4% of reserves on the remaining disabled lives reflects Task Force judgement applied to the modeled results for larger blocks of disabled lives. Accordingly, the Task Force is recommending specific values for this formula and further recommends that this formula be excluded from the relative value structure it is recommending for other types of coverages.

M&R2-5K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-15.00%	0.00%
-13.75%	0.02%
-11.25%	0.96%
-8.75%	4.04%
-6.25%	10.63%
-3.75%	17.47%
-1.25%	19.80%
1.25%	18.19%
3.75%	12.69%
6.25%	7.97%
8.75%	4.42%
11.25%	2.13%
13.75%	1.02%
16.25%	0.37%
18.75%	0.18%
21.25%	0.06%
23.75%	0.01%
26.25%	0.02%
28.75%	0.02%
30.00%	0.00%

Expected Claims:	9,815,399.75

(Act - Exp)/Exp Claims	Frequency
-12.00%	0.00%
-11.50%	0.01%
-10.50%	0.06%
-9.50%	0.11%
-8.50%	0.47%
-7.50%	0.96%
-6.50%	1.87%
-5.50%	3.35%
-4.50%	5.46%
-3.50%	8.13%
-2.50%	10.01%
-1.50%	11.10%
-0.50%	11.75%
0.50%	10.23%
1.50%	9.44%
2.50%	7.56%
3.50%	5.85%
4.50%	4.65%
5.50%	3.35%
6.50%	2.04%
7.50%	1.23%
8.50%	1.14%
9.50%	0.53%
10.50%	0.34%
11.50%	0.15%
12.50%	0.09%
13.50%	0.05%
14.50%	0.03%
15.50%	0.02%
16.50%	0.02%
17.00%	0.00%

Expected Claims:	19,630,800

(Act - Exp)/Exp Claims	Frequency
-25.00%	0.00%
-23.50%	0.02%
-20.50%	0.02%
-17.50%	0.29%
-14.50%	1.20%
-11.50%	4.10%
-8.50%	9.39%
-5.50%	14.34%
-2.50%	17.20%
0.50%	17.97%
3.50%	13.78%
6.50%	9.85%
9.50%	5.76%
12.50%	3.16%
15.50%	1.51%
18.50%	0.75%
21.50%	0.42%
24.50%	0.15%
27.50%	0.04%
30.50%	0.03%
33.50%	0.02%
35.00%	0.00%

Expected Claims:	9,815,392.11

M&R1-10K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-17.50%	0.00%
-16.25%	0.03%
-13.75%	0.22%
-11.25%	1.04%
-8.75%	3.86%
-6.25%	9.59%
-3.75%	16.83%
-1.25%	20.31%
1.25%	18.78%
3.75%	13.92%
6.25%	8.48%
8.75%	4.25%
11.25%	1.66%
13.75%	0.66%
16.25%	0.24%
18.75%	0.08%
21.25%	0.02%
23.75%	0.01%
26.25%	0.01%
28.75%	0.01%
30.00%	0.00%

Expected Claims:	19,630,784.22

M&R1-25K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-11.00%	0.00%
-10.50%	0.03%
-9.50%	0.08%
-8.50%	0.20%
-7.50%	0.46%
-6.50%	1.25%
-5.50%	2.44%
-4.50%	4.75%
-3.50%	7.47%
-2.50%	9.74%
-1.50%	12.12%
-0.50%	12.61%
0.50%	11.98%
1.50%	11.47%
2.50%	9.11%
3.50%	6.23%
4.50%	4.44%
5.50%	2.76%
6.50%	1.52%
7.50%	0.77%
8.50%	0.29%
9.50%	0.20%
10.50%	0.05%
11.50%	0.01%
12.50%	0.02%
13.00%	0.00%

Expected Claims:	49,076,960.54

M&R1-100K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-6.00%	0.00%
-5.75%	0.01%
-5.25%	0.01%
-4.75%	0.12%
-4.25%	0.29%
-3.75%	0.66%
-3.25%	1.27%
-2.75%	2.49%
-2.25%	4.38%
-1.75%	7.14%
-1.25%	9.64%
-0.75%	11.33%
-0.25%	12.88%
0.25%	13.30%
0.75%	11.50%
1.25%	8.72%
1.75%	6.73%
2.25%	4.31%
2.75%	2.54%
3.25%	1.31%
3.75%	0.70%
4.25%	0.36%
4.75%	0.21%
5.25%	0.04%
5.75%	0.04%
6.25%	0.01%
6.75%	0.01%
7.00%	0.00%

Expected Claims:	196,307,842.17

M&RCAP-5K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
0.00%	100.000%

Expected Claims:	9,815,400

M&RCAP-10K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
0.00%	100.000%

Expected Claims:	19,630,800

M&RCAP-25K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
0.00%	100.000%

Expected Claims:	49,077,000

M&RCAP-100K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
0.00%	100.000%

Expected Claims:	196,308,000

DEN-100K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-2.00%	0.000%
-1.88%	0.010%
-1.63%	0.010%
-1.38%	0.080%
-1.13%	0.350%
-0.88%	1.570%
-0.63%	5.760%
-0.38%	12.310%
-0.13%	19.000%
0.12%	23.060%
0.37%	19.240%
0.62%	12.070%
0.87%	4.780%
1.12%	1.310%
1.37%	0.350%
1.62%	0.080%
1.87%	0.010%
2.12%	0.010%
2.25%	0.000%

Expected Claims:	19,903,564.36

(Act - Exp)/Exp Claims	Frequency
-35.00%	0.00%
-32.50%	0.01%
-27.50%	0.07%
-22.50%	0.74%
-17.50%	3.47%
-12.50%	10.20%
-7.50%	16.75%
-2.50%	20.31%
2.50%	19.29%
7.50%	14.26%
12.50%	8.50%
17.50%	3.99%
22.50%	1.48%
27.50%	0.70%
32.50%	0.14%
37.50%	0.08%
42.50%	0.01%
45.00%	0.00%

Expected Claims:	353,616.32

MEDSUP-10K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-8.00%	0.00%
-7.50%	0.02%
-6.50%	0.24%
-5.50%	0.82%
-4.50%	2.18%
-3.50%	5.56%
-2.50%	10.21%
-1.50%	14.51%
-0.50%	17.41%
0.50%	16.17%
1.50%	13.81%
2.50%	9.34%
3.50%	5.35%
4.50%	2.61%
5.50%	1.14%
6.50%	0.44%
7.50%	0.12%
8.50%	0.04%
9.50%	0.01%
10.50%	0.01%
11.50%	0.01%
12.00%	0.00%

Expected Claims:	16,710,326.16

(Act - Exp)/Exp Claims	Frequency
-40.00%	0.00%
-37.50%	0.05%
-32.50%	0.21%
-27.50%	1.01%
-22.50%	2.94%
-17.50%	6.20%
-12.50%	10.64%
-7.50%	14.86%
-2.50%	16.79%
2.50%	14.71%
7.50%	12.62%
12.50%	8.21%
17.50%	5.32%
22.50%	3.08%
27.50%	1.55%
32.50%	0.91%
37.50%	0.42%
42.50%	0.26%
47.50%	0.08%
52.50%	0.09%
57.50%	0.01%
62.50%	0.02%
67.50%	0.01%
72.50%	0.01%
75.00%	0.00%

Expected Claims:	504,389

CAN-100K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-17.00%	0.00%
-15.00%	0.02%
-13.00%	0.05%
-11.00%	0.37%
-9.00%	1.36%
-7.00%	4.13%
-5.00%	8.71%
-3.00%	15.76%
-1.00%	19.26%
1.00%	19.32%
3.00%	15.02%
5.00%	8.52%
7.00%	4.53%
9.00%	2.10%
11.00%	0.59%
13.00%	0.21%
15.00%	0.05%
17.00%	0.000%

Expected Claims:	5,043,889.48

AD-10K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-100.00%	3.05%
-71.35%	10.64%
-42.69%	18.57%
-14.04%	21.61%
14.61%	18.89%
43.27%	13.16%
71.92%	7.65%
100.57%	3.82%
129.23%	1.66%
157.88%	0.64%
186.53%	0.22%
215.19%	0.07%
243.84%	0.02%
272.49%	0.00%

Expected Claims	349,000.00

AD-100K Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-110.00%	0.00%
-105.00%	0.08%
-95.00%	0.24%
-85.00%	0.23%
-75.00%	0.85%
-65.00%	1.95%
-55.00%	3.96%
-45.00%	3.03%
-35.00%	7.64%
-25.00%	11.40%
-15.00%	12.79%
-5.00%	6.48%
5.00%	12.86%
15.00%	11.77%
25.00%	9.50%
35.00%	3.86%
45.00%	5.64%
55.00%	3.45%
65.00%	1.94%
75.00%	0.71%
85.00%	0.90%
95.00%	0.46%
105.00%	0.18%
115.00%	0.04%
125.00%	0.03%
135.00%	0.00%
145.00%	0.01%
150.00%	0.00%

Expected Claims	3,490,000.00

LIM1-10K   Portfolio Distribution

DISABILITY

(Act - Exp)/Exp Claims	Frequency
-16.00%	0.00%
-15.50%	0.02%
-14.50%	0.05%
-13.50%	0.05%
-12.50%	0.18%
-11.50%	0.27%
-10.50%	0.49%
-9.50%	0.82%
-8.50%	1.48%
-7.50%	2.22%
-6.50%	3.52%
-5.50%	4.36%
-4.50%	5.74%
-3.50%	6.67%
-2.50%	8.25%
-1.50%	8.27%
-0.50%	9.23%
0.50%	8.61%
1.50%	8.52%
2.50%	7.38%
3.50%	6.20%
4.50%	5.14%
5.50%	3.49%
6.50%	3.02%
7.50%	2.17%
8.50%	1.53%
9.50%	0.97%
10.50%	0.44%
11.50%	0.44%
12.50%	0.18%
13.50%	0.14%
14.50%	0.11%
15.50%	0.01%
16.50%	0.03%

17.00%	0.00%

Expected Claims	4,190,525.49

LIM2-10K   Portfolio Distribution

HOSPITAL

(Act - Exp)/Exp Claims	Frequency
-50.00%	0.00%
-47.50%	0.02%
-42.50%	0.09%
-37.50%	0.27%
-32.50%	1.03%
-27.50%	2.57%
-22.50%	5.26%
-17.50%	7.91%
-12.50%	10.84%
-7.50%	12.65%
-2.50%	12.67%
2.50%	11.61%
7.50%	10.25%
12.50%	8.17%
17.50%	5.71%
22.50%	4.45%
27.50%	2.62%
32.50%	1.59%
37.50%	0.90%
42.50%	0.63%
47.50%	0.33%
52.50%	0.14%
57.50%	0.14%
62.50%	0.08%
67.50%	0.02%
72.50%	0.03%
77.50%	0.00%
82.50%	0.01%
87.50%	0.01%
90.00%	0.00%

Expected Claims	109,722.58

(Act - Exp)/Exp Claims	Frequency
-11.00%	0.00%
-10.50%	0.01%
-9.50%	0.03%
-8.50%	0.07%
-7.50%	0.27%
-6.50%	0.84%
-5.50%	1.85%
-4.50%	3.73%
-3.50%	6.61%
-2.50%	9.98%
-1.50%	12.58%
-0.50%	14.61%
0.50%	14.45%
1.50%	12.00%
2.50%	9.39%
3.50%	6.48%
4.50%	4.08%
5.50%	1.77%
6.50%	0.81%
7.50%	0.32%
8.50%	0.10%
9.50%	0.01%
10.50%	0.01%
11.00%	0.00%

Expected Claims:	127,341,271

INC1-5K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-45.00%	0.00%
-42.50%	0.01%
-37.50%	0.07%
-32.50%	0.20%
-27.50%	1.68%
-22.50%	2.30%
-17.50%	7.07%
-12.50%	8.77%
-7.50%	16.92%
-2.50%	14.15%
2.50%	13.81%
7.50%	15.41%
12.50%	8.26%
17.50%	6.78%
22.50%	2.25%
27.50%	1.66%
32.50%	0.35%
37.50%	0.21%
42.50%	0.07%
47.50%	0.03%
50.00%	0.00%

Expected Claims:	6,950,000.00

INC1-100K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-8.00%	0.00%
-7.50%	0.04%
-6.50%	0.08%
-5.50%	0.42%
-4.50%	0.91%
-3.50%	2.02%
-2.50%	3.80%
-1.50%	6.72%
-0.50%	9.99%
0.50%	12.03%
1.50%	14.47%
2.50%	13.80%
3.50%	12.42%
4.50%	10.29%
5.50%	6.15%
6.50%	3.72%
7.50%	1.70%
8.50%	0.91%
9.50%	0.34%
10.50%	0.14%
11.50%	0.04%
12.50%	0.00%
13.50%	0.01%
14.00%	0.00%

Expected Claims:	139,000,000.00

INC2-5K   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
-30.00%	0.00%
-27.50%	0.08%
-22.50%	0.68%
-17.50%	2.92%
-12.50%	8.35%
-7.50%	16.96%
-2.50%	23.40%
2.50%	19.28%
7.50%	16.09%
12.50%	8.41%
17.50%	2.94%
22.50%	0.75%
27.50%	0.12%
32.50%	0.02%
35.00%	0.00%

Expected Claims:	13,900,000.00

(Act - Exp)/Exp Claims	Frequency
-19.00%	0.00%
-18.50%	0.02%
-17.50%	0.01%
-16.50%	0.06%
-15.50%	0.05%
-14.50%	0.18%
-13.50%	0.22%
-12.50%	0.34%
-11.50%	0.57%
-10.50%	0.73%
-9.50%	0.80%
-8.50%	1.57%
-7.50%	1.89%
-6.50%	3.00%
-5.50%	3.19%
-4.50%	2.61%
-3.50%	4.55%
-2.50%	5.58%
-1.50%	6.29%
-0.50%	6.63%
0.50%	4.83%
1.50%	7.24%
2.50%	6.90%
3.50%	6.70%
4.50%	4.61%
5.50%	6.17%
6.50%	5.36%
7.50%	4.57%
8.50%	3.91%
9.50%	2.17%
10.50%	2.51%
11.50%	2.13%
12.50%	1.46%
13.50%	0.75%

14.50%	0.69%
15.50%	0.59%
16.50%	0.36%
17.50%	0.33%
18.50%	0.11%
19.50%	0.13%
20.50%	0.08%
21.50%	0.03%
22.50%	0.03%
23.50%	0.04%
24.50%	0.01%
25.00%	0.00%

Expected Claims:	27,800,000.00

DRCLMS-2   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
0.00%	100.00%

Expected Claims:	1,652,206.25

DRCLMS-3   Portfolio Distribution

(Act - Exp)/Exp Claims	Frequency
0.00%	100.00%

Expected Claims:	6,608,825.00

SM-1

Trend Miss	Probability
-15.0000%	0.00%
-12.5000%	7.14%
-7.5000%	21.43%
-2.5000%	35.71%
2.5000%	14.29%
7.5000%	14.29%
12.5000%	0.00%
17.5000%	7.14%
20.0000%	0.00%

GM-2

Trend Miss	Probability
-60.0000%	0.00%
-50.0000%	3.01%
-30.0000%	1.20%
-18.5000%	0.00%
-16.5000%	0.00%
-15.5000%	0.60%
-14.5000%	0.00%
-13.5000%	0.00%
-12.5000%	0.60%
-11.5000%	1.20%
-10.5000%	0.60%
-9.5000%	2.41%
-8.5000%	0.60%
-7.5000%	1.81%
-6.5000%	1.81%
-5.5000%	2.41%
-4.5000%	3.01%
-3.5000%	6.63%
-2.5000%	7.83%
-1.5000%	9.64%
-0.5000%	12.05%
0.5000%	9.04%
1.5000%	9.64%
2.5000%	6.02%
3.5000%	4.22%
4.5000%	3.01%
5.5000%	3.61%
6.5000%	0.60%
7.5000%	1.20%
8.5000%	0.60%
9.5000%	0.60%
10.5000%	0.00%
11.5000%	1.20%

12.5000%	0.60%
13.5000%	2.41%
14.5000%	0.00%
15.5000%	0.00%
16.5000%	0.00%
18.5000%	1.20%
30.0000%	0.60%
40.0000%	0.00%

BCA - 1

Trend Miss	Probability
-30.72%	0.00%
-23.42%	2.42%
-15.00%	3.64%
-10.00%	10.30%
-5.00%	20.61%
0.00%	24.85%
5.00%	20.61%
10.00%	12.73%
15.00%	2.42%
20.00%	1.82%
30.00%	0.61%
34.00%	0.00%

BCA - 2

Trend Miss	Probability
-17.50%	0.00%
-15.00%	4.24%
-10.00%	6.67%
-5.00%	23.64%
0.00%	38.18%
5.00%	13.94%
10.00%	6.67%
15.00%	4.85%
20.00%	1.21%
25.00%	0.61%
27.50%	0.00%

CMMSG-3

Trend Miss	Probability
-30.0000%	0.00%
-27.5000%	1.90%
-22.5000%	1.42%
-17.5000%	2.37%
-12.5000%	7.58%
-7.5000%	14.69%
-2.5000%	29.86%
2.5000%	16.59%
7.5000%	11.85%
12.5000%	6.16%
17.5000%	1.90%
22.5000%	2.37%
27.5000%	2.37%
32.5000%	0.00%
37.5000%	0.00%
42.5000%	0.00%
47.5000%	0.00%
52.5000%	0.47%
57.5000%	0.47%
60.0000%	0.00%

MCPI

Trend Miss	Probability
-2.7500%	0.00%
-2.6250%	3.00%
-2.3750%	0.00%
-2.1250%	10.00%
-1.8750%	3.00%
-1.6250%	13.00%
-1.3750%	3.00%
-1.1250%	7.00%
-0.8750%	0.00%
-0.6250%	7.00%
-0.3750%	0.00%
-0.1250%	7.00%
0.1250%	3.00%
0.3750%	3.00%
0.6250%	7.00%
0.8750%	0.00%
1.1250%	3.00%
1.3750%	3.00%
1.6250%	3.00%
1.8750%	7.00%
2.1250%	13.00%
2.3750%	3.00%
2.5000%	0.00%

MT-1

Trend Miss	Probability
-6.5000%	0.00%
-6.0000%	4.42%
-5.0000%	5.56%
-4.0000%	7.13%
-3.0000%	8.56%
-2.0000%	9.56%
-1.0000%	10.27%
0.0000%	10.27%
1.0000%	10.13%
2.0000%	9.42%
3.0000%	8.13%
4.0000%	6.85%
5.0000%	5.42%
6.0000%	4.28%
6.5000%	0.00%

CMMLG

Trend Miss	Probability
-20.0000%	0.0000%
-17.5000%	4.6154%
-12.5000%	6.9231%
-7.5000%	19.2308%
-2.5000%	26.9231%
2.5000%	16.1538%
7.5000%	11.5385%
12.5000%	6.9231%
17.5000%	5.3846%
22.5000%	1.5385%
27.5000%	0.7692%
30.0000%	0.0000%

JS-1

Trend Miss	Probability
-13.0000%	0.00%
-12.0000%	1.00%
-9.0000%	2.00%
-7.0000%	2.00%
-6.0000%	3.00%
-4.5000%	4.00%
-3.0000%	11.00%
-2.0000%	10.00%
-1.0000%	18.00%
0.5000%	11.00%
1.5000%	11.00%
2.5000%	9.00%
4.0000%	7.00%
5.0000%	5.00%
6.5000%	3.00%
7.5000%	2.00%
9.0000%	1.00%
10.0000%	0.00%

DEN-1

Trend Miss	Probability
-105.0000%	0.00%
-102.5000%	0.88%
-97.5000%	2.63%
-92.5000%	0.88%
-87.5000%	0.00%
-82.5000%	0.00%
-77.5000%	0.88%
-72.5000%	0.00%
-62.5000%	0.00%
-57.5000%	0.88%
-52.5000%	0.00%
-32.5000%	0.00%
-27.5000%	0.88%
-22.5000%	0.00%
-17.5000%	4.39%
-12.5000%	3.51%
-7.5000%	11.40%
-2.5000%	28.07%
2.5000%	25.44%
7.5000%	11.40%
12.5000%	3.51%
17.5000%	1.75%
22.5000%	1.75%
27.5000%	0.00%
87.5000%	0.00%
92.5000%	0.88%
97.5000%	0.88%
100.0000%	0.00%

HIP-1

Trend Miss	Probability
-110.0000%	0.00%
-105.0000%	3.57%
-95.0000%	0.00%
-85.0000%	0.00%
-75.0000%	0.00%
-65.0000%	1.79%
-55.0000%	1.79%
-45.0000%	0.00%
-35.0000%	5.36%
-25.0000%	1.79%
-15.0000%	7.14%
-5.0000%	28.57%
5.0000%	28.57%
15.0000%	10.71%
25.0000%	3.57%
35.0000%	0.00%
45.0000%	0.00%
55.0000%	1.79%
65.0000%	0.00%
75.0000%	1.79%
85.0000%	0.00%
95.0000%	3.57%
100.0000%	0.00%

MS-1

Trend Miss	Probability
-35.0000%	0.00%
-32.5000%	0.67%
-27.5000%	1.34%
-22.5000%	0.00%
-17.5000%	2.01%
-12.5000%	6.04%
-7.5000%	13.42%
-2.5000%	26.85%
2.5000%	25.50%
7.5000%	9.40%
12.5000%	11.41%
17.5000%	2.68%
22.5000%	0.67%
25.0000%	0.00%

CAN-1

Trend Miss	Probability
-10.0000%	0.00%
-7.5000%	14.29%
-2.5000%	42.86%
2.5000%	28.57%
7.5000%	14.29%
10.0000%	0.00%

ADD-1

Trend Miss	Probability
-35.0000%	0.00%
-32.5000%	3.33%
-27.5000%	0.00%
-22.5000%	0.00%
-17.5000%	5.00%
-12.5000%	5.00%
-7.5000%	18.33%
-2.5000%	15.00%
2.5000%	28.33%
7.5000%	11.67%
12.5000%	8.33%
17.5000%	0.00%
22.5000%	1.67%
27.5000%	0.00%
32.5000%	1.67%
37.5000%	0.00%
62.5000%	0.00%
67.5000%	1.67%
70.0000%	0.00%

ACC-1

Trend Miss	Probability
-20.0000%	0.00%
-17.5000%	7.14%
-12.5000%	14.29%
-7.5000%	21.43%
-2.5000%	35.71%
2.5000%	7.14%
7.5000%	0.00%
17.5000%	0.00%
22.5000%	7.14%
27.5000%	0.00%
52.5000%	0.00%
57.5000%	7.14%
60.0000%	0.00%

LTC-4

Trend Miss	Probability
-32.5000%	0.00%
-27.5000%	4.26%
-22.5000%	2.13%
-17.5000%	2.13%
-12.5000%	10.64%
-7.5000%	19.15%
-2.5000%	17.02%
2.5000%	19.15%
7.5000%	8.51%
12.5000%	4.26%
17.5000%	2.13%
22.5000%	8.51%
27.5000%	0.00%
32.5000%	0.00%
37.5000%	0.00%
42.5000%	0.00%
47.5000%	0.00%
52.5000%	0.00%
57.5000%	2.13%
62.5000%	0.00%

DISINC-1

Trend Miss	Probability
-13.7500%	0.00%
-12.5000%	3.00%
-10.0000%	3.00%
-7.5000%	8.00%
-5.0000%	11.00%
-2.5000%	17.00%
0.0000%	24.00%
2.5000%	11.00%
5.0000%	6.00%
7.5000%	6.00%
10.0000%	8.00%
12.5000%	0.00%
15.0000%	3.00%
16.2500%	0.00%

DISINC-2

Trend Miss	Probability
-15.1250%	0.00%
-13.7500%	3.00%
-11.0000%	3.00%
-8.2500%	8.00%
-5.5000%	11.00%
-2.7500%	17.00%
0.0000%	24.00%
2.7500%	11.00%
5.5000%	6.00%
8.2500%	6.00%
11.0000%	8.00%
13.7500%	0.00%
16.5000%	3.00%
17.8750%	0.00%

DR-2

Trend Miss	Probability
-10.00%	0.00%
-8.0000%	0.25%
-7.0000%	1.00%
-6.0000%	1.25%
-5.0000%	3.50%
-4.0000%	5.00%
-3.0000%	7.50%
-2.0000%	9.50%
-1.0000%	13.75%
0.0000%	12.50%
1.0000%	13.75%
2.0000%	11.00%
3.0000%	8.00%
4.0000%	6.00%
5.0000%	3.50%
6.0000%	1.75%
7.0000%	1.25%
8.0000%	0.25%
9.0000%	0.25%
10.0000%	0.00%

DR-3

Trend Miss	Probability
-8.00%	0.00%
-6.0000%	0.25%
-5.0000%	1.00%
-4.0000%	1.50%
-3.0000%	5.50%
-2.0000%	11.00%
-1.0000%	19.00%
0.0000%	23.00%
1.0000%	17.00%
2.0000%	12.75%
3.0000%	6.25%
4.0000%	1.50%
5.0000%	1.00%
6.0000%	0.25%
8.0000%	0.00%

APPENDIX D

Use of Leveraging Factor for Stop-Loss
Change Applies Only to Stop-Loss Cells

Previously, the idea was to build a portfolio distribution for each of a selected number of values of trend miss (or accumulated, uncorrected trend miss), thus making a "family" of distributions. Then, based on the current (possibly accumulated) trend miss, the program would sample from the appropriate portfolio distribution. The purpose of this is to account for the fact that rend is leveraged in cases of cells with stop-loss.

We now propose to abandon the idea of making portfolio distribution families and instead use a leveraging factor for cells with stop-loss.

The leveraging factor will be a constant k which will be multiplied by the unleveraged trend miss x value as follows:

$$[Leveraged\ Trend\ Miss] = k\ x$$

The leveraging factor will be determined by the specific stop-loss value and the attachment point.

Note that this discussion assumes the historical variance numbers to be used are those from CMM. If stop-loss numbers are used, the leveraging would already be implicitly included.

A Description of the Tax Model Used Within the HORBC Model

General Description

- Both positive and negative carry forwards assume that no gains or losses have occurred before year 1.

- A 35% tax percentage has been assumed.

- Positive gains in a given year can be carried forward for 3 years to bring a tax credit to future negative losses. The positive gains that can be carried forward must be net of any losses that have been applied from the past.

- Positive losses can be carried forward indefinitely to reduce taxes on any positive future gains. Positive losses that can be carried forward must be net of any positive gains that have been carried forward for tax credit purposes.

- The uses of positive carry forwards and negative carry forwards will then be used to calculate the tax. It must be noted that dividends do not enter this model. Dividends would be applied to the after tax gain of this model.

General Effect of Tax on the RBC Model

The use of tax in the RBC model will be affected by the tax credit than can now be applied to a loss. A tax credit of up to 35% of a loss may now be applied to a loss depending on how much positive carry forward can be forwarded to the loss. With our assumption of no losses or gains before the first year, the probability of ruin in the first year is unaffected by this tax model. It is impossible to have a tax credit in the first year.

An explanation of the variables is attached.

Explanation of Variables

TAX CALCULATION

Initial Statutory Gain	This is the initial gain generated by the RBC model.
Effect of Tax Reserves	This is the difference between statutory and tax reserve increases.* It is based on a percentage of premium.
Negative Carry Forward	This is equal to previous year's "Taxable Gain" if it is negative.
Used Carry Forward	Look below for development.
Taxable Gain (if positive)	"Initial Stat Gain" + "Effect of Tax Reserves" + "Neg Carry Forward" + "Used Carry Forward"
Tax (reduction in income)	If "Taxable Gain" is positive it equals .35 * "Taxable Gain". It is 0 otherwise.

TAX CREDIT CALCULATION

Taxable Gain Without Positive Carry	"Initial Statutory Gain" + "Effect of Tax Reserves" + "Negative Carry Forward. This variable is used to develop the positive carry forwards below. Positive carry overs from previous years can only be generated if this variable is negative.
Positive Carry Forward from Year 1 Positive Carry Forward from Year 2 Positive Carry Forward from Year 3 Positive Carry Forward from Year 4 Positive Carry Forward from Year 5 Positive Carry Forward from Year 6	For these six variables, the amount that can be carried forward is based on the variable "Taxable Gains". "Taxable Gains" can only be carried forward up to 3 years.
Used Positive Carry Forward	This equals the sum of the above 6 variables.
Tax Credit (Addition to Income)	.35 * "Used Pos Carry Forward"

*Note: Requires an assumption on the difference between tax and statutory reserves.

FORMULA CHANGES IN HORBC MODEL

A. Dynamic relationship between $AS(t-1)/TX(t-1)$ and TP_t

The model should assume that as AS drops below $(1-Y)TS$ that management will take pricing action to <u>increase</u> AS. The current formula needs two corrections:

(1) If $AS(t-1) < TS(t-1)$

TP(t) should be the lessor of

$TP(t-1) + \{.05\} * LR(t-1)$ or
$TP(t-1) * TS(t-1)/AS(t-1)$

(2) If $AS(t-1) \geq TS(t-1)$

$TP(t) = TP(t-1)$

Note 1:   The current formula reverses the ration TS/AS so that lower profits are expected when surplus needs to be increased but the example does not track this change year-by-year.

Note 2:   The { } is an assumption value and a suggested value is included

Note 3:   The profit target change should be limited since it is limited in the real market

(3) If $TP(t) \neq T(t-1)$ then

$LR(t) = LR(t-1) + TP(t) - TP(t-1)$

This change reflects that expenses are a constant percentage of premium, so increases in target profit level must be fully reflected by similar <u>percentage of premium</u> decreases in the loss ratio.

B. Dynamic relationship between $AS(t-1) / TS(t1)$ and phase-in factors to reflect regulatory <u>assistance</u> at low RBC ratios. The changes suggested are:

If $AS(t-1)/TS(t-1) < \{.5\}$

(1) Increase all phase-in factors < {.7} to {.7} for year t

(2) Increase all phase-in factors changed for year t (i.e., excludes year t premiums) to {.85} for year t+1

Note 4: If the model cannot apply this type of premium change in mid-year which is probably realistic, may need to reduce the {.7} value

C. Modify model to allow for underlying rend and interest earnings

(1) Change so $AT(t) = AT(t-1) * (1+UT) * (1+TM(t))$ where UT is a given underlying trend which will be set at zero for non-trend affected cells with cumulative effects from historical variances.

(2) Change so $AT(t) = (1+TM(t))$ for cells without cumulative effects from historical variances.

(3) Change so $OG(t) = P(t) * (IP+G/L(t)) + IS*(AS(t-1)+(OG(t)))$ where IP is a given interest credit on premium plus reserve applied to current year premium and IS is a given interest credit on average surplus.

Note 5: Company specific premium adjustments should include the full value of UT plus the phase-in values applied to trend-miss and statistical miss effects.

Trend Miss Accumulations Methodology

1. Historical Variance Distributions

Tend miss is measured by using historical variance distributions. These distributions measure the variance of year by year loss ratios from the mean loss ratio, after excluding the effect of statistical fluctuations and industry-wide trends from the variations. This variation should be expressed as a percent of the mean loss ratio, as the model uses a multiplicative approach to incorporate trend miss.

These historical variance distributions can be viewed as being comprised of percentage variances from the mean as shown in Chart 1 below:

Chart 1:
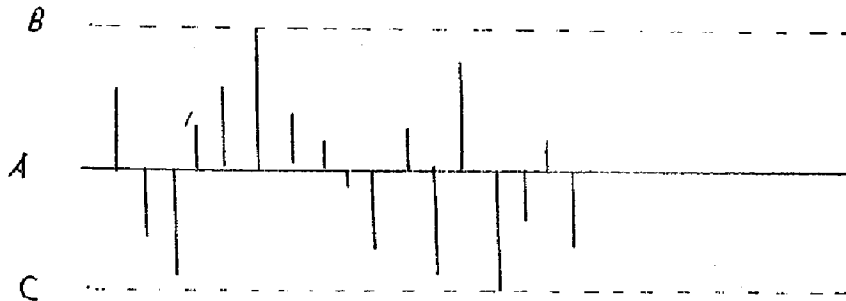
Chart 1 shows that each point in the distribution is based on the percent variation from the mean loss ratio. Line A represents the average loss ratio, Line B represents the maximum upward variation observed during the historical period, and Line C represents the maximum downward variation observed during the historical period. Therefore, during the observation period, annual loss ratios never fell outside the range set by lines B and C.

Since the data represents a limited sampling which never exceeds the B-C range, it is necessary to provide for a completed distribution with a tail of low probability outside the B-C range.

2. Adjusted Distributions

Applying the historical variance distributions as annual variances from the previous year's loss ratio might produce results which as those shown in Chart 2:

Chart 2:
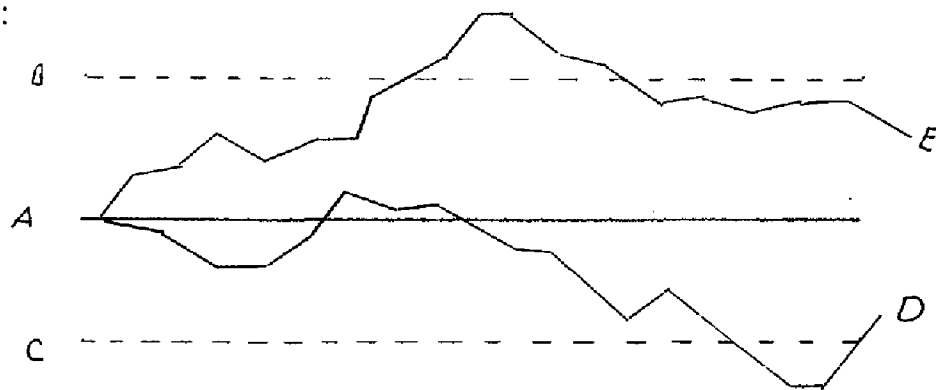
Line A is the same mean as in Chart 1, and lines D and E represent two possible outcomes of applying the historical variance distribution as annual deviations from the mean. Lines B and C are the same as from Chart 1 and are included for reference.

The annual loss ratios that are produced in this manner have a wider range of maximum values than the historical variance distribution that was used as input. The variance is also larger.

An adjustment is then made to the values in the historical variance distribution such that, when the revised distribution is used in the Task Force model, the resulting distribution has loss ratios that are closer to A, and which will reproduce the original data variance. The revised historical variance distribution might produce a pattern of loss ratios such as those shown as lines F and G in Chart 3.

Chart 3:
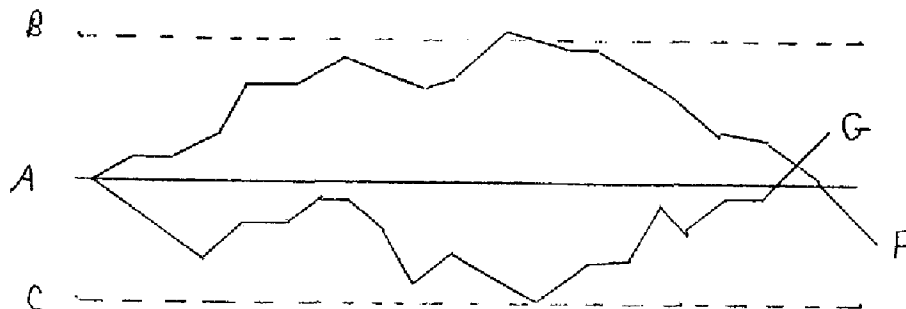
Note that it is possible for loss ratios to fall outside of the range of historical loss ratios established by lines B and C; since the historical data does not provide the universe of possible loss ratios, it only presents what has happened during the limited observation period, not what might happen over all time periods.

Removing Double Counting of Phase-In Factors

Conceptually, the removal of double counting is accomplished by: 1) taking the starting historical variance (already adjusted to remove statistical variance), using phase-in factors of 1,000, and calculating the variance of the resulting loss ratios, 2) doing the same thing with real phase-in factors, and 3) scaling the variance of the historical variance distribution so that the results match the variance in 1). This adjusted variance would be the final one.

If we treat the impact of phase-ins as a multiplicative constant, then we find the ratio of 2) to 1), call it "p", then go back to the historical variance distribution and adjust each value Y_i to:

$$\overline{Y} + (Y_i - \overline{Y}) \sqrt{p}$$

I.   Theory

Let:
X = Random Variable of underlying claims, net of Trend Miss/Historical Variance
Θ = R.V. - Statistical Deviation
Y = Observed Trend Miss/Historical Variance
$Y = (1 + \Theta) \cdot X$

Assuming Θ, X independent:

$$VAR(Y) = E((1+\Theta)^2)E(X^2) - E(1+\Theta)^2 E(X)^2.$$

$$Since \ E \ (1+\Theta) = 1,$$

$$VAR(Y) = E((1+\Theta)^2) \ E(X^2) - E(X)^2$$

$$= E((1+\Theta)^2) \ [VAR(X)+E(X)^2] - E(X)^2.$$

$$Since \ VAR((1+\Theta)) = E \ ((1+\Theta)^2) - E(1+\Theta)^2,$$

$$and \ E \ (1+\Theta) = 1,$$

$$then \ VAR \ (1+\Theta) = E((1+\Theta)^2) - 1.$$

So,

$$VAR(Y) = [VAR(1+\Theta)+1] \ [VAR(X) + E(X)^2] - E(X)^2$$

II.   Practice

Let $\overline{Y}$ = average claim value including Historical Variance

$$S^2 = \sum_{i=1}^{N} \frac{(Yi - \overline{Y})^2}{N-1} = sample \ variance$$

Similar definitions occur for $\overline{(1+\Theta)}$ and $S^2_{(1+\Theta)}$.

Note that since $E(\Theta) = 0$, $E(Y) = (X)$.

Y values are from data, Θ values are from the portfolio distribution.

$$\text{Then: } VAR(X) = \frac{S_Y^2 + \bar{Y}^2}{S_{(1+\Theta)}^2 + 1} - \bar{Y}^2 .$$

$$\text{Then let } K = \frac{VAR(X)}{VAR(Y)}$$

To modify Y to have the variance of X, we must modify Yi in a way which leaves $\bar{Y}$ unchanged.

Thus:

$$\text{Find } t \rightarrow$$

$$VAR[t(Yi - \bar{Y})] = VAR(X)$$

$$t^2 VAR(Yi - \bar{Y}) = K \cdot VAR(Y)$$

$$t^2 VAR(Yi) = K \cdot VAR(Y)$$

$$t = \sqrt{K}$$

III.   Therefore, the calculational steps are:

(1) *Find $\bar{Y}$, $S_{1+\Theta}^2$, $VAR(X)$*

(2) *Replace each historical variance data entry Yi with:*

$$Zi = \bar{Y} + (Yi - \bar{Y}) \cdot \sqrt{\frac{VAR(X)}{S_Y^2}}$$

Risk Based Capital Data Preparation— Fitting of industry trend lines

This describes the method we used for developing data used in RBC testing. It differs from the instructions at several points, so this description is being submitted for approval.

A. Trend lines were calculated for each line of business separately.

B. Data for all companies to be used within a line of business was combined in the calculation of the trend. The regression was based on loss ratio by year.

C. A weighted regression was performed using premium as the weight. This determined the slope of the industry trend.

D. An intercept was calculated for each company separately, with the slope fixed from C., again using weighted least squares. This is equivalent to passing a line with given slope through the company data so that actual claims equal predicted claims.

E. This gives for each company and year a predicted value:

$$\hat{LR}_{Co, Yr}$$

This was the data sent to each modeler.

F. The general consensus was to use:

$$\frac{LR_{Co, Yr} - \hat{LR}_{Co, Yr}}{\hat{LR}_{Co, Yr}}$$

as the Y distribution, before removing the statistical claims variance.

Alternative method of calculating S^2_{e+1}

This is to propose an alternative method of calculating S^2_{e+1}. This method was developed since it proved to tedious to run a portfolio distribution for each line of business, company and year. Since the current directions request that this be done, we wished to explain our alternative method.

The alternative method is based on the idea that the portfolio distribution e is based on the individual distribution I, so the variance of e can be calculated from the mean and the variance of I. This gives the actual variance of the distribution e, as opposed to the estimator S^2_{e+1}, so should actually be more accurate as well as more convenient.

Derivation:

I is the individual claim distribution. It is defined by frequencies f_i and severities S_i. The expected value of I is:

$$Expected\ Individual\ Claims = \overline{I} = \sum f_i S_i$$

The variance of I is:

$$Variance\ of\ Individual\ Claims = Var(I) = \sum f_i (S_i - \overline{I})^2$$

These two items can be calculated from the individual distribution and do not change based on portfolio size.

The portfolio distributions depend on the size of the portfolio. Let the number of lives be L, and let e_L be the portfolio distribution for L lives. Then

$$\Theta_L = \frac{Actual\ Claims - Expected\ Claims}{Expected\ Claims}$$

$$\Theta_L = \frac{\sum_L I - L\overline{I}}{L\overline{I}}$$

where the sum is over L identical independent copies of I. The actual claims and e are random variables and the expected claims is a number.

From this we can calculate the variance of θ_L.

$$Var(\theta_L) = \frac{LVar(I)}{\{LI\}^2} = \frac{Var(I)}{L\,\overline{I}^2}$$

This is the actual variance of the distribution θ_L. This is the formula we are proposing to use. The number of lives L is used together with the parameters from the distribution I.

The method in the instructions is to take a sample of N observations of θ_L using the portfolio generator and calculate:

$$S^2_\theta = \sum_{i=1}^{N} \frac{(\theta_i - \overline{\theta})^2}{N-1}$$

This is an unbiased estimator of Var(θ): $E(S^2_\theta) = Var(\theta)$, however, each run of the portfolio generator will give different results. The formula we are proposing will
give the actual variance without sampling errors.

One last note: $S^2_\theta = S^2_{\theta+1}$ and Var(θ)=Var(θ+1).

kuserisacprwses

Mr. William F. Bluhm, FSA
Principal and Consulting Actuary
Milliman & Robertson Inc.
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Dear Bill:

We had a very good meeting yesterday. You asked that I provide some formulas for phase-in given the new approach to loss ratio generation. Along the way, I also took a look for other formulas that will have to change. As it turns out, I don't think we need to change much.

Currently, the company specific (CS) deviation from the target loss ratio is a function of the target loss ratio (LR), the previously accumulated trend miss (AT), this year's trend miss (TMC), and this year's statistical miss (SMC). (The trend and statistical functions are assumed to be a percentage of claim cost in these formulas.)

$$AT(t) = AT(t-1) \cdot [1+TMC(t) \cdot LR(t)]$$

old

$$CS(t) = AT(t) \cdot [1+SMC(t) \cdot LR(t)]$$

The new model will eliminate the accumulation of the trend miss. This means that the term AT(t) is eliminated and the formula for CS(t) changes:

$$CS(t) = [1+SMC(t) \cdot LR(t)] \cdot [1+TMC(t) \cdot LR(t)]$$ new

The "phase-in" of morbidity changes into pricing is a function of the change in morbidity from year to year and a set of phase-in factors that represent how quickly companies reflect experience changes in their pricing. Concern was expressed that the elimination of the accumulated trend factor would eliminate the basis for phase-in.

As it turns out, phase-in is based on the observed trend movement (OTM) from year to year in the company specific results rather than changes in accumulated trend (AT).

$$OTM(t) = [CS(t)/CS(t-1)] - 1$$

Given that, I don't feel the handling of the phase-in factors needs to be changed. It used to be based on changes that a particular company saw; it will continue to be so.

It turns out we probably don't need to change much to go to a "deviation from mean" based system. I didn't give it an exhaustive look but outside of the formula for CS, I don't think anything else needs to change. Feel free to call me if you'd like to discuss this.

RBC FORMULAE AND NOTATION

Description	Notation	Conditions	Formula
		Given Information	
Surplus Target	ST		
Table for Phase in Factors	PF(i) for year i		
Table for Profit Target	PT	'	
Dividend Level	DL		
Historical Variance Leveraging Factor	LEV		
Reset Year (to reset AS to TS)	RY		
Distribution for Historical Variance			
Distribution for Statistical Variance			
		Formulae	
Beginning Surplus	BS		EC / LR(1) * ST
Target Profit(t)	TP(t)		Look up PT(t) for AS(t-1)/TS(t-1)
Target Loss Ratio	LR(t)	$t = 1$	Given
		$t > 1$	$[(1 - TP(t)) / (1 - TP(t-1))] * LR(t-1)$
Exposed Premium(t)	P(t)		EC / LR(t)
Historical Variance(t) (% Claims)	TMC(t)		Random Variable (Distribution Given) * LEV
Statistical Variance(t) (% Claims)	SMC(t)		Random Variable (Distribution Given)
Statistical Variance(t) (% Prem)	SM(t)		SMC(t) * LR(t)
Claim Level			
- Company Specific(t)	CS(t)		$1+[SMC(t)+TMC(t)]*LR(t)$
Observed Trend Movement(t)	OTM(t)		$(CS(t)/CS(t-1)) - 1$
Premium Level(t)	PL(t)		Product of $[1 + PF(t-i+1) * OTM(i)]$ over $i = 1$ to t
% Gain/Loss(t)	G/L(t)		TP(t) + PL(t) - CS(t)
Operating Gain before Dividends and Tax(t)	OG(t)		P(t) * G/L(t)
Tax(t)	TAX(t)		See tax worksheet and documentation
Tax Credit(t)	TC(t)		See tax worksheet and documentation
Operating Gain after Taxes(t)	OGT(t)		OG(t)-TAX(t)+TC(t)
Target Surplus(t)	TS(t)		ST * P(t)
Dividend(t)	D(t)	OGT(t) < 0	0
		OGT(t) => 0 and OGT(t) < TS(t)*(1+DL) - AS(t-1)	0
		OGT(t) => 0 and OGT(t) => TS(t)*(1+DL) - AS(t-1)	OGT(t) - TS(t)*(1+DL) + AS(t-1)
Operating Gain after Dividends and Tax(t)	OGD(t)		OGT(t) - D(t)
Actual Surplus(t)	AS(t)	if t=RY-1	TS(t)
		otherwise	AS(t-1) + OGT(t) - D(t)
Change in Surplus(t)	SC(t)		AS(t) - AS(t-1)

D-16

Model Cell Number

Financial Results from One Monte Carlo Sampling

Beginning Surplus	3,505,496				Surplus Target (% premium)		5.00%

End of Year	1	2	3	4	5	6	7
Target Loss Ratio	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%
Exposed Aggregate Premium (000's)	70,109,929	70,109,929	70,109,929	70,109,929	70,109,929	70,109,929	70,109,929
Operating Gain before Dividends (000's)	2,678,995	3,887,979	7,351,269	3,749,137	(1,513,403)	(826,546)	791,013
Dividends (000's)	2,678,995	3,887,979	7,351,269	3,749,137	0	0	0
Operating Gain after Dividends (000's)	0	0	0	0	(1,513,403)	(826,546)	791,013
% Gain/Loss (before dividends)	3.82%	5.55%	10.49%	5.35%	-2.16%	-1.18%	1.13%
Actual Surplus (000's)	3,505,496	3,505,496	3,505,496	3,505,496	1,992,093	1,165,547	1,956,560
Change in Surplus from Prior Year (000's)	0	0	0	0	(1,513,403)	(826,546)	791,013
Target Surplus (000's)	3,505,496	3,505,496	3,505,496	3,505,496	3,505,496	3,505,496	3,505,496
Target Profit	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Trend Miss (% Prem)	8.05%	-0.97%	-4.20%	0.62%	16.76%	10.69%	-1.75%
Statistical Miss (% Exp Claims)	-3.00%	-1.61%	-4.26%	3.15%	-1.46%	-6.10%	3.71%
Statistical Miss (% Prem)	-2.10%	-1.13%	-2.98%	2.21%	-1.02%	-4.27%	2.60%
Observed Trend Movement	5.78%	0.02%	-6.00%	6.00%	13.07%	7.05%	5.30%
Claim Level							
- Accumulated Trend	1.08	1.07	1.03	1.03	1.20	1.33	1.31
- Company Specific	1.06	1.06	0.99	1.05	1.19	1.28	1.34
Premium Level	1.03	1.04	1.03	1.04	1.10	1.19	1.28

Minimum Surplus => 0	1,165,547

Model Cell Number

Financial Results from One Monte Carlo Sampling

| Beginning Surplus | 3,505,496 | | | | Surplus Target (% premium) | | 5.00% |

End of Year	1	2	3	4	5	6	7
Target Loss Ratio	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%
Exposed Aggregate Premium (000's)	70,109,929	70,109,929	70,109,929	70,109,929	70,109,929	70,109,929	70,109,929
Operating Gain before Dividends (000's)	2,678,995	3,887,979	7,351,269	3,749,137	(1,513,403)	(826,546)	791,013
Dividends (000's)	2,678,995	3,887,979	7,351,269	3,749,137	0	0	0
Operating Gain after Dividends (000's)	0	0	0	0	(1,513,403)	(826,546)	791,013
% Gain/Loss (before dividends)	3.82%	5.55%	10.49%	5.35%	-2.16%	-1.18%	1.13%
Actual Surplus (000's)	3,505,496	3,505,496	3,505,496	3,505,496	1,992,093	1,165,547	1,956,560
Change in Surplus from Prior Year (000's)	0	0	0	0	(1,513,403)	(826,546)	791,013
Target Surplus (000's)	3,505,496	3,505,496	3,505,496	3,505,496	3,505,496	3,505,496	3,505,496
Target Profit	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Trend Miss (% Prem)	8.05%	-0.97%	-4.20%	0.62%	16.76%	10.69%	-1.75%
Statistical Miss (% Exp Claims)	-3.00%	-1.61%	-4.26%	3.15%	-1.46%	-6.10%	3.71%
Statistical Miss (% Prem)	-2.10%	-1.13%	-2.98%	2.21%	-1.02%	-4.27%	2.60%
Observed Trend Movement	5.78%	0.02%	-6.00%	6.00%	13.07%	7.05%	5.30%
Claim Level							
- Accumulated Trend	1.08	1.07	1.03	1.03	1.20	1.33	1.31
- Company Specific	1.06	1.06	0.99	1.05	1.19	1.28	1.34
Premium Level	1.03	1.04	1.03	1.04	1.10	1.19	1.28

| Minimum Surplus => 0 | 1,165,547 |

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APPENDIX F

GLOSSARY

Administrative Services Only (ASO) Agreement
Contract for the provision of certain services between an insurer and a group employer or other plan sponsor. Such services often include actuarial activities, benefit plan design, claim processing, data recovery and analysis, employee benefits communication, financial advice, medical care conversions, and preparation of data for reports to governmental units.

Admitted Assets
Assets of an insurance company permitted by supervisory authorities to be included in the company's balance sheet.

American Academy of Actuaries
The Academy is a professional membership, government information, and public relations organization for actuaries practicing in the United States, regardless of specialty. The Academy also establishes qualification standards for making public statements of actuarial opinion. Professional standards of practice and discipline procedures are the responsibility of the Actuarial Standards Board and the Actuarial Board for Counseling and Discipline, respectively, both independent entities within the Academy.

Assessment
An amount charged to an insurer in a jurisdiction, through regulation or government programs, to cover losses attributable to such programs. For example, amounts attributable to losses from reinsurance pools, state guaranty funds, or insolvency funds.

Asset Risk
The risk that the amount or timing of items of cash flow connected with assets will differ from expectations or assumptions as of the valuation date, for reasons other than a change in investment rates of return. Asset risk includes the risk of default or other financial nonperformance.

Capitation
Method of payment for health services in which a health care provider or hospital is paid in advance a fixed amount for each person to be served for the period, regardless of the actual number or nature of services provided to each person.

Case Management
The assessment of health care needs, development of a plan of care, coordination of those services assessed to be needed, and appropriate monitoring/follow-up of the extent and quality of the services needed.

Cash Flow Testing

The process of projecting and comparing, as of a given date called the valuation date, the timing and amount of asset and obligation cash flow after the valuation date under a variety or economic scenarios.

Claim Liability

The actuarial present value as of the valuation date, of future claim payments under the benefit plan for claims which have been incurred on or before the valuation date and have accrued payments through valuation date.

Claim Reserve

The actuarial present value as of a valuation date of future claim payments under the benefit plan for claims which have been incurred as of the valuation date, but not yet accrued.

Community Rating

A method of rating that produces identical rates for all members of an identified pool or class, based on the expected costs for these members as a group. Typically, rates may vary only by certain broad classifications within the community, such as family status (single versus family coverage), and occasionally by geographic areas.

Cost of Health Care

All salaries, expenses, and payments incurred to deliver, or to contractually commit to deliver, health care to a covered life.

Cost Plus

Insurance arrangement whereby a policyholder is charged the amount of claims paid plus the insurer's retention.

Credit Risk

Risk associated with the possibility of a loss on an investment security, either in whole or in part.

Duration

Policy Duration: The period of time between the date of issue of a policy and valuation date.
Claim Duration: The period of time between the date a claim was incurred and a valuation date.

Earned Premium

The portion of premium for a policy or group of policies attributable to the period of coverage between valuation dates.

Equivalent Premium
The total amount of premium that would have been paid to an insurer if a self-insured, cost-plus, or minimum premium plan had been fully insured. Typically calculated as actual premium plus self-insured claims. Includes, but is not limited to, paid claims, incurred but not reported administrative and other expenses, and other retention charges.

Extended Elimination Period Reinsurance
A type of reinsurance in which the reinsurer's loss is a proportional share of either the claim in excess of a dollar limit or periodic payments after a given elapsed time after incurral of the claim.

Health Maintenance Organization (HMO)
An organization that coordinates, and usually provides, the delivery of comprehensive health care to an enrolled population, licensed under separate enabling legislation than other insurers.

Health Risk Adjustment
see Risk Adjustment

HMO
see Health Maintenance Organization

Incurred Losses
The amounts paid or payable for claims covered by a policy or group of policies attributable to the period of protection.

Individual Insurance
A type of insurance policy that is sold directly to individual persons or to individual families, as contrasted with insurance that is sold through employers, associations, or other organizations.

Lives
When used in the RBC formula, lives is the people covered by a health plan.

Loss Ratio
The ratio of claims to premiums during a specified period.

Managed Care
An organized system for delivering cost-effective health care that incorporates benefit design features, financial incentives for providers (e.g., reimbursement methods that extend beyond discounted fees), and controls on utilization.

Minimum Premium Plan
Combination approach to funding an insurance plan aimed primarily at premium tax savings. The employer self-funds a fixed percentage (e.g., 90%) of the estimated monthly claims and the insurer insures the excess.

National Association of Insurance Commissioners (NAIC)
National organization of state insurance regulatory officials of the 50 states, the District of Columbia, American Samoa, Guam, Puerto Rico and the Virgin Islands, charged with regulating insurance. It has no official power but wields influence. The association was formed to promote national uniformity in insurance regulations.

Non-Admitted Assets
Assets of an insurance company permitted by supervisory authorities to be included in the company's balance sheet.

Performance Guarantees
A binding commitment by a health plan to provide a level of service or cost during the policy or contract period. Often a financial penalty results when the performance levels are not met.

Premium Equivalent
see Equivalent Premium

Proportional Reinsurance
A type of reinsurance wherein the loss incurred by the reinsurer is directly proportional to the size of the original direct claim. "Quota Share" in type of proportional reinsurance.

Rate Guarantees
A binding commitment by a health plan to maintain a premium amount charged for a specified period of time.

Reinsurance
The transaction whereby the assuming insurer, for a consideration, agrees to indemnify the ceding company against all, or a part, of the loss which the latter may sustain under the policy or policies which it has issued.

Reinsurance Agreement
Any contractual arrangement or treaty whereby some element of risk contained in insurance contracts is transferred from a primary (or ceding) insurance company to a reinsuring (or assuming) insurance company in return for some consideration.

Reinsurer

The insurer which assumes all or a part of the insurance of reinsurance risk written by another insurer.

Risk Adjustment

Process to determine the amount of the monetary transfers between carriers needed to account for the differences in risk characteristics of the various carriers' risk pools, based on a risk assessment.

Risk Assessment

A means of determining objectively whether an individual or group represents a risk that is reasonably close to the average and, if not, of quantifying the relative deviation from the average.

Risk Based Capital

Provides an elastic means of setting the capital standards for insurance companies to support their overall business operation in light of their size and risk profile. A company's RBC is calculated by applying factors to various asset, premium and re-serve items, where the factor is higher for those items with greater underlying risk and lower for less risky items.

Risk Categories

(C-1) Asset risk with respect to the insurer's assets
(C-2) Pricing risk of adverse insurance experience with respect to the insurer's liabilities and obligations
(C-3) Interest risk with respect to the insurer's business
(C-4) General management risk

Risk Margin

An amount to compensate for the uncertainty in an actuarial calculation; that portion of the insurer's retention other than for expenses, e.g., risk or other contingency charges and profits.

Withhold

The portion of a health care provider's negotiated fee which is not paid to the provider at the time a service is rendered but is instead held at risk. It is paid to the provider only if the aggregate cost of health care provided to a group of covered persons is at or below a target figure. It actual costs exceed the target figure, the withhold is re-tained by the insurer up to the amount necessary to recover the difference between the actual cost and the target cost.

State of Utah
INSURANCE DEPARTMENT

Michael O. Leavitt
Governor
Robert E. Wilcox
Commissioner

State Office Building, Room 3110
Salt Lake City, Utah 84114-6901
(801) 538-3800

November 8, 1993

Mr. William F. Bluhm, FSA
Milliman & Robertson, Inc.
8500 Normandale Lake Boulevard, Suite 1850
Minneapolis MN 55437

Via Fax 612\897-5301

Dear Bill:

HEALTH ORGANIZATIONS RISK BASED CAPITAL

We held our open meeting of the working group on November 4, 1993, and my personal opinion was that it was quite successful. We had good participation and made significant progress in defining the issues.

There are definitely some areas in which the input of your committee from the Academy will be helpful and certainly appreciated. While others have offered their assistance, our working group will look primarily to the Academy for unbiased technical support. I will outline here those specific items we are requesting of you which were identified in our meeting, but this should not be considered a total list.

We concluded that it will be important that your committee include strong participation from HMO practitioners. We received a presentation from Kaiser Permanente where they concluded that RBC rules should exclude HMOs. While there was general rejection of their being excluded, it is clear there are concerns that need special attention.

1.   Glossary.

        There is a need for a glossary of terminology. The acronyms especially provide a problem for many regulators in reviewing the issues and understanding the implications for risk based capital. It became clear that different kinds of organizations use different terms to mean the same thing and perhaps the same terms to describe something different. Health care reform has further complicated the confusion as the terminology has shifted and different proposals use different terms. Your help in this area could be used as soon as possible.

Ltr/Bluhm
November 8, 1993
Page 2

2.   Identification of Issues.

We next need to develop a matrix of the different kinds of entities and the issues
related to RBC that flow from each of these entities. Our goal is to develop a
seamless approach that will deal with the existing system as well as new kinds of
approaches, to the extent that we can anticipate them, that certainly evolve as we
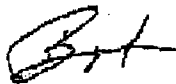move toward health care reform.

3.   C-2 Analysis.

Then we need to ask your committee to undertake a detailed analysis of the C-2
risks for health organizations. We discussed the concerns about accuracy versus
complexity. We will certainly need to make compromises to end up with a system
that is practical to apply. We think that regulation should determine where those
compromises should be made and, hopefully, do so with information about the
impact on accuracy. Therefore, we would ask your committee to make a detailed
analysis with identification of problems in application rather than focusing on
practicality from the outset.

I am asking NAIC staff to develop an analysis of the variety of regulatory structures
imposed upon health organizations including the differences in reporting requirements and
formats. They will also begin the process of securing and organizing the data that will be
necessary for testing purposes.

I think this is one of the most important projects that we will undertake. Your help is
very much appreciated. Please let me know of any questions you may have or ways that
I can help.

                        Respectfully,

                        Robert E. Wilcox, FCA, ASA, MAAA
                        Insurance Commissioner

cc: Mike Barth (For distribution to Working Group)

chd/riskbc

F-2

APPENDIX H

COVARIANCE AND OVERALL RUIN THEORY SUBCOMMITTEE

2. Uncomfortable with calibrating results to the NAIC medical level. Defining the appropriate regulatory intervention level is a critical part.

Subcommittee Referral: Covariance and Overall Ruin Theory
Recommended Action:

> Develop a map from results from specific cells in the model to the formula and to specifically address the basis for calibration of the formula.

3. It seems illogical that the impact of the C-2 medical risk should be reduced so significantly for a multi-line insurance company. Covariance formula seems questionable.

Subcommittee Referral: Covariance and Overall Ruin Theory
Recommended Action:

> Retain the existing covariance formula and expand the discussion in the written report regarding the issues surrounding the covariance formula.

4. Existing covariance formula makes it difficult to achieve the "level playing field" goal given that multi-line companies with significant C-1 risks can underwrite medical risks for essential no additional capital while significant capital is required for BCBS plans or HMOs.

Subcommittee Referral: Covariance and Overall Ruin Theory
Recommended Action:

> Based on additional input, this issue is subsequently withdrawn.

9. Concerned with the consistency of factors for "other health coverages" may not reflect a consistent 15% probability of ruin.

Subcommittee Referral: Covariance and Overall Ruin Theory
Recommended Action:

> Assure consistency of factors through the previously mentioned map from the model to the formula for each specific formula cell.

18. Tried to address that where the risk was reduced due to other sources of margin particularly in "participating" type contracts. A reasonable approach was developed where contingency reserves applied and agree that a similar approach should be used where other margins may apply. The retrospective premiums are not the truest indicators of "margins" as is inferred by the report. Retros can be used even where they do not represent margins and margins can exist without retros. The current formula uses dividends to account for margins available on participating business.

Subcommittee Referral: Covariance and Overall Ruin Theory
Recommended Action:

> Include dividend paid as an additional category for adjustment similar to rate stabilization reserves and retrospective premium cells. An individual group would be eligible for only one of the three adjustments. In addition, a factor was recommended to adjust the 1/2 percent to reflect the size of the group. The actual factor should be based on modeling results but a suggested form was (500+n)/n.

19. The different levels of capital can be very confusing. All other things being equal, the seven year modeling time frame would produce a target level of capital. Most managements, with several lines of business, would develop their target capital using less conservative probabilities of ruin then we have so far or choose a level after evaluating alternative scenarios.

Subcommittee Referral: Covariance and Overall Ruin Theory
Recommended Action:

> Develop a map from the models to the RBC formula. The model time frame raised in this issue was referred to the model subcommittee. The model subcommittee has recommended reducing the time frame from seven years to five years.

45. The starting surplus as a percentage of RBC is an issue. Only non-rated companies have surplus equal to control level.

Subcommittee Referral: Covariance and Overall Ruin Theory
Recommended Action:

> This issue was referred to the Model Subcommittee. The Model Subcommittee has recommended amending the amount of RBC an organization can accumulate beyond the target level dependent upon the existence of rate regulation.

DATA AND ASSUMPTIONS SUBCOMMITTEE

1. Long tails on trend variance distributions are likely aberrations in the data and should probably be trimmed. For example, under BCA-2, the probability of missing trend by 15% or more is 10.91%. This means that if claims are priced at 10% trend, actual trends will be less than -5% or greater than 25%.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> The historic variance distributions have been adjusted to scale out the statistical fluctuation resulting from smaller company data being included. As a result, the tails of the distributions are much smaller in most cases. Each subgroup developed an approach to accomplish this purpose.

6. Academic concern of whether the trend miss distributions should have an expected value of zero.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> We agree that the trend miss or historical variance distribution should have an expected value of zero. To the extent that we were able to scale the statistical fluctuation out of the distribution, and we have normalized the distribution to an expected value of zero.

10. Concerned that modeling methodology for disability is incorrect. There may be double-counting for historical variances, once in the premium factor where historical variance is based on fluctuations in financial results reflecting variations in both incidence and duration and again in the reserve factor which reflects variations in duration.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> The data was adjusted to remove first year variance from expected in recoveries from the claim reserves. In future years, the claim reserves will not fluctuate because we are assuming a mature block of business where the change in reserves is zero.

14. Double counting may exist with both statistical fluctuation and historical variance component. Wouldn't observed historical variances by primarily the result of statistical fluctuations given the very low incidence of accidental death?

Subcommittee Referral: Data and Assumptions
Recommended Action:

> We believe that it is appropriate to remove the statistical fluctuation from the historic variance. We used existing information by size from the historic variance distribution to do this. We have made further adjustments based on the evaluation of possible aberrations in the data developed from the questions we asked the suppliers of data.

16. The application of the model is flawed. The use of distributions of loss ratios as a substitute for what could be viewed as "trend miss" assumption leads to significant double counting of risk as it itself is impacted by all the risks we are modeling. Suggest using a trend miss distribution derived from the delphi method of surveying actuaries in the group field. The loss ratio distributions is what we should be using to test the results of the model not as an input.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> Our approach was to back out all known double counts, based on the assessment of what went into the data using the evaluation described in 14. Each subgroup incorporated this in their evaluation of the data. We also explored the use of model cells with and without phase-in factors in order to remove the double count effect arising from the phase-in reflecting the same factors as the historic distribution.

17. Concerned that the results from Medicare Supplement are dramatically higher than those from major medical as well as existing capital requirements. These results were not based on theoretical differences in risk but rather were derived empirically.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> Medicare supplement data was limited. Furthermore, its value is somewhat dubious because of the legal changes which make any historic evaluation not directly comparable to the present conditions. The other coverages subgroup considered this issue in setting the historic variance distribution.

20. Loss ratio distributions being used a proxies for trend misses contain all of
the results of trend misses, etc. I believe we were going to use the loss ratio
distributions to test the model output as a reality check. It also seems that
because everything is embodied in the loss ratio distributions, that the phase in
factors should be 1.00. (Issue of double counting.)

Subcommittee Referral: Data and Assumptions
Recommended Action:

> See response to issue 16.

21. It is difficult to model management and regulatory actions as capital falls.
All actions increase the probability of limiting losses/increasing profit potential.
A possible proxy for these actions might be to use the profit matrix starting at
about 50% of target capital to grade into higher profit targets.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> The model allows for profit to vary depending on level of target capital. This
> was generally not done in the initial runs. However, it can be. Each subgroup
> has recommended an appropriate treatment.

27. Concerned about multiplication factor for prior approval of rate increases.
Although the factor may be appropriate for a rating agency's evaluation, it
seems much too high for regulator RBC. The factor should only relate to one or
two month rate increase delay and not reflect the concern that regulators will
not do their job.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> Medical coverages were looked at with and without the phase-in adjustment.
> Each subgroup evaluated the phase-in factors used in the coverages modeled,
> and adjusted them as appropriate to reflect this factor.

28. Need to refine the RBC C-2 health insurance formula. Some of the analysis are pointing towards factors that appear not to be representative of the risks inherent in types of products to which they are assigned.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> Each subgroup determined that the data used was appropriately representative of the various products, and that the assumptions chosen for the distributions and phase-in and profit were appropriate to those products. The formula subcommittee needs to make sure that differences emerging from the model based on these factors are appropriately reflected in the final formula.

31. Similar concerns regarding the double counting in the loss ratios.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> See response to issue 16.

32. The expected loss ratio is inappropriate for DI because of the active life reserves. Recommend testing it and see what happens if the loss ratio is changed.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> This item appears to have minimal impact. The subgroup will evaluate the appropriateness of the treatment for active life reserves. (The subgroup has withdrawn this item as an issue (8/1)).

33. Need to reconsider the cells D.I.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> The subgroup determined appropriate cells for D.I. business and modelled them.

34. The phase in factors for non-cancelable D.I. should be small, but do not recommend zero.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> The subgroup determined appropriate non-zero factors for D. I. reflecting management practices.

37. The historical company experience on disability income used in the model may not be appropriate depending on how it is used in the model. Several questions about the company experience need to be considered. (Issues include statutory loss ratios, annual claim reserves, treatment of investment income, active life reserves, GAAP results rather than statutory results.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> The subgroup established appropriate assumptions for D.I. in using historic experience.

38. The CIDA table was used in developing some assumptions for the model, but the table has margins in some elements. Were adjustments made? How was the table used?

Subcommittee Referral: Data and Assumptions
Recommended Action:

> An unloaded table was used in the preparation of the assumptions. Hence, there are no margins.

40. It seems logical that RBC should vary significantly by the size of a block. The preliminary model results are almost the same for the 100,000 size portfolio and the 5,000 size portfolio. This results suggests there may be a problem with the model and/or data since identical results occur for dissimilar blocks.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> We agree that RBC could vary significantly by the size and characteristics of a block. This can be tested by selection of appropriate model cells reflecting both the size of the block and the nature of business. Each subgroup has considered that in defining model cells that were run. The formula group should reflect differences in the ultimate factors.

44. Interest on surplus and where you fund the inflationary trend is a concern. Should interest on surplus be added to the model?

Subcommittee Referral: Data and Assumptions
Recommended Action:

> Interest on surplus is indeed a factor. This was included as a profit target variable. Also note that this would apply to interest in excess of required on any claim reserve.

47. Is it appropriate to include LTC in the RBC Standards? If so, concerned with the current standards.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> We are concerned that there is no mature data available to place long term care on the same basis as most other coverages. However, the NAIC has requested that long term care be included in the standards. Therefore we have made recommendations using our best assumptions and methodologies, which include assumed distributions of historic fluctuation.

51. The historical variance should be the same level of conservatism for all blocks. To accomplish this we may have to choose what blocks we use and in other cases we may need to adjust the results. For example, large enough blocks were used for medical and dental to eliminate statistical variance and were large enough that management worries about results. Shouldn't we be consistent among all lines?

Subcommittee Referral: Data and Assumptions
Recommended Action:

> We attempted to remove the statistical variances from the various distributions though the cell size definition vehicle. Each subgroup has evaluated the cell size definitions, and obtained additional data where necessary.

52. We have assumed that for any company, the tabular interest in active life and claim reserves is constant over time. This may not be a good assumption.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> The assumption that have tabular interest on active and claim reserves appears to be a valid assumption assuming a stable and mature block of business.

53. Because active life reserves are not based on gross premium assumptions, if gross premium claim assumptions are met, loss ratios as we have defined it, will only by accident be level. We should think about a growing block of business using a two year preliminary term method.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> Each subgroup has considered if this issue should be reflected in the cell definitions for their particular coverages. Smaller cells provide for analysis of this issue.

54. There is a need for some smoothing before using data that contains large claim reserves. Observed yearly loss ratios on medical and dental lines are real. On high claim reserve products, as LTD, yearly loss ratios are estimates. Observed fluctuation from year to year for high reserve products can be caused by errors in estimation followed by correction of error.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> We believe that the variance from claim reserves has been appropriately adjusted out.

55. Historical experience may include reserve strengthening in active life and claim reserves. We should discuss how to handle these situations.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> Contributing companies were asked if such strengthening occurred, and the distributions were adjusted to factor it out where appropriate.

56. For products subject to regulatory loss ratio control, is it correct to assume low followed by high loss ratios are both misses. The high could be expected in order to meet lifetime requirements.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> The Modeling Subcommittee has suggested that the model be modified to provide for a limit on dividends or an allowance to retain surplus. This would permit holding of extra monies to account for future expected results. We concur with this recommendation.

62. The factors seem to be high for claim reserves and liabilities in light of appointed actuary signing off. Capital is needed to cover the risk that while reserves are adequate based on reasonable assumptions, they are not adequate based on unreasonable assumptions. Plus they are needed to cover temporary fluctuations in recoveries that do not effect adequacy of reserves but could cause an insolvency.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> The underlying issue here appears to be that certain reserves will be in excess of minimum levels. This is felt to be another level of profit margin and has been reflected in profit targets.

63. The factors for claim reserves and liabilities should vary by maximum periods. Short duration reserves are based on loss development methods as medical.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> This issue appears to apply mostly to disability products, including short term. The subgroups selected appropriate data cells to evaluate differences. Where the modeling produced different ruin probabilities, the Formula Subcommittee should consider whether there ought to be differences in the RBC formula.

66. For major medical hospital coverages where the average (or base) rate is unregulated, additional data is needed. In some instances, only one data line exists for historical variance.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> The medical subgroup has dealt with this issue in cell definitions. In fact, there was ample data available.

67. A data review should take place. A spot check only should be necessary to insure that common definition of earned premium and incurred claims were used. In addition, sources of the statistical variances should be checked for consistency and sufficient size.

Subcommittee Referral: Data and Assumptions

Recommended Action:

> Each subgroup has evaluated the data that went into the model. This evaluation included a determination that the data was consistent and that any significant unusual events are factored out.

70. The model needs a modification to recognize that the NAIC RBC model act includes more than just a RBC formula but also includes a "trend test" which focuses regulatory recognition on continuing decreases in the RBC ratio over time. Such recognition (for rate regulated products) is inconsistent with the model's assumptions of "hands-off" prior to ruin. Carrier requirements for rate guarantees may be ignored by the regulator if such actions are deemed counter to the best interests of the policyholders.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> This issue is the reverse of that described in item 21. The model will permit adjustment in profit targets as the surplus level changes. Each subgroup has evaluated the application of this adjustment to their particular lines of business.

79. Based on the distribution, a proper model for the LTC product needs to account for the impact of varying incidence rates on different age groups. To focus on the incidence risk, the model would assume that the benefit period (average claim duration for nursing home/home health care) would be short.

Subcommittee Referral: Model Structure - Data and Assumptions
Recommended Action:

> We agree. However the lack of data will probably preclude any further evaluation of this subject at this time. Cell definitions have addressed the problem.

81. The current model assumption of continually adjusting prices for annual experience is not a valid assumption for accident-only products.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> Accident policies seem to present a unique situation in that they have had a long historical record of negative trend. Therefore, although premium adjustments have lagged experience, this has had a positive affect on profits. The subgroups evaluated the phase-in factors used for these coverages and also adjusted historic variance distributions to reflect this trend.

82. The size factors used in model cells are too low to represent reality.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> Each subgroup evaluated the cell sizes used in the modelling to determine their appropriateness, and consistency with the businesses modelled.

83. The frequency with which reinsurers payout under accident-only reinsurance would be a better basis for the risk potential which is catastrophic rather tan the model's delayed price adjustment ruin risk. We should also look at appropriate offsets to RBC for risk-reducing reinsurance which focus on this catastrophic factor.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> This item should be referred to the reinsurance group and the co-variance subcommittee. It does not appear to be a function of the data assumption selection.

84. There should be a factor to recognize the size of the book in a particular company for the disability income and the accident only coverage.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> We agree. The model cell definitions reflect this issue.

89. How should RBC requirements recognize the appointed actuary and valuation standards? What is RBC needed for with regard to claim reserves and products not repriced every year if the appointed actuary has made a Section 8 opinion. Isn't risk based capital needed only for amounts falling outside some confidence limit and for items discussed above. Can we as an Academy group imply that the appointed actuary is not doing his job? Some of our factors seem to imply exactly that.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> See response to issue 62.

98. The financial modeling that is illustrated in Appendix D uses an input the portfolio distribution of claims. The portfolio distribution of claims presumably is based on actual claims of one or more companies over one or more years. We wonder if a changing mix of company contributions with different and changing claim administration practices could lead to a portfolio distribution with a greater variance than would be the case if data from a single company with consistent claim administration practices was used as input.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> We agree. We feel that the inclusion of such practices and their change is appropriate as a statistical variance item that we wish to have reflected in the results. Therefore no further action would be required here.

100. The underlying experience for some of the lines of business incorporated certain shocks such as Medicare Catastrophic and its repeal and OBRA 1990. Have the impacts of these and other shocks been factored out of the data? LTC insurance benefit design has gone through a rapid evolutionary process. Experience contributions from different companies over different time periods may give the impression of greater variation in claim results than would exist if data from a single company was analyzed.

Subcommittee Referral: Data and Assumptions
Recommended Action:

> Each subgroup evaluated whether the shocks as described have adequately been reflected in the data. Adjustments were made to the historic variance distributions based on data follow-up requests.

7. Believe that the model should be supplemented with analysis of historical insolvencies and adverse scenario testing to assure appropriate regulatory invention level is established.

Subcommittee Referral: Model Structure
Recommended Action:

> The final formula should be applied to various companies who have become insolvent to estimate how many years in advance of the insolvency the formula would have indicated that each company would have gotten into financial trouble. This step cannot happen until the formula is finalized, however.

> In addition, a separate study should be performed to determine the likelihood that the formula would identify a company as troubled but where in fact the company did not become insolvent.

> These tasks should be performed after the Task Force delivers its revised report to the NAIC in September.

11. Concerned that the methodology is not correct for LTC. For example, under LTC, premiums are collected over a number of years and accumulated in an active life reserve. For a 45 - 50 year old, there are many years available to correct premiums and thus accumulated reserves for changes in the cost of benefits (which have their highest incidence in old age), whereas for people in their 70s, there is much more limited time for correction. This suggests that a company's active life age distribution ought to have a bearing on the RBC factor. Structure of the reserve factor for LTC does not seem right. The factor is contingent on the number of claims, but in actuality, most of the reserves may be active life reserves, not claim reserves. A better structure for the LTC formula may be x% of Active Life Reserves + y% of Claim Reserves.

Subcommittee Referral: Model Structure
Recommended Action:

> The structure of the risk based capital formula should be based on both the active life and claim reserves. Premiums may not be an appropriate measure of risk for this business. These changes will be considered by the Formula Subcommittee.

> In addition, separate RBC factors should apply for individual LTC and for group LTC. The different factors should reflect the significant difference in average issue ages, and hence the active life reserve accumulation period, between

these two product lines. The Data and Assumptions Subcommittee should incorporate appropriate cells into the model.

The Data and Assumptions Subcommittee subgroup defined model cells to reflect the different types of LTC coverage.

12. Concerned that the model is susceptible to the same type of double counting for LTC as in Disability.

Subcommittee Referral: Model Structure
Recommended Action:

> This item has been referred to a subgroup of the Data and Assumptions Subcommittee that is reviewing LTC issues. In general, data sources are being asked to adjust data for these types of double counting situations. If good data sources of historical variance are not available for LTC, the subgroup is responsible for determining a substitute distribution to be used in modeling. All of the potential double counting situations were identified for the subgroup to consider.
>
> For LTC, there is a general agreement that data does not exist on a mature basis. We have used a proxy distribution to represent the historic variance distribution. Actual data was also adjusted by removing statistical variance from the distribution.

13. The performance guarantees in the RBC factor of 50% of the maximum amount at risk is arbitrary and punitive.

Subcommittee Referral: Model Structure
Recommended Action:

> Two types of performance guarantees exist. One is based on administrative performance (e.g. processing x% of claims within y days, error rate less than z%, etc.). The other is based on management of claims dollars to be within a pre-determined level. Under each of these, a portion of administrative charges are generally put at risk; 50% is a common percentage of total administrative charges that are at risk.
>
> The present formula requires an RBC factor based on the maximum amount at risk. If the maximum amount at risk is 50% of administrative charges, then the YRBC factor applied to that.
>
> The Formula Subcommittee has reviewed this methodology and believes that it is reasonable and that he factor is appropriate.

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22. If we use a three year time frame to develop the regulatory action level, the limit on surplus component of the model which gives away excess surplus, should be turned off or begin operating at a level perhaps double the action level.

Subcommittee Referral: Model Structure
Recommended Action:

> The formula has been revised such that no surplus will be dividended until total surplus exceeds 150% of the target surplus. At that time, 100% of the excess over that 150% will be paid as a dividend. The 150% factor was decided by the Formula Subcommittee.

23. A subgroup should verify the arithmetic of the model operation.

Subcommittee Referral: Model Structure
Recommended Action:

> The model will be peer reviewed and report to the Model Structure Subcommittee.

> The arithmetic in the spreadsheet has been checked.

> Members who have attempted to re-produce the results of the sample outputs that have been distributed have generally been able to generate answers that are similar but not necessarily exact. An electronic version of the sample output, which will contain the results to many decimal places, has been made available to interested persons so that rounding differences can be eliminated. Persons who conduct such comparisons should report their findings to the Model Structure Subcommittee.

25. Concern over providing full credit for reinsurance on a quota share basis. Often quota share reinsurance is subject to annual renewal. If the direct writing carrier is having difficulty with this business at renewal, the reinsurance is either not renewed or renewed on a less favorable basis. This increases the potential for insolvency of the writing carrier. Thus, providing full credit for the quota share reinsurance does not adequately reflect the risk associated with the renewal of this business.

Subcommittee Referral: Model Structure

Recommended Action:

> This issue has already been addressed in the report. It is not an issue if the renewal date of reinsurance and the policy are the same. If they are not, no credit is allowed.

29. Volume/block of business need to be reflected more. This occurs in medical, but not the others.

Subcommittee Referral: Model Structure
Recommended Action:

> Additional sensitivity testing to size of block of business is appropriate. Also, for very small size blocks, the assumption of a stationary population may no longer be reasonable.

> The Data and Assumptions Subcommittee subgroups defined model cells to reflect block of business by size.

43. Recognition of federal income taxes. Losses can be carried back to recover paid taxes or carried forward to reduce future taxes. Losses on one LOB will reduce gains on other lines and therefore company taxes. If we recognize this, it affects ruin.

Subcommittee Referral: Model Structure
Recommended Action:

> FIT may have an effect on the probability of ruin. Consequently, the model has been revised to incorporate the effects of federal income taxes. The model assumes that there are no tax carry-forwards and no losses to carry back at the beginning of the first year of the modeling period.

46. Consider the HIAA Group Long Term Disability Model.

Subcommittee Referral: Model Structure
Recommended Action:

> The Subcommittee encourages companies to compare results from their model to results produced using the Task Force's model, where both utilize the same sets of assumptions.

> The specific model in question does not reflect all of the same variables as the Task Force's model; in particular, the HIAA LTD model does not make any provision for the concept of historical variances.

48. The starting surplus should be a percentage of RBC. Irregardless of initial surplus level, we should consider what the minimum level should be before we distribute or use surplus for other purposes

Subcommittee Referral: Model Structure
Recommended Action:

> See response to issue 22.

49. Concerned with the interplay between excess gains, stockholder dividends and minimum loss ratio requirement. Is it correct to assume that excess profits will be allowed to flow into surplus even if it needed to support minimum loss ratio requirements?

Subcommittee Referral: Model Structure
Recommended Action:

> See response to issue 22.

50. The model assumes that rate increases are implemented to correct historical and statistical misses. Shouldn't they be used to correct historical only?

Subcommittee Referral: Model Structure
Recommended Action:

> For large blocks of business, such a change would have no material effect because the statistical variance on such blocks is minimal. For smaller blocks, the variation due to historical trends cannot be separated from variation due to historical miss. Therefore, making such a change for smaller blocks would not be practical.
>
> Therefore, no changes are recommended.

60. The factors for direct stop loss are inconsistent with Section A of the formula. For example, my tables indicate that the effect of inflation (because of deductible leveraging) is 2.5 times greater for a $150,000 deductible than for a $500 deductible policy. If one adjusts the major medical historical variance by a 2.5 factor the surplus requirements are five times higher than the lower variance model. The recommended factors are eight times. In addition, the true historical variance (excluding statistical) is even less because pricing in this line tends to be more conservative.

Subcommittee Referral: Model Structure

Recommended Action:

This has been rerun with new assumptions.

The Data and Assumptions Subcommittee subgroups defined appropriate model cells to reflect the differences in leveraging.

68. It is my understanding that the current model starts with target surplus and deducts losses then rebuilds to target and thereafter any profit is returned to the shareholders. Is this approach consistent with the covariance assumptions retained from the L&H model? Is it not necessary to assume some underlying trend greater than zero so that premium volume will increase for constant exposure and surplus will have to also increase.

Subcommittee Referral: Model Structure
Recommended Action:

The Formula Subcommittee determined that specific trend adjustments are not required in the model. Underlying trend rates will increase all values in the model proportionately, thereby having no effect on the target surplus relative to its benchmark (e.g. premiums, reserves, etc.).

The term "target profit" has been re-stated as "target margin" in that the values to be used in the model should reflect margins from all sources, including the excess investment income on reserves, as well as underwriting gains.

69. It is hard to believe that the model reproduces a constant target surplus regardless of the reduction in size of the exposure below 8000. While that portion which comes from statistical fluctuations is clearly size related, I do not believe that portion which comes from historical trend variance has anything to do with size for model purposes.

Subcommittee Referral: Model Structure
Recommended Action:

This issue was addressed by the Task Force prior to the release of the draft report in June, 1994. At that time, it was decided that a minimum dollar amount of surplus should be held regardless of how small the entity was. This position has not been changed.

71. Higher than average profits will frequently not be payable to shareholders since the carrier will likely be below expectations for lifetime loss ratio requirements. In the event of losses leading toward ruin, the likelihood of quicker action on rate increase requests is improved by the higher than

expected experience. While regulatory approval does add a time delay, this delay expands when results are better than expected and the delay contracts when cumulative results are worse than expected. This should be reflected in the model.

Subcommittee Referral: Model Structure
Recommended Action:

> See response to issue 22.

72. The model uses incurred claims divided by earned premiums as the loss ratio for these products. Yet the incurred claims are really paid plus change in claim reserves. Since the claim reserves for Group DI frequently anticipate significant interest earnings, the variance is overstated. Interest should be included in the denominator.

Subcommittee Referral: Model Structure
Recommended Action:

> Interest-adjustments were included in the loss ratios as input to the model. An interest adjusted loss ratio is equal to the ratio of (paid claims plus change in active life and claim reserves less required interest on reserves) to earned premiums.

73. The model doubles the effects of variances in claim reserves for Group DI since mis-estimates of reserves impact the loss ratio adding to historical variances as well as being the source of the reserve adjustment in the draft (page 19 of preliminary report, Section G). One of these must be eliminated.

Subcommittee Referral: Model Structure
Recommended Action:

> The Data and Assumptions Subcommittee adjusted the data to remove first year variance from expected in recoveries from the claim reserves. In future years, the claim reserves will not fluctuate because we are assuming a mature block of business where the change in reserves is zero.

74. If you assume that a loss ratio test was appropriate, the L&H RBC three year time frame appears sufficient and should be the extent of the modeling of price risk.

Subcommittee Referral: Model Structure

Recommended Action:

>Probabilities of ruin will be determined over a five year period, where the five years will be the last five years of the seven year model period. Thus, the first two years of the model will be used to establish a starting point for surplus for the five year time frame, where the surplus at the end of the two year starting period will be set equal to the target surplus.

75. A RBC formula might need to have the capacity to reflect the time from issue for significant changes in the level of new business or whenever the underwriting basis is liberalized.

Subcommittee Referral: Model Structure
Recommended Action:

>Though these variations should ideally be recognized, it is impractical to believe that they can be isolated from the other components of the historical variance. Therefore, the Model Structure Subcommittee recommends that it is not practical to recognize these changes in level of new business or underwriting basis.

76. The appropriate RBC factor which can be applied to statement reserves is (1+X) x Minimum Reserve less (1-Y) x Actual Reserves.

Subcommittee Referral: Model Structure
Recommended Action:

>We must assume that, regardless of the level of the reserves being held by a company, all reserves contain the same level of margins. Therefore, varying the factors based on actual reserve levels relative to minimum reserves is not required.

77. Historical variances at the carrier level are useless in modeling future Medigap risks making correcting the data errors for the current model a waste of time.

Subcommittee Referral: Model Structure
Recommended Action:

>See response to issue 17.

78. A RBC formula might need to have the capacity to reflect the time from issue for significant changes in the level of new business or whenever the underwriting basis is liberalized.

Subcommittee Referral: Model Structure
Recommended Action:

> See response to issue 75.

79. Based on the distribution, a proper model for the LTC product needs to account for the impact of varying incidence rates on different age groups. To focus on the incidence risk, the model would assume that the benefit period (average claim duration for nursing home/home health care) would be short.

Subcommittee Referral: Model Structure
Recommended Action:

> This was referred to the Data and Assumptions Subcommittee to create the appropriate LTC cells.

80. Ultimately, the NAIC will develop minimum valuation morbidity tables for LTC. Once these are available, the RBC formula should give appropriate credits to reserves higher than minimum.

Subcommittee Referral: Model Structure
Recommended Action:

> See response to issue 76.

99. The financial modeling also appears to assume that all of the business has a single premium reset date. In fact, the premium reset dates are staggered throughout the year and this would permit business that is repriced later in the year to take advantage of the results obtained on business repriced earlier in the year. There are other examples of management actions that are not captured in the modeling.

Subcommittee Referral: Model Structure
Recommended Action:

> The phase-in factors reflect the distribution of renewal dates.

> The Data and Assumptions Subcommittee subgroups defined phase-in factors to reflect the timing of premium adjustments.

104. What block of business is being modelled? Is it a closed block? If so, it should reflect lapse and have a higher or different increasing target profit. Is it an open block? Then it should grow and have different premiums on new business when needed. Is it a stationary population? New business at different rates should replace old.

Subcommittee Referral: Model Structure
Recommended Action:

> The model is based on blocks of business having constant exposure over time. As one cohort of business lapses, it is replaced by another cohort of the same size. Changes in the nature of the new risks that replace the old risks are addressed via phase in factors that implement the effects of the historical variations.

105. Companies price for an increase in morbidity over time. How should this be reflected?

Subcommittee Referral: Model Structure
Recommended Action:

> See response to issue 68.

106. Companies with rising morbidity costs can respond in ways other than price. For example, better management of offending claims, reduced analyst workload, and tougher legal viewpoint. How should this be reflected?

Subcommittee Referral: Model Structure
Recommended Action:

> All methods for improving the relationship between the premiums and morbidity levels should be reflected in the phase-in factors. This includes changes that improve costs as well as those that increase rates.

> The Data and Assumptions Subcommittee subgroups defined phase-in factors to recognize the relationship between premium and morbidity levels and the timing, if any, of changes in practice that would impact the relationship. This applied to IDI and LTC coverages.

107. The impact of a troublesome block of claims will diminish over time, one way or another. Either the block lapses away over time or new business is added with higher margins. How should this be reflected?

Subcommittee Referral: Model Structure
Recommended Action:

      See response to issue 104.

108. Income taxes will mitigate the effect of declining earnings. How should this be reflected?

Subcommittee Referral: Model Structure
Recommended Action:

      See response to issue 43.

109. Several of the factors in issues 105 to 108 may vary by size of the DI operation. For example, large DI writers will respond more quickly to morbidity changes than small ones, partly because they have better resources and data, and partly because they can't afford not to. How should this be reflected?

Subcommittee Referral: Model Structure
Recommended Action:

      The Model Structure Subcommittee suggests that the Data and Assumptions Subcommittee incorporate historical variance distributions that differ by size of company.

      The Data and Assumptions Subcommittee subgroups recognized this in the cell definitions and historic variances used in the modelling.

110. A good description of the model, and good instructions and guidance of the data group are imperative if the two groups are to work smoothly together.

Subcommittee Referral: Model Structure
Recommended Action:

      A more detailed description of the model has been developed for inclusion in the Task Force's report.

112. Lapses should be reflected in the model.

Subcommittee Referral: Model Structure
Recommended Action:

See response to issue 104.

113. Disabled life reserves and investment income impacts should be considered for the model.

Subcommittee Referral: Model Structure
Recommended Action:

See response to issue 72.

118. RBC requirements should be reduced for those lines of business for which statutory minimum valuation standards are known to be grossly redundant.

Subcommittee Referral: Model Structure
Recommended Action:

RBC requirements assume a consistent degree of reserve margin for all companies and across all lines of business. Issues related to redundancy in minimum reserve standards should be addressed by changing the reserve changes, not modifying the RBC standards.

COMPANY DATA BASE SUBCOMMITTEE

15. Concerned that even if all of the RBC factors are on a consistent basis, the effect of the formula will not be known until it is tested on actual companies. This would confirm whether the calibration of the factors is correct.

Subcommittee Referral: Company Data Base
Recommended Action:

> The formula will be tested on actual company data. This data is currently being gathered now and will continue until we are satisfied that we have the appropriate calibration.

FORMULA SUBCOMMITTEE

5. Concern over the lack of a C-3 adjustment given that the primary risk for medical is current losses. Under the proposed formula, a company investing all assets attributable to surplus in overnights or even cash would have greater capital requirements than an otherwise identical company investing all assets in 30-year treasuries. Given the primary use of surplus under our analysis is to fund current period losses, this result seems questionable.

Subcommittee Referral: Formula
Recommended Action:

> The Formula Subcommittee agreed that the point is valid. However, it probably is not highly material, since the concern is over the mismatch of asset and liability durations on surplus. This risk is substantially less material than such C-3 risks with asset-rich products such as life insurance. We therefore recommend no action.

8. Concerned with the practicality of the formula.

Subcommittee Referral: Formula
Recommended Action:

> The Formula Subcommittee is also concerned over practicality of the formula. That is one major reason why we are currently testing the formula in real-company tests. Our charge was to provide a responsive, reasonable formula which didn't make substantial concessions to accuracy to achieve simplicity, and to let Commissioner Wilcox's committee do the simplification. Despite this, however, early indications are that most life and health insurers should not have substantial difficulties in developing the needed information.

30. Catastrophic needs to be clearly addressed in the reinsurance portion.

Subcommittee Referral: Formula
Recommended Action:

> The formula was modified to recognize a number of nonproportional reinsurance arrangements.

57. Item A1 in the formula excludes coverage paying less than 50% of expected claims, presumably because of lower RBC requirements. However, this coverage would be forced into E-7 with higher factors.

Subcommittee Referral: Formula
Recommended Action:

> The Formula Subcommittee agrees that this is a correct statement. However, we don't believe this concern is material. We were unable in our own experience to find an example of a coinsurance percentage less than 50%, and doubt that such coverages exist in any material way. We therefore recommend no change.

58. There is no adjustment in item B of the formula for managed care. Comprehensive plans with deductible lower than $2501 would have adjustment. Why not for higher deductible?

Subcommittee Referral: Formula
Recommended Action:

> The subcommittee did not feel managed care should significantly impact the variance of claims which exceed high deductibles. However, we will analyze this further.

59. In item B, the factors are applied to premium while A1 factors are applied to claims. Individual major medical with 60% loss ratios would have 25% higher RBC for a $2501 deductible plan compared to a $2500. Shouldn't all factors be based on claims?

Subcommittee Referral: Formula
Recommended Action:

> The use of claims vs. premiums was decided by the Task Force for ease of calculation. It was felt that claims would be far easier to determine by managed care mechanism than trying to split premiums by the same categories. (Point-of-service plans being one major example where the premium split would likely be impossible.) On the other hand, premiums are far more available than claims under stop-loss coverages. The Task Force felt, and the subcommittee still agrees, that this methodology is appropriate.

> To accommodate the loss ratio issue, we modified the table to allow for group and individual factors. Model cells must then be identified to determine if this distinction should remain.

61. The reinsurance credit is missing guidance for excess reinsurance.

Subcommittee Referral: Formula
Recommended Action:

> The formula was modified to recognize a number of nonproportional
> reinsurance arrangements.

85. The increased risk adjustment (C-4 adjustment for 50% of growth in C-2 risk factor for prior year in excess of 20%) is overkill. I believe this particular item got into the formula very late in the process. I am not sure what the purpose of this is, it seems like overkill. It could result in a fairly high level of additional RBC for high growth lines. The current life/health formula has a .5% factor and the current proposal might drive a factor which is a multiple of the .5%. This, coupled with high factors throughout the proposal, result in an unnecessary burden. Recommend going back to a flat .5%.

Subcommittee Referral: Formula
Recommended Action:

> Contrary to the indication in the question, the current Life and Health RBC
> Formula has no specific factor to account for sudden increases in the level of
> risk taken on by an insurer. The current formula's .5% factor for C-4 risk was
> deemed insufficient. The Task Force originally felt, and the Subcommittee still
> agrees, that the proposed factor is appropriate. Three factors ought to be
> mentioned: (1) In a quickly growing block of business, the business in force on
> the valuation date is materially higher than the average inforce for the year,
> justifying a higher factor, (2) Higher RBC levels due to growth will increase the
> probability of regulatory scrutiny, which is probably a desirable public policy
> goal, and (3) It is the experience of the Task Force members that large and
> sudden growth in particular health lines of coverage is often an indicator of
> future losses, which was the original driving reason behind the factor.

87. The .5% factor on premiums and PE's is an Administrative Services Contract results is an appropriate amount of RBC for a single legal entity. However, our ASO managed care business is written on an affiliated life company paper. As a result, I believe the current RBC formula would result in a doubling of total RBC for the same business since the formula would require separate calculation of RBC on PE's each legal entity. We propose that there should be an adjustment to eliminate RBC in the situation where affiliated companies maintain RBC for the same business. Our company has an ASO managed care product which is written on Life Company paper and considered an indemnity product. However, many regulators require that we record revenues and incurred claims for this business in the HMO statutory blank even though the healthplan is "held harmless" from experience (and revenues and expenses for medical care expenses completely offset in the P&L). This business is recorded as premium equivalents in the Life Company.

Subcommittee Referral: Formula
Recommended Action:

>   We agree that the formula should be drafted in such a way that double counting
>   should not occur. The Formula Subcommittee will add a footnote to the formula
>   to make this clear.

**102. The reinsurance credit allows the ceding company to take credit for
reinsurance for RBC purposes under certain circumstances. Objective
requirements for the credit are identified. In addition, Commissioner approval
approach is not part of the Life RBC formula and can lead to inconsistent RBC
requirements from company to company. We recommend the elimination of the
references to Commissioner approval as a way of justifying reinsurance credit.**

Subcommittee Referral: Formula
Recommended Action:

>   The original reasoning used by the Task Force was that reinsurance
>   arrangements are plentiful and diverse. Beyond the quota share and excess
>   types, we felt unable to characterize those agreements in a sufficiently succinct
>   way to be useful for the formula. However, there are many reinsurance treaties
>   which provide for valid transfer of risk to reinsurers, and for which we felt a
>   credit should be given. We have reexamined the issue, and still feel that the
>   recommended language is the only way to solve this dilemma and a fair way.

**103. The adjustment for environmental factors contains a section on valuation
variations. This is a "small company" penalty since small companies are not
required to file asset adequacy analysis opinions. Since asset adequacy
analysis encompasses many different techniques for demonstrating the
adequacy of reserves, not just cash flow testing, the typical techniques used to
demonstrate the adequacy of reserves when making a Section 8 opinion are not
different than the techniques required as part of the health reserve requirements
regulations. We are not convinced that the valuation variation adjustment is
appropriate.**

Subcommittee Referral: Formula
Recommended Action:

>   The Task Force agreed that recognition should be made of companies that
>   obtain a statement of actuarial opinion based on an asset adequacy analysis or
>   that obtained a statement by a member of the American Academy of Actuaries
>   that claim reserves and liabilities are good and sufficient to meet the company's
>   obligations.

114. Guarantee funds are probably a much smaller risk on the health side as opposed to asset accumulation products. The proposed formula does not seem to handle guarantee fund consistently.

Subcommittee Referral: Formula
Recommended Action:

> The Formula Subcommittee sees no inconsistency. Note that part of our charge was to attempt to address, as much as possible, a post-reform environment, where guarantee fund assessments may well be a material risk.

115. The rate regulation loading does not have a counterpart in the Life or P/C formula. the impact of rate regulation will vary product to product and state to state. The magnitude of the adjustment seems arbitrary. The adjustment should be eliminated. (This came up in Issue 101. The magnitude issue is raised in issue 27. We should reconsider the need for the adjustment, and if we keep it, whether the 50% magnitude is correct.)

Subcommittee Referral: Formula
Recommended Action:

> Life and P/C products don't share the regulatory environment of health products. The Task Force felt, and the Formula Subcommittee agrees, that the wide variation in regulatory environment by state justified a factor in the formula. We also felt it inappropriate, though, to separately evaluate the environment in each state, for a variety of reasons. The chosen factor seemed to address the major concern. The magnitude of the adjustment is not arbitrary. It was based on specific testing of the Task Force's stochastic model, using assumptions developed by the Task Force to represent the average delay in implementing rate increases.

116. The RBC of 150% of the assessments for the last three years for health alliances, small employer reinsurance pools, etc. (page 17 of the report) seems high. Over time, these assessments should be somewhat predictable and built into the premiums for active customers. In that way, such assessments work their way into the RBC. That would seem sufficient and would simplify the formula.

Subcommittee Referral: Formula
Recommended Action:

> The Formula Subcommittee has reexamined the formula, and will change it in the next version. The change will more closely reflect the concern over volatility and unpredictability of assessments, rather than the level of the assessments. The formula will be: (The highest assessment percentage in the last three years)-(The lowest assessment percentage in the last three years.), applied to health premium.

117. Including Administrative Service Contracts and Cost Plus Contracts in the RBC formula opens the question of what else would need to be reviewed and changed with respect to reporting requirements and other regulatory considerations around ASC/CPCS.

Subcommittee Referral: Formula
Recommended Action:

> We agree. The Task Force has known since the beginning of this project that reporting changes would likely be necessary from all health carriers, including those with ASC contracts.

REPORT SUBCOMMITTEE

41. The report should point out conflicts with other regulatory issues, such as conflicts with rate filings, etc.

Subcommittee Referral: Report
Recommended Action:

   Will include in the report.

42. An increase in RBC will have the effect of increasing premiums to consumers. This raises the question of value to the consumer and the appropriate probability of ruin.

Subcommittee Referral: Report
Recommended Action:

   The relationship of RBC and premium levels will be mentioned in the report.

64. The rate stabilization reserves also exist on life contracts. Also combination life and health contracts will be experience rated together and reserves may be split for statutory accounting between both lines. The recommended change should also apply to life stabilization reserves and be allowed, where appropriate, to reduce both life and health RBC.

Subcommittee Referral: Report
Recommended Action:

   The NAIC noted that the Life RBC formula will be reviewed in light of the Task Force's work.

65. Excess medical reinsurance limits reinsurance RBC offset to 50%. Reinsurance assumed RBC should not be limited and therefore should be allowed to exceed credit.

Subcommittee Referral: Report
Recommended Action:

   The report will reflect the proper wording on the solution.

DUPLICATE OR WITHDRAWN ISSUES

24. General concern for Group LTD. The more conservative the reserves are, the less surplus is needed to safeguard the claimants.

This issue was already discussed by the Task Force and will be included in the next report. The Task Force disagrees with the concern.

26. Concerned about prior year losses. Requiring RBC equal to the most recent years loss or some percentage of that encourages companies to take more rapid action in correcting financial problems.

This issue was resolved; valuation actuary issue.

35. Should Disability Income be treated as a health coverage?

Issue already addressed.

36. Need to have additional review of model regarding DI, both the assumptions and the data.

Issue already addressed.

39. What should the relationship between RBC and statutory reserve margins be? The requirements of the valuation actuary should be coordinated with the requirements of RBC.

Issue already addressed.

86. There is no recognition of experience ratings in the current formula (i.e. no credit for future recovery of current year incurred deficits). The additional margin built into premium for providing experience rating actually results in a greater required RBC in the current formula. There is no consideration for the fact experience rating actually decreases risk of insolvency.

Withdrawn by source.

88. Our model determines capital needs for yearly repricing and statistical risks. The C-2 life insurance factors are for temporary but unfavorable increases in claims from economical changes, epidemics, natural and man-made catastrophes. We should discuss how we will determine capital for these risks. For large claim reserve blocks and large premium lines not subject to repricing this is the main need for RBC.

Issue previously assigned.

90. All of our factors should vary by size of exposure. Smaller blocks need higher RBC for statistical, lack of technical expertise, etc., larger blocks don't.

Issue previously assigned.

91. Is seven years the correct number of years for all LOB. Need to run sensitivity tests.

Issue previously assigned.

92. Shouldn't statistical variance only be used to determine gradation by size? This is the approach used on both medical and dental. Shouldn't all lines be handled consistently.

Issue previously assigned.

93. Can regulatory control be ignored? In the real world it won't be. When under regulatory supervision will the same variances apply? Isn't it correct to assume that actuaries will be more conservative when surplus is low? Should we have a different variance when a specific low level of surplus is reached?

Issue previously assigned.

94. Item B4 of the formula - ASO. As a percentage of service fees it is in the range of 5% - 10%, which is higher than the RBC factors for some medical and dental products.

Issue previously assigned.

95. Factors for the following products are inconsistent with what I would have expected. Medicare Supplement and other health coverage subject to inflation are both in excess to 2.5 times major medical; Other not subject to inflation are at least twice dental.

Issue previously assigned.

96. Factors for LTC and accident only are so high it implies they are based on risks which we have decided to ignore on other lines or problems with historical data.For excess reinsurance we need LTC factors which vary by maximum benefit period.

Issue previously assigned.

97. Rate approval adjustment. Since all Medicare Supplement is subject to rate approval is it possible historical data reflects this risk? Should the factor vary by product, Medicare Supplement because rate increases are smaller, seem to be accepted easier by regulators.

Issue previously assigned.

101. Rate approval factor: Believe that companies who operate in prior approval environment probably price for this risk element. Assuming that companies do take this into account, the earned premiums and, therefore RBC based on earned premiums, already reflect this risk. The rate approval adjustment factor may actually be double counting.

The formula separates the prior approval risk from the underlying risk since not all carriers or products are subject to prior approval. Therefore, the Task Force does not feel this is double counting.

111. The model workings for disabled lives needs a better explanation.

Withdrawn by source.

119. The model as initially prepared is presented as "a somewhat conservative model that does not reflect many real world factors that serve to reduce the probability of bankruptcy". We believe these "real world" factors need to be identified and analyzed, with the results reflected in the final development of a risk-based capital standard.

Subcommittee Referral: Model Structure

Recommended Action: The model utilizes data that is reflective of actual "real world" experience. To the extent practical, variables are incorporated into the model and the assumptions if they have an effect on an enterprise's likelihood of ruin. However, no model can recognize every possible event, nor can any model be specifically tailored to the circumstances of an individual entity.

120. We also believe that in addition to the description of the model already provided, disclosure of the model, the testing process used, and the results of the testing process, should be made available for review and comment. Our concern relates not only to the potential level of the factors, but also to the relationship between the various factors.

Subcommittee Referral: Formula

Recommended Action: The formulas underlying the model, a description of the testing process, and the results of the tests were all included in the original draft and will be included in the final version of the report.

121. The preliminary draft includes the comment many believe, that multi-line companies experience a greater spread of risk, and thus get greater protection from the same amount of capital as a single line company of comparable size. It would similarly seem to hold that if integrated delivery systems are viewed as being in different businesses (insurance risk and health delivery risk), this may in fact be similarly viewed as a diversification of risk that decreases the total amount of capital required to support the total business risk within the total corporation.

Subcommittee Referral: Covariance

Recommended Action: No action. We concur with the comment but are unaware of a broad based mechanism to allow for joint regulation of health care providers and those that take insurance risk. As the regulatory scope is reduced to insurance type products, it would not be appropriate to contemplate other types of business specific risks associated with other types of business in our analysis. The primary mechanism for addressing other business is through the C-1 factor for investments in subsidiaries which is unchanged from the Life and Health Insurance Company formula.

122. Care needs to be taken to insure that the establishment of baseline factors do not double count the capital required to support a line of business, and that the relationships resulting from the application of the factors are reasonable.
Subcommittee Referral: Formula
Recommended Action: It is our intention to not double count capital requirements. Relationships resulting from the application of the factors will be reviewed.

123. Consideration should also be given to the interaction between solvency standards and other important policy goals.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

124. The full managed care capitation credit should be allowed for the capitated payment covering the services provided by those who own or control the entity accepting the payment.
Subcommittee Referral: Formula
Recommended Action: The capitation credit is intended to provide for situations where the guarantee of services is substantial. If the owners have other assets that can brought to bear, then it is appropriate to take full credit.

125. It is not clear from the preliminary draft as to what types of organizations the required capital criteria apply. The RBC standard should state that they only apply to licensed or certified health plans.
Subcommittee Referral: Formula
Recommended Action: No action. Paragraph five on page one state that the formula has been developed and intended to apply to all types of plans that may provide health coverage.

126. The preliminary formula includes a growth adjustment factor. This may be a mechanism that serves to systematically discourage the development of new types of integrated delivery systems, since all such new types of organizations will be subject to the increased capital requirements during their early operational years. Consequently, it should be studied further.
Subcommittee Referral: Formula
Recommended Action: No action. The development of new types of integrated delivery systems will be more impacted by the minimum requirements than the growth adjustment. One purpose of the growth adjustment is to recognize that the RBC statistic is calculated annually in February of year x+1 for events that occurred through calendar year x. Therefore, the regulators will rely on that tool for up to 20 months following the midpoint of the experience period. The magnitude of the growth factor will be refined through a testing process applying the proposed formula to actual organizations and determining the frequency and rapidity of organization's movement across proposed regulatory boundaries.

127. The formula appears to presume that all health plans are taxable entities. It should be modified to reflect the fact that not all new health delivery organizations will be taxable organizations.
Subcommittee Referral: Formula
Recommended Action: We decided that the formula would be made unduly complex if we attempted to recognize all possible combinations of taxability. In addition, most of the non-profit (and therefore tax-exempt) organizations would likely be providing medical coverage, where the tax consequences in the model are minor or non-existent.

128. "E. Reinsurance Credit - (1) Quota Share on Proportional Reinsurance". The reinsurance credit is the percentage of the risk reinsured. This is subject to: a) for coinsurance of excess indemnity on a proportional premium basis, the percentage of risks reinsured is the coinsurance premium divided by the direct or assumed gross premium; b) for other forms of coinsurance (i.e. YRT), the percentage of risk reinsured is the total reinsured amount of indemnity divided by the total direct or assumed amount of indemnity; c) for Management Care, the percentage of risk reinsured is applied after adjustment for other credits, rate approvals and premium guarantees. Within the Non-Proportional Reinsurance section, it is my understanding that 2.b relates only to indemnity plans. I would think that this would be limited disability type coverages. If so, claim reserve and liability credits are taken care of in Section G and therefore the factor referred to in 2.b should apply to premiums. The phrase "or claims" should be deleted.
Subcommittee Referral: Formula
Recommended Action: None. The issue was withdrawn by submitter following discussion at November 15, 1994 HORBC Task Force meeting.

129. For disability income, I believe it would add clarity if the factor adjusting for noncancellable was mentioned. Also, the differentiation of factors by length of benefit period seems to be rather arbitrary. Is two years appropriate? I believe that this differentiation should, at this point only, be mentioned in a general context, similar to how we're addressing differentiation of factors by size.
Subcommittee Referral: Data and Assumptions
Recommended Action: We agree that the adjustment for non-cancelable coverages should be listed in the "Other Health Coverages" section. The subgroup modelling disability income included a differentiation by benefit duration which, if it produces a different need for RBC, should be reflected in the formula.

130. I think serious consideration should be given to separating accident only coverage into the distinct coverage types. Clearly, the nature and incidence of claims for accidental death coverage is different from accident only disability coverage.

Subcommittee Referral: Data and Assumptions
Recommended Action: Accident coverage model cells were reviewed separately for death and disability. The results of the modeling will be reflected in a formula separation if warranted.

131. For the catch-all category labeled "Other Health Coverages", which would include hospital indemnity, cancer and specified disease policies, I believe we should consider a single factor.
Subcommittee Referral: Data and Assumptions
Recommended Action: "Other Health Coverages" are designed to differentiate between a coverage which indemnifies a specified amount only and a coverage with an unknown amount indemnified. Factor differentiation is appropriate.

132. I believe that "Section C. Claim Reserves and Liabilities" should state that the factor(s) should be applied to figures net of reinsurance. Also, I believe that the weighted average calculation should be left out since it was decided that a general comment would be made elsewhere that size considerations will be incorporated as work by the Academy proceeds.
Subcommittee Referral: Data and Assumptions
Recommended Action: We believe the questioner refers to Section G. We agree that the factors should be applied net of reinsurance. For claim reserves, the weighted calculation is the recognition of size intended to apply, as this item is independent of other factors.

133. We urge that additional time be taken before an exposure draft is released by the NAIC in order to do a "reality check" that HMOs of all types, including many who have operated profitably for many years, do not have dramatic and unintended changes in RBC requirements.
Subcommittee Referral: Testing
Recommended Action: Financial data has been collected from commercial insurers, Blue Cross Blue Shield Plans and HMOs in order to test the effect of the formula. This testing will begin prior to the exposure draft and will continue beyond the exposure period in order to thoroughly understand the industry impact of the formula.

134. Regardless of the intent, the standard will become a benchmark for accrediting institutions. It is critical that changes in RBC do not unrealistically place the HMO industry in a sharply reduced rating position. It is extremely important that the factors represent the current and past favorable financial experience and stability of some of these organizations whose need for capital may increase with size.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

135. We emphasize that HMOs are health care delivery systems that often own facilities of a substantial nature. HMO operational methods and accounting systems are currently different from the more traditional accounting rules and statements for insurance which are pure financial institutions. The synthesis of rules for RBC requirements should be accompanied by reasonable changes in account rules for the HMO industry.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

136. We believe there should continue to be a grading of capital requirements by size, with higher relative capital requirements for plans with lower total premium revenue, reflecting less stability and more possible fluctuations in experience. We believe the existing break point for the NAIC HMO model of $150 million in premium would still be appropriate.
Subcommittee Referral: Data and Assumptions
Recommended Action: The modeling process examined size cells designed to reflect portfolio and revenue magnitude. To the extent this modeling indicates a difference, it will be reflected in the formula.

137. There are many receivables which tend to be non-admitted assets in an insurance company's statement which if not admitted for HMOs might cause significant financial hardship in meeting RBC requirements.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

138. [The Managed Care Credit for Fee Schedules] appears to be reasonably defined. However, the credit of 1% appears to understate the value of fixing the unit cost of expenditures versus uncontrolled indemnity. Depending on the base RBC level, a credit equal to 25% of this level might be more appropriate.
Subcommittee Referral: Formula
Recommended Action: A 1% credit is 9% of the base 11% medical factor published in the preliminary report. All of the RBC factors are under review by the task force.

139. We believe [the Managed Care Credits] section should be clarified and simplified. Essentially, this category is meant to reflect the reduced risk for health plans which share that risk with providers through withholds or bonuses. We believe a more direct and simple approach would be to permit a credit to RBC of up to 25% of the "at risk payments actually paid to providers in the last year where such amounts at risk can be maintained by the health plan to reduce instability." This credit should be, in addition to other credits, represent withholds/bonuses on both fee schedules and capitations. We see no need to limit that credit to where at risk payments represent at least 15% of payments or to sue a three-year average (which complicates this calculation and reporting).

We suggest removing the inclusion of the factor "pre-approved by a primary care physician." It is not clear that this affects the risk of fluctuation.
Subcommittee Referral: Formula
Recommended Action: The method for determining credits is designed to reflect difference in risk identified by the task force. Further, the factors selected reflect a longer-term approach whereby RBC will not fluctuate from time to time as withholds are released.

140. We believe that the credit on capitations should be roughly 50-60% of the base RBC level (the only remaining risk being the risk that costs are not negotiated as favorably as those included in the pricing). In addition, where an organization is capitated for services it does not provide directly, we propose this category be simplified by limiting the credit "to capitations made for medical care to entities directly providing medical services, excluding the capitations made on behalf of hospitalization expenses unless such capitations are made directly with the hospital."
Subcommittee Referral: Formula
Recommended Action: No factors were included in the second draft of the report. Analysis and modeling is still underway to establish factors. The clarifying language suggested was used in the report.

141. While we recognize that some medical services capitated with medical groups are purchased outside the organization providing direct care, in many cases these services are minimal. Because of the variation in experience of referrals from a capitated group we believe it would be extremely difficult for any plan to keep track of each specific medical group and the percentage of services referred outside.
Subcommittee Referral: Data and Assumptions
Recommended Action: The intent of the formula is to apply a specified percentage to the payments made outside the organization. We understand this issue concerning the availability of data. We believe that alternatives available invite gaming. Therefore, if a company can identify credit items they can reduce RBC. If not, no credit is available.

142. It is important to emphasize that such contractual arrangements [hospital inpatient services capitated to a medical group] between HMOs and the large medical groups not be disturbed or discouraged.
Subcommittee Referral: Formula
Recommended Action: No action. The level of managed care credit for staff model type arrangements was based on the relative results of the ruin theory model. Variation distributions were developed to reflect staff model HMOs and the accompanying map describes the logic used in evaluating the level of credit. The credit was stated as a percent of applicable medical expenses as opposed to base

RBC to effectively recognize operations which do not uniquely fall into a specific managed care category.

143. [Under the Managed Care Credit chart] we believe the credit should be at least 60-70% of the base RBC level given the health plan's ability to budget for, control, and adjust resources necessary in the delivery of health plan services.
Subcommittee Referral: Formula
Recommended Action: The level of managed care credit is based on the relative results of the ruin theory model. Assumptions and results have been open for participation and critical review. Ending results will be tested for impact and reasonability. In comparing impact, there will be some historically well managed companies that have survived the genesis, shakeout and evolution of managed care organizations for whom, retrospectively, some factors may seem high. This same thing happened with life and P&C companies in their RBC development. Testing should focus on ultimate factors which are neither unrealistically too high but effective to assist the regulator in identifying potentially troubled companies.

144. It is possible that a 5% RBC factor for the C-1 risk might be an acceptable compromise between unadjusted recognition of the asset values and the classification of these real estate assets as investments, as in the current Life and Health RBC formula.
Subcommittee Referral: Formula
Recommended Action: The subcommittee which was created to examine this issue decided that the existing 10% factor would be more appropriate. The rationale included a recognition that there are offsetting considerations in developing this factor.

145. One of the problems integrating the statements of multiple corporations is that a number of HMOs are 501 (c)(3) or 501 (c)(4), and have no "ownership" of companies that are interrelated and integrated but are technically separate legal entities. The companies are controlled through common boards of directors. We think it is important to permit combination of these organizations that deliver care for the HMO, such as hospitals, into one, particularly, or possibly only, where they have unlimited mutual guarantees of solvency for all of these organizations. Some of these organizations may be defined as unregulated but they are still part of a "health care system" which is really an integrated entity in operation.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

146. Since the guaranty funds do not currently exist, we believe it is inappropriate to establish RBC factors relative to guaranty fund assessments.
Subcommittee Referral: Formula
Recommended Action: Though guaranty funds are not commonly in place at this time, their framework has been developed. Consequently, by incorporating an RBC

provision now that addresses the funds, modifications in the formula will not need to be made in the future.

147. Given the potential impact of RBC on many health plans, it is critical that HMO statutes, in general, be changed to permit quota share reinsurance of any and all of the HMO's operations, if needed. Particularly for newer, smaller organizations such as PHOs, AHPs, or ISNs, etc., we think it would be a desirable function of a reinsurance company to provide capital indirectly by taking a quota share of any of the business that can be written directly by an HMO.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

148. In the past, when states have increased capital requirements, they have normally included a 3-5 year phase-in of meeting these requirements to give the HMO time to adjust its premium rates but not force them into a very difficult rating situation to increase their capital. We believe a phase-in should be required as has been common in other revisions affecting capital in the HMO field.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

149. The RBC calculations may be too complex for many HMO companies to use.
Subcommittee Referral: Testing
Recommended Action: Companies are being requested to provide financial data for testing the formula. As part of that process, they are also requested to comment on difficulties in obtaining the necessary data. This feedback will be used to determine any necessary simplifications. The results of the testing and the comments will also be sent to the NAIC for their consideration.

150. We urge that the Academy recommend that no exposure draft be released by the NAIC until more organizations have had the opportunity to calculate their RBC level using a revised draft formula. In addition, we would point out that any RBC factors should be applied to all risk bearing organizations even if they are not currently licensed by a state.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

151. The Academy's Task Force is assuming the existence, both past and future, of trend and accumulated trend-miss. Has the task force completed research to support these assumptions, including consideration by type of coverage?
Subcommittee: Data and Assumptions

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Recommended Action: The historic variation distributions were obtained by compiling annual historic loss ratio results from large blocks of policies of the various coverages studied. These historic results were reviewed by subgroups of the task force with particular knowledge and background in the coverage. We believe that the distributions used reflect the trend characteristics over time of the particular coverages. That trend may be minimal or negative in certain coverages such as accident.

152. The Task Force's hypothesis is that the combined statistical and financial model generates appropriate required surplus results. Isn't it necessary to demonstrate that this hypothesis is right, starting from basic principles and risk drivers, for each of the various coverages under consideration? How will this be accomplished?
Subcommittee Referral: Model Structure
Recommended Action: Any model is as good as its design and its assumtions.

153. The report submitted to the NAIC needs to not only convey decisions adopted by the task force but also the ranges of views expressed in reaching those decisions, and the degree to which disagreements remain among the task force members. The NAIC should be told where there is clear agreement, where you are operating on a consensus basis, and where strong disagreements or uncertainties continue to exist.
Subcommittee Referral: Report
Recommended Action: The "Practical Aspects of Modeling" discussion in Section III, "Considerations in Developing the Formula" notes that many differences can be identified between our model and real life. This discussion will be expanded to include a discussion of areas of disagreement within the committee. Also, Appendix H contains all comments received and is a source of documentation of disagreements on issues and decisions.

154. I do not believe the model should be used as the only tool in recommending RBC standards for any type of insurance product, because it does not reflect the specific risks for each product except to the extent that they impact the loss ration experience. My principal objection to the process is that the HORBC model is being used as the only indicator of risk for each product.
Subcommittee Referral: Formula
Recommended Action: The task force began their process by identifying all of the potential risks and the model was developed to simulate many of the risks that were deemed to be significant, but not all of them. Some risk factors are not being set using the model, guarantee fund and environmental risks, for example. See Section III and IV.

155. The random walk principal of loss ratio projection makes good sense for products which have a medical inflation trend, but it makes no sense for products such as disability income.

Subcommittee Referral: Model Structure

Recommended Action: This issue has been deliberated at length by the task force and subcommittees. The "random walk", which means that each year's loss ratio is determined based on a variance from the prior year's loss ratio, has been established in such a way that the resulting distribution of loss ratios is consistent with the actual loss ratio data that was input into the model. This principle applies both to products with inflation trend and to products without such a trend.

156. The Task Force's approach only makes sense if you include relative values for life insurance and probably some forms of casualty insurance as well.

Subcommittee Referral: Report

Recommended Action: The report will summarize the model and assumptions ultimately used in developing the formula.

157. A complete report would include recommended levels of risk based capital rather than deferring the subject of absolute levels completely to the regulators. I suspect that a great deal more work would be necessary before the committee would be willing to make a recommendation on absolute levels of risk based capital, yet the Academy committee expects the NAIC to make such a determination without any additional information.

Subcommittee Referral: Report

Recommended Action: The goal of the modeling work has been to establish a consistent probability of ruin which would suggest an appropriate RBC level. When this work is completed the results and the factors will be included in the report. The task force has stated that there will always be further work and refinement to be done on RBC. However, the NAIC has determined that they want to establish an RBC level within the year. Given that the NAIC will carry this out, it is presumed that their decisions will be better served with our best input at the time rather than no input at all.

158. If the Task Force truly intends to use only relative values of risk, then the final numbers in the report should use a sliding scale with some coverage deemed to have a value of 100 and all other values shown relative to that figure. It is not reasonable to include percentages of premiums which have the appearance of absolute recommendations while stating that they are only relative values.

Subcommittee Referral: Report

Recommended Action: Should relative values be the basis of the formula, this suggestion will be incorporated.

159. Can it be demonstrated that the model adequately reproduces the variation in loss ratios exhibited by our sampling of companies?

Subcommittee Referral: Model Structure

Recommended Action: The application of the model to historical data includes a

provision to ensure that the distribution of loss ratios used by the model adequately reproduces the historical input data.

160. Is it appropriate to ignore the industry trend line in the model? The data used to develop the trend miss distribution was based on deviations from an industry trend line, adjusted for the company's mean, but it ignored the trend itself. For medical expense insurance this may be reasonable since rates are relatively easily adjusted and increases are often anticipated in pricing. For non-can, DI rates on existing business can't be adjusted. I believe one of the biggest risks facing non-can DI today is the risk that costs will go up but rates can't. The model ignores this.
Subcommittee Referral: Task Force
Recommended Action: After considerable discussion, methodology was changed, and trend lines were included for disability income insurance.

161. Has the model been verified by an outside source? I am working on this and hope to be done soon. The issue should be in the hopper.
Subcommittee Referral: Model Structure
Recommended Action: The task force has signed off on the formulas underlying the model. A number of persons have developed their own models based on these formulas and have produced consistent results. Also, numerous persons have had access to the model for use in running different scenarios for various lines of business. Additionally, the model was peer reviewed by persons who did not write the code for the model.

162. The tax model seems awfully complicated. The rest of the model is elegant and simple. I don't have an alternative but did the tax model have to be this way?
Subcommittee Referral: Model Structure
Recommended Action: The tax model was developed to recognize different tax positions a company might face depending on its historical experience. The model was reviewed by the model structure subcommittee and found to be accurate, it was recommended for adoption the task force, and the task force agreed that it should be implemented.

163. Is the stationary population assumption appropriate? This has been addressed before but I'm still not comfortable with it. I favor a closed block but realize that it may be too late to change.
Subcommittee Referral: Model Structure
Recommended Action: This issue has been debated at length by the task force, by other Academy members, and by industry representatives. It has been and it continues to be the task force's view that the stationary population approach is appropriate.

164. There needs to be more diversity of the managed care groups to better represent the risks that are being taken.
Subcommittee Referral: Formula
Recommended Action: The task force has attempted to include various forms of managed care in the modelling.

165. The credit risk for reinsurance between private and public is different. This should be included in the formula.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

166. The regulatory factors are a concern.
Subcommittee Referral: Report
Recommended Action: These factors are meant to represent the difference between the reaction time for a carrier to reflect changes in experience in rates. This difference is typically between individual and group, although small group subject to "premium caps" may also experience some delays in adjustments. The report language will be reviewed for clarity around this subject.

167. Claim reserves and liabilities need to be discussed in greater detail.
Subcommittee Referral: Report
Recommended Action: Section II, "Claim Reserves and Liabilities" of the report will expand on this subject.

168. Under RSR section, wording needs to be added to allow for company by company choice.
Subcommittee Referral: Report
Recommended Action: Additional language will be added to make clear that this credit opportunity is available at a company's choice.

169. The wording on page 31[(for this purpose, risk based capital attributed is calculated by calculating the total C-2 risk based capital with and without such policies, and taking their differences)] needs to be worded better for marginal size adjustments.
Subcommittee Referral: Report
Recommended Action: Agree. The report will clarify this.

170. Tax considerations need to be included in the formula for consolidated statements.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

171. Blue Cross Blue Shield plans have a different [tax] status than other plans. Is there enough difference to be material?

Source: NAIC Working Group
Subcommittee Referral: Testing
Recommended Action: Will refer this issue to the Blue Cross Blue Shield
Association's tax expert for an opinion on the tax effect.

172. Change [clarify] wording for managed care credits on page 22 of the formula.
Subcommittee Referral: Formula
Recommended Action: This will be reviewed again by the task force for further consideration.

173. Page 21, A.1 [Cost of Medical Care Incurred] needs to be clarified to include claim management expenses.
Subcommittee Referral: Formula
Recommended Action: There is no easy way to isolate "claim management expenses" from claim administration expenses. We view part of our charge as finding a formula which can reasonably be implemented, without insurer's ability to "game the system." We believe that such provisions would be possible if we were to include such expenses. We recognize that the result of this decision is a dichotomy with respect to the expenses--to the extent they are performed by a third party they can be counted as claim expense; to the extent they are performed by the insurer they are not. These two situations lead to different RBC figures, but the difference is relatively small.

174. Stop Loss table on page 23 needs work.
Subcommittee Referral: Formula
Recommended Action: Issue is not clear, but the task force will review and modify the chart based on the final modeling.

175. On page 25, item C2; reasonable should be substituted for adequate.
Subcommittee Referral: Formula
Recommended Action: This has been changed in the current draft.

176. On page 27, number 6; should it be accident only or should it also include AD&D. It is suggested a credit should be split between single and periodic.
Subcommittee Referral: Formula
Recommended Action: Accident coverage model cells were reviewed separately for accident death and other accident-only coverages. The data available for credit insurance did not differentiate between single premium and periodic premium business. In addition, these two types of credit business have certain risk characteristics that are somewhat offsetting. While single premium business will generate greater investment income, the rates are guaranteed for the length of the contract. While monthly premium business has a maximum benefit duration that is significantly less than the maximum of benefit for a single premium contract (assuming

the insured becomes disabled immediately), it is only slightly less than the average duration of maximum benefit. It was felt that these characteristics where generally offsetting.

177. On page 32, item C-1; the risk should add medical equipment used to provide care. Both an issue as to how much is admitted due to limits on concentrating of assets.
Subcommittee Referral: Formula
Recommended Action: Outside the scope of the task force.

178. ASO should be included in the dental calculations.
Subcommittee Referral: Formula
Recommended Action: The formula description will be modified to include dental ASC and Cost Plus contracts.

179. On page 32, item C-4; risk should be against the RBC instead of the factor.
Subcommittee Referral: Formula
Recommended Action: This was an oversight in the wording of the formula, and will be corrected.

180. One issue I believe needs to be addressed is that of the adjustments to be made in consideration of the size of a block of business - specifically as they relate to disability income.
Subcommittee Referral: Data and Assumptions
Recommended Action: The modeling includes a number of portfolio sizes and, where appropriate, has been reflected in the recommended formula.

181. Although credit for reinsurance is being provided in the RBC calculations, I do not believe that the affect reinsurance has on reducing the volatility/variance of loss ratios has been fully accounted for. I concur for a given per policy risk retention level that a higher RBC factor may be appropriate as the size of a block decreases. I believe, though, that by reducing the per policy risk retention level, a smaller size may be no more volatile and may have no more variance than the larger block. Therefore, smaller blocks of business of smaller companies may be no more volatile and have no more variance than a larger block in a larger company.
Subcommittee Referral: Data and Assumptions
Recommended Action: We agree that reinsurance reduces volatility. We recommend that determination of a factor to be used in calculating RBC be based on the measurement (e.g.: premium, claims, reserves) before reinsurance, and that the factor be applied to the measurement of net of reinsurance.

182. The cover letter should not be relied upon to convey any caveats or limitations. These should be included in the report.

Subcommittee Referral: Report
Recommended Action: The report contains many caveats and suggestions for future analysis and refinements.

183. On page 7 discussion on claim reserves and liabilities; the issue is not excess reserves versus minimum standards; the issue is that reserves at minimum standards include considerable margin. I believe that we do not have conceptual consensus on this.
Subcommittee Referral: Formula
Recommended Action: The RBC formulas assume that the claim reserves and liabilities being held by companies all have similar margins. The issue being addressed in the report is not whether there are considerable margins in the reserves at minimum standards; it is the assumption that the RBC formulas assume the reserve margins across companies are similar. The RBC formulas thus recognize the risks beyond the levels covered by the reserves that are held at minimum standards.

184. The discussion on affiliated companies should expand discussion to recognize legal separation among companies.
Subcommittee Referral: Formula
Recommend Action: Affiliated companies can be separate legal entities residing in different states. In these situations RBC requirements may trigger regulator intervention causing a confusing situation concerning different state requirements and authority. This is an issue for the NAIC to address during their discussions of the implementation of health organization RBC standards.

185. On page 10 discussion of Practical Aspects; the task force says the model simplifies a complex process. We do not yet know whether effects of simplification are material or not. To know this would require that we be able to describe the difference between the math that describes the real world versus that employed by the model.
Subcommittee Referral: Formula
Recommended Action: Certain simplifying assumptions were made in the modelling. We have identified these areas in the report. We believe that the total model represents a reasonable and practical approach to a complex set of issues, and represents a new and better solution to the RBC issue.

186. The first paragraph in "Discussion of Issues" should reiterate the purpose of capital and recognize that there is debate about this.
Subcommittee Referral: Report
Recommended Action: No action. This is outside the scope of the task force. Our report focuses not on the use of capital but on RBC formulas and risk.

187. Items extending beyond C-2 (e.g. C-1 discussion on page 12): How do we recognize views of non-health practice areas?

Subcommittee Referral: Formula
Recommended Action: Most, if not all, comments and inputs received by the task force from letters and discussions have been listed in Appendix H. Other practice areas may comment in a similar manner.

188. On page 13 under Cash Flow section, last paragraph versus first paragraph; What are the implications of this difference. Seems to me that large tail cash flow products at least raise different issues than short tail products.
Subcommittee Referral: Report
Recommended Action: Need more detail to respond to this.

189. Description of model and data should include an explanation of the conceptual basis of the model. We never indicate why this approach makes sense. This comment extends throughout the discussion through middle of page 20.
Subcommittee Referral: Report
Recommended Action: No action. Section V, "Overview", discusses the overall concept and purpose of the model.

190. On page 20, fifth paragraph, suggest use of same model for all coverages and provide examples of where there are significant differences within the task force.
Subcommittee Referral: Report
Recommended Action: See response to Issue 153.

191. We believe that the recommendations with respect to non-cancelable disability income insurance are totally inappropriate. Non-cancelable disability income bears no relationship to health coverages which pay for hospitalization or medical treatment. Replacement of lost income through non-cancelable disability income insurance is more closely related conceptually to life insurance. Therefore, we ask that the recommendations on non-cancelable disability income insurance by the American Academy of Actuaries be discarded and that the issue of non-cancelable disability insurance risk based capital be referred to the Life RBC working group.

Subcommittee Referral: Model Structure

Recommended Action: The model itself is not necessarily specific to health insurance. It simply simulates the historical variation of a product line as exhibited in past results. Major factors affecting ruin have been included. Minor factors have not. Because it is not specific to health, it can be used for disability insurance and, perhaps, for life.

192. The current RBC formula for non-cancelable disability income totally ignores individual company experience and assumes that management of this product line is no different than gambling in Monte Carlo. The result of that assumption is that companies with very large amounts of non-cancelable disability income premium need much less RBC than smaller companies.

Subcommittee Referral: Formula

Recommended Action: The distribution of loss ratios developed by the model is verified to reproduce the first and second moments of the distribution of actual company experience gathered. Separate model iterations were performed by coverage type (including disability income), by renewal provision (including non-cancelable) and by company size to effectively understand and reflect the impact of each on RBC needs. The model does not reflect individual company management because the task force was unable to determine how to measure this factor and how to assure management would stay in place and not change philosophy.

193. No matter what the components of the formula, there should be an adjustment provided based on individual company morbidity experience versus industry average. Companies with much more favorable experience over a long term should be permitted to discount their RBC based on that experience. Bad experience should result in a surcharge.

Subcommittee Referral: Formula

Recommended Action: We disagree. RBC is designed to reflect the risk of ruin based on levels of surplus held and the risks inherent in the coverage. We need to recognize that a company's behavior in the market must, over time, conform to the market. Either the company will underprice and "spend surplus" to support new business, or it will overprice and "spend surplus" to pay expenses. Furthermore,

management, strategy and philosophy will change over time. Presumably, a company with favorable experience will maintain surplus, while a company with unfavorable experience will deplete surplus. Meeting a given level of RBC will be easy for the former and difficult for the latter.

194. On a historical basis, there is absolutely no justification for any split in the formula components based on premium volume such as the current 35% of the first 50 million of premium, 15% of the excess. No component of the formula should vary based on volume.
Subcommittee Referral: Formula
Recommended Action: The size of a block of business may materially influence the statistical fluctuation in experience from its expected value. The size adjustments are intended to recognize this difference in variability by size. The results of the Task Force's modeling of likelihood of ruin based on size of a block of business clearly demonstrated that size is an important variable.

195. If company-experience warrants it, we could eliminate that discount on existing business and increase premiums up to a contractual guaranteed maximum. The amount by which we can increase existing premium is approximately 25% of our current RBC for disability income and yet under the current formula we cannot take a dime of credit in calculating our required RBC. This is unfair, at the very least we should be able to take a credit for 50% of the amount by which we could increase premiums.
Subcommittee Referral: Formula
Recommended Action: None. Section I, H. allows for RBC credit for dividends paid to policyholders and retrospective premium arrangements. The arrangement described appears to be recognized. In section I, E. 2a) the formula recognizes arrangements that limit or allow for opportunities for rate actions.

196. If a carrier's health C-2 RBC value using the L&H RBC formula is less than 25% of the sum of the C-1, C-2, C-3 and C-4 values (ie., before co-variance), the carrier is not permitted (or required) to use the health modifications.
Subcommittee Referral: NAIC
Recommended Action: Outside scope of the task force.

197. If a carrier meets all of the following requirements, the carrier is not required to use the health modifications: The health premium during the year is less than $100,000,000; the health premium is less than 25% of total revenue during the year; and the RBC ratio using the L&H formula produce a ratio above 200% (company level = 100%).
Subcommittee Referral: NAIC
Recommended Action: Outside scope of the task force.

198. I believe the new standards are applied to credit disability income coverages would impose a severe and unnecessary burden in addition to that extremely conservative statutory reserve requirements already in place. This is a different product than that anticipated by this C-2 element and should not be subject to the current or proposed standard.

Consider a credit disability income coverage sold with a single premium of $100 and a 48 month term. Assume a gross unearned premium reserve and premiums earned on a Rule-of-78 basis. Anticipated claims are 60% of unearned premiums as this is the NAIC benchmark loss ratio for this coverage. This simple example illustrates that before any consideration of Risk Based Capital, the statutory reserve is 167% of the anticipated claims. The current C-2 element of RBC at 100% produces a rising RBC ratio to anticipated claims from 32% at duration 1 to an infinite ratio at duration 4. This RBC requirement is in addition to the 167% of anticipated claims that statutory reserves currently require. Similarly, the proposed standard at 100% would produce ratios of 70% at duration 1 rising to infinity at duration 4. Now, if one doubles the C-2 standard to approximate the level of RBC held by most insurance companies, the inappropriateness of this requirement for single premium credit disability income becomes even more apparent.

Subcommittee Referral: Formula
Recommended Action: The Task Force, as requested by the NAIC, adopted a principal that the RBC standards we develop are to be independent of the particular reserve standard which might be in place at a given time. We therefore, cannot allow for changes in the formula based on the redundancy which might or might not exist for a particular coverage or type of insurer.

Also, note that this is in reference to the preliminary, draft numbers included with the June draft. That draft has been superseded by one without any numbers, and final numbers will not be adopted until our December report. (And even then we will only be recommending relativities, not absolute numbers.) The example, therefore becomes irrelevant, at least until the NAIC adopts final figures.

199. Comment on the proposed change in the C-2 claim reserves and liabilities element: The current standard is 5% of such liabilities. The proposed standard is 30% if there are 250 or fewer claims and a weighted average if there are more than 250 outstanding claims. Since claim liabilities after the first year of a claim approximate the remaining payments for credit disability income coverages, I see no need to increase the current standard. If adopted this standard could prompt companies to post a more aggressive and less conservative claims liability for statement purposes, given the fact that a 30% margin would be added for RBC purposes. If the proposed standard is adopted, a ceiling on this C-2 element plus claim liabilities equal to 100% of the sum of remaining payments should be added.

Subcommittee Referral: Formula
Recommended Action: The preliminary amounts referred to in this issue are not necessarily indicative of the amounts in the final report. The level recommended will be based on the results of the model which will examine the variability in these numbers. The preliminary levels represent the high variability in termination rates when the high variability in termination rates when the portfolio of claims is small. The task force is concerned about the potential for decreased claim liabilities but recognize the value of the actuarial certification to assure these liabilities will not be reduced beyond an appropriate level. It should also be remembered that the hurdle rate for risk based capital should be set substantially higher than for statutory financial reporting.

200. Would it be reasonable that 50% of the Schedule H redundancy (Part C, line 3c), at the prior year end, be given as an offset in the RBC calculation in a manner similar to the "credit for rate stabilization reserves?"
Subcommittee Referral: Formula
Recommended Action: This issue has been considered in discussions with NAIC. The decision is to ignore excess or redundant reserves such as extra margins. The Schedule H redundancy is such a reserve.

201. The handling of reserved minimum premium business in Schedule H should be reviewed.
Subcommittee Referral: Formula
Recommended Action: The Task Force believes it has addressed the different medical risk categories in alternative financial arrangement, stop loss and reinsurance sections. Minimum premium arrangements are pervasive and were discussed at length in the formula development. The testing process may highlight unanticipated classification problems. The Task Force has known since the beginning of this project that reporting changes would likely be necessary from all health carriers.

202. Preliminary Nature of the Report and the Time Frame for Completion: Statements are made in the report about the preliminary nature of the formula and factors and the need for a considerable amount of additional work. Due to time constraints, it appears the AAA Task Force may not have had sufficient time to review its results and work through its own concerns before releasing its report. Given the broad scope of the project and the number of issues/details that must still be addressed, the December time frame goal may not be realistic for achieving a quality end product with broad support.
Subcommittee Referral: Report
Recommended Action: None. Caveats have been noted throughout the report. Further testing and mapping will be discussed in the report. Also, see answer to Issue 157.

203. **Comparison to NAIC Life Risk Based Capital Formula:** Peer review is especially important here since there is overlap of prior work and significant factor differences compared to the NAIC Life RBC formula. The AAA Task Force should provide explanation of superiorities of the new ruin model approach and any perceived deficiencies of the corresponding NAIC Life RBC model approach that haven't already surfaced from its exposure period. Original participants in the development of the NAIC Life RBC formula should also be enlisted to provide an independent peer review and comparative comments.

Subcommittee Referral: Model Structure

Recommended Action: The NAIC HORBC Working Group has reiterated its position that it asked the AAA Solvency Task Force to address all A&H C-2 risk factors in Life RBC. Within the NAIC there is open coordination between the P&C RBC, the Life RBC and the HORBC Working Groups to the (EX4) Risk Based Capital Task Force. In giving the assignment to the AAA Task Force, the NAIC HORBC Working Group maintained that it has the sole discretion of business direction and interpretation of the output of the AAA Task Force. The NAIC HORBC Working Group was adamant that all of the review and AAA involvement were also submitted to the President of the AAA. During the course of Working Group meetings, original participants of the Industry Advisory Group to Life RBC were asked to participate and make public their original models, etc. deployed at that time. Numerous sub-working groups were formed to review data, models, output, etc.

204. **Formula Impact and Validation:** Assessment of the impact of the formula on specific companies should be performed, as well as an exercise to validate the proposed RBC levels and regulatory intervention levels against historical insolvency experience for health organizations.

Subcommittee Referral: Testing

Recommended Action: Financial data has been collected from commercial insurance companies, Blue Cross and Blue Shield Plans and HMOs in order to test the effect of the formula. This testing will begin prior to the exposure draft and will continue beyond the exposure period in order to thoroughly understand the industry impact of the formula.

205. **Ruin Model: What to Do with Operating Gains?** The ruin model appears to take the most conservative approach regarding dividends. Operating gains are always released as dividends, except in the case where actual surplus falls below target, in which case gains are added to surplus to build back to target. Actual surplus is never allowed to accumulate in excess of the target amount during the seven-year period. Thus, the ruin model is ultimately reduced to a test of whether one of the serve years, or maybe a couple in a row, is bad enough to cause ruin for a given fixed surplus target.

Subcommittee Referral: Model Structure

Recommended Action: The model time frame and dividend payment criteria has received considerable attention. In response to these issues, the Committee agreed to

run a seven year period and look at five year probabilities of ruin. This was a compromise between the three and seven year suggestions. The formula was modified so that no surplus was a dividend until total surplus exceeded 150% of target surplus; at which time 100% of the excess over that 150% would be paid as a dividend.

206. Ruin Model: Premium Trends, Discounting, Underwriting Cycles, Taxes.
We have identified certain areas where further refinement of the model is appropriate. For example, it is not clear why the premium in the Appendix D example remains level over the seven-year simulation period. The time value of money should be considered in the model. Year-to-year operating results appear to have been modeled as independent, while cyclical patterns are a historical reality for some lines and should be incorporated. Taxes, which appear to have been ignored in the model, should be considered.
Subcommittee Referral: Model Structure
Recommended Action: Model enhancement and deliberation has addressed all of these concerns. For example, income tax recognition was added early on (see #43). Other aspects were debated by modeling sub-groups. Numerous sub-working groups were formed to review data, models, output, etc.

207. Consideration of Size of Inforce Block. Statistical fluctuation in total claim outcomes is a very important C-2 risk influence for stop-loss coverages. However, risk is significantly diminished as size of block of business increases. The importance of size derives from the large degree of statistical independence in individual claim outcomes.

In other words, the probability of a bad claim on one insured individual is unaffected by whether or not there is a bad claim on another. The factors illustrated in the report do not account for size. We believe the structure of the factor table should be modified so that the importance of size is recognized. Given the structure of the factor table (broken down by attachment point), a size adjustment is needed at two levels:

(1) Within Each Attachment Point Level. The factor shown for a particular attachment point corresponds to the RBC need for a certain block of business size. A multi-tier factor approach could be used to reflect the decreased risk of a larger inforce blocks.

(2) Across Attachment Points. The same reasoning about independence in individual claim outcomes is true for outcomes across attachment points. The probability of an unfavorable statistical fluctuation for business associated with one attachment point is unaffected by whether or not there is an unfavorable statistical fluctuation for business with another attachment point.

Presumably, premiums would be broken down by attachment point, factors would be applied according to attachment point, and the results summed across attachment points. We recommend an overall "covariance adjustment" be applied to the sum to recognize the large degree of independence of statistical fluctuation between business associated with different attachment points.
Subcommittee Referral: Formula
Recommended Action: Stop-loss will be modeled for different portfolio sizes and the effect of size will be determined. If warranted, there will be different capital requirements based on portfolio size.

Covariance adjustments are to reflect dependent risks not the independence of risks. If the risk of different attachment points are independent, there should not be a covariance adjustment.

208. Applicability of Direct Specific Stop-Loss for other Coverages: It is unclear to which coverages the table applies.
Subcommittee Referral: Formula
Recommended Action: The table applies to direct stop loss coverages on all non medical coverages. This will be clarified in the formula.

209. Aggregate Stop-Loss and Minimum Premium: Table Cells and Covariance. The same points expressed regarding the need for consideration of size of inforce block apply here also.
Subcommittee Referral: Formula
Recommended Action: The Task Force is taking size of the inforce block for these coverages in its deliberations for the next report.

210. Reinsurance Credit: Reinsurance Coverages with Certain Inside Limits. The requirements appear to have been written with a narrow perspective: addressing only the case of group-level specific stop-loss reinsurance. Another view is that of HMO specific excess reinsurance, which covers a portfolio of the HMO's group contracts and typically contains inside limits which as daily limits on eligible hospital payments covered and different levels of coinsurance beyond the attachment point. Due to the limits, the reinsurer's C-2 risk may be reduced compared to that of 100% unlimited coverage above an attachment point. Thus, the HMO's RBC credit, and reinsurer's assumed RBC, should be less. Perhaps an adjustment factor could be introduced to reflect the risk-controlling impacts of certain limits to excess reinsurance coverage.
Subcommittee Referral: Formula
Recommended Action: The Task Force believed that reinsurance provisions such as daily limits would tend to reduce premiums and anticipated claims but not substantially reduce risk in proportion to the premium. For example, whether you pay $1000/day in excess of 300 days/1000 or pay $2000/day in excess of 300 days/1000 does not significantly impact the variability of claim payment with respect to anticipated claims.

211. Eligibility for Credit. We are uncertain whether the coverage limits just mentioned are considered "contract limits, or terms to diminish, the losses of the reinsurer", thereby nullifying any reinsurance credit to the HMO and any RBC requirement for the reinsurer. While catastrophic claim risk transfer is somewhat less than "pure" stop-loss, the risk transfer remains substantial and is clearly the motivation for the HMO's reinsurance purchase. The HMO should receive an adjusted RBC credit with the reinsurer assuming a corresponding RBC amount.
Subcommittee Referral: Formula
Recommended Action: The non-proportional reinsurance credit is intended to include a risk-bearer's portfolio of risk, whether it be an HMO, insurer or other entity. This would include excess-of-loss coverages as described.

212. Other Health Coverages and Consideration of Size of Inforce Block. Again, no size adjustment is included. We believe that a multi-tired factor approach based on size is appropriate for these lines.
Subcommittee Referral: Formula
Recommended Action: The Task Force's modeling investigated the importance of size of block in developing the recommended formulas. Whenever size of block was determined to be a meaningful variable, the risk-based capital factors were modified by size.

213. Increased risk adjustment and the need for adjustment. We question the rationale and basis for this adjustment. It appears arbitrary, redundant, and excessive.
Subcommittee Referral: Formula
Recommended Action: The Task Force felt that there was added risk for companies with growing blocks of business and this is how they decided to measure this risk. The increase in C-2 risk is a proxy for growth.

214. Rate Approval Adjustment and need for adjustment. Any delays associated with rate approvals are an expected part of the normal course of business and may be planned for and provided for in advance. This adjustment adds redundancies and should be dropped.
Subcommittee Referral: Formula
Recommended Action: While such delays are already accounted for in setting premium levels, the volatility they add to financial results isn't accounted for. It is the belief of the Task Force that such delays cause greater volatility, and therefore greater risk. This is borne out by our modeling.

215. Premium Guarantees: Adjustment for Policy Anniversary or One-Year Guarantee. It is curious that any adjustment is applied here since this could be considered the norm. Adjustment should be considered only when the guarantee extends beyond one year.

Subcommittee Referral: Formula
Recommended Action: None. The modeling was done with a number of rate guarantees. The model results then illustrated the impact of various rate guarantees. Thus if the table had no adjustment for policy anniversary or one-year guarantees, then a credit would be required for policies with no guarantees.

216. Adjustment for Non-Cancelable, Non-Medical Coverage. Based upon recent experience of the disability income insurance industry, the adjustment factor of 1.1 appears very small. We believe the relative risk difference for non-cancelable vs. guaranteed renewable is much larger.
Subcommittee Referral: Formula
Recommended Action: The final report will reflect an adjustment for non-cancelable provisions consistent with that produced by a model which recognizes the inability to adjust premiums. Implicit in the model construction is the assumption that products will be priced on a basis that anticipates returning a target profit. Management decisions to price above or below that target profit are believed to be within the scope of the rate regulatory process and not surplus adequacy evaluation.

217. Claim Reserves and Liabilities: Measurement Bias. Use of statutory reserves as a RBC calculation base rewards those companies that are most aggressive in calculating reserves as low as possible and penalizes those with more conservative reserves. In other words, conservative bias in reserve estimates inadvertently leads to a higher formula RBC result. The much larger factor applicable to certain claim reserves heightens the importance of this underlying problem. This issue needs to be addressed.
Subcommittee Referral: Formula
Recommended Action: We agree that more conservative reserves generate higher RBC requirements. This seems to be counter to the purpose of RBC testing, in that there is a "double hit" when this occurs. The same argument applies to premiums...the more you charge the more RBC is required. The NAIC has requested that we specifically not allow credit for excess reserves.

218. Reinsurance Assumed: Information Needs. The new "mirror RBC" requirement creates significant additional information passing burdens for reinsurers and ceding companies. The amount of additional work and expense outweighs any small gain in consistency achieved through this requirement.
Subcommittee Referral: Testing
Recommended Action: Companies are being requested to provide financial data for testing the formula. As part of that process, they are also requested to comment on difficulties in obtaining the necessary data. This feedback will be used to determine any necessary simplifications.

219. Treatment of Health Care Subsidiaries: The proposals to change factors for health coverages recommend a separate risk based capital calculation for

managed care organizations. Many such organizations are subsidiaries of insurance companies. Currently, the surplus of health care subsidiaries is assessed a flat 30% charge in the parent company's C-1 affiliated common stock component. We recommend a "look-through" approach for these organizations. Then, the health care subsidiaries' calculated risk based capital would replace the flat charge currently used in the calculation of the parent company's risk based capital.

Subcommittee Referral: Covariance

Recommended Action: A "look through" approach has been adopted as is described in the final report. There is no intention to change the current Life and P&C Risk Based Capital approach where the C-1 risk factor for subsidiaries is their RBC factor, where it exists. Previously this did not exist for HMOs and other health entities. In addition, it is proposed that a company be allowed to calculate its RBC in the "aggregate", on a consolidated basis providing monies and guarantees flow freely between the so consolidated companies.

220. **Appropriateness of Factors: Guarantee Fund Assessment Risk.** The proposal correctly identifies the risk of future guarantee assessments. However, some companies have taken measures to anticipate their future liability in this area. Companies that set up a reserve for these assessments, thus decreasing their current Total Adjusted Capital, should be able to take a credit to their C-4 component equal to the amount of the reserve. This would be consistent with the treatment of voluntary investment reserves in the mortgage proposal.

Subcommittee Referral: Formula

Recommended Action: The Task Force has adopted the basis principle that reserves are intended for different purposes than RBC, which leads to the conclusion that credits should not be made to RBC for reserves in excess of minimums.

221. **Disability Income Factors.** A refinement that includes factors for both long/short benefit periods and group/individual coverage would enhance the calculation since the risk for group coverages differs from that of individual.

Subcommittee Referral: Model Structure

Recommended Action: The model that has been developed by the Task Force works for all coverages, both individual and group, and all benefit periods, long and short. Different assumptions that recognize the different risks associated with these coverages have been developed and used in the model to determine the risk-based capital requirements that are appropriate for individual business separately from group business and long benefit periods separate from short benefit periods.

222. **Additional Justification For Other Factors.** The factors in the proposal address some risks that are not recognized in the current formula. For example, the proposal includes adjustments for environmental factors, rate approval limitations, and premium and performance guarantees. It would be beneficial for companies to clearly understand how these and other factors were developed

and assigned their weightings.
Subcommittee Referral: Data and Assumptions
Recommended Action: The rationale for including adjustments in the RBC was based on detailed discussions at several task force meetings of elements of risk for external factors beyond the control of the company. Rate approval, premium guarantees and performance guarantees were deemed to influence the ability to adjust for emerging conditions promptly. The modeling included tests which helped evaluate the magnitude of this risk. This process will be described in the final report.

223. **Definition Improvement.** Since this proposal is a draft by nature, precise definitions were not expected. We appreciate the efforts to compile a glossary of various terms (Appendix E). However, before considering implementation, additional improvements are needed in two areas: clarifying technical definitions and specifying the correct application of the factors. For example, additional clarifications of managed care credits and the claim reserve adjustment factor would ensure that all companies are applying the formula consistently and as intended.
Subcommittee Referral: Report
Recommended Action: The report, formula and instructions will be revised as the formula is tested and ambiguities are discovered.

224. **Collection Of Information And Testing.** While this proposal more accurately determines the C-2 risk for an insurance company, it also loses some of the simplicity of the current formula. Input for the current NAIC calculation primarily uses more refined data, e.g. premium by state and by attachment point. For some companies, collecting the required information may present a problem, or if data collection is possible, it would require more resources. In addition, calculations that use complex information will be increasingly difficult to audit. Since these calculations need to be completed concurrently with the annual statement, some companies may find it difficult to give proper attention to these refinements.
Subcommittee Referral: Testing
Recommended Action: Companies are being requested to provide financial data for testing the formula. As part of that process, they are also requested to comment on difficulties in obtaining the necessary data. This feedback will be used to determine any necessary simplifications.

225. **Simplify the Formula.** The proposed formula requires considerable more detail than we currently track. While the current version presents a nice theoretical framework, it will be programming and account intensive in its present form. Additional compliance costs will be the result without any clear benefit to be gained from the additional detail. It is suggested that a more simplified approach, as used under the current NAIC formula, or the many other surplus formulas currently publicized, would provide sufficient guidance.

Subcommittee Referral: Testing
Recommended Action: Companies are being requested to provide financial data for testing the formula. As part of that process, they are also requested to comment on difficulties in obtaining the necessary data. This feedback will be used to determine any necessary simplifications.

226. Concern arises from the proposed 1.5 factor for business having premiums subject to regulatory approval. A large fraction of A&H business has been subject to at least some rate regulation for a number of years, which may already be reflected in much of the available experience. Unless the Task Force data excluded such business, this 50% special increase would be redundant and therefore excessive.
Subcommittee Referral: Formula
Recommended Action: The 1.5 factor for regulatory approval will be recalculated using new phase-in assumptions. The group modeling each product will first adjust for the rate approval delays in the data to eliminate double counting in the phase-in factors.

227. A technical point relates to determining capital for some entities outside of the insurance industry, e.g., HMO's. A large part of their assets may be, as noted on page 9 of the Task Force report, "real estate and equipment, which are used in the delivery of care." Some value for such assets would presumably be recognized in any comparison of actual capital against risk-based capital. While these assets may be not subject to the traditional C-1 risk of debtor default, they may have much greater risks of loss in value from technological obsolescence, limited marketability, demographic shifts, changing purchasing practices for healthcare, etc. Such balance sheet risks appear both material and relevant in attempting to establish uniform capital requirements among carriers.
Subcommittee Referral: Covariance
Recommended Action: This is the flip side of questions 144, where the risk factor was considered too high. The subcommittee which was created to examine this issue decided that the existing 10% real estate factor would be appropriate. The rationale included a recognition that there are offsetting considerations in developing this factor.

228. What is the process (mentioned on page 5 of the Task Force report) by which coverages were assigned to probability density functions for subsequent modeling, including goodness-of-fit tests performed, and the standards applied in the absence of carrier information.
Subcommittee Referral: Data and Assumptions
Recommended Action: The final report will describe this process for each major coverage.

229. Is the method and reasoning (report page 5) to adjust modeled ruin probabilities consistent with those used by the life and property/casualty RBC

groups.
Subcommittee Referral: Data and Assumptions
Recommended Action: The final report will describe the methods used. However, we feel that the modeling done here is much more refined than that used for the prior RBC work. The final level of ruin probability should be determined by the NAIC.

230. What are the sources and characteristics of the various individual distribution functions (report page A-1) used in the initial stage of the Statistical Model, as described on report page 11.
Subcommittee Referral: Data and Assumptions
Recommended Action: The final report will describe the distribution functions used in the statistical model including the sources of data.

231. Experience underlying, and derivation of, the historical variance distributions (report page 12), seem to have been an important element in the Financial Model.
Subcommittee Referral: Data and Assumptions
Recommended Action: The final report will include a description of the sources for the historic distributions.

232. What are the Task Force's formulas for establishing insolvency with the various coverages and surplus levels.
Subcommittee Referral: Model Structure
Recommended Action: The Task Force's formulas, risk models, and development of surplus levels, matching with actual data from carriers, will be described completely in the final report to the NAIC. Anyone wishing copies of specific information reflecting the methodologies being used can obtain it from Christine Cassidy at the AAA office.

233. What is the method and reasoning followed in getting from Task Force modeling results to their RBC factors.
Subcommittee Referral: Data and Assumptions
Recommended Action: The final report will describe the mapping of the model results to the RBC factors.

234. What is the data and reasoning behind the proposed 1.2 factor for C-2 RBC amounts, if an insurer's annual statement lacks a statement of actuarial opinion based on asset adequacy analysis. Also would this 1.2 factor be multiplied by the factors suggested (report pages 18 and 19) for business subject to rate regulation or guarantees and the factor suggested (report page 19) for claim reserves?
Subcommittee Referral: Formula
Recommended Action: The formula has been modified to clarify that the adjustment for the lack of an actuarial opinion based on asset adequacy analysis is applied to the calculated C-2 risk based capital amount. This has the result of making this

adjustment apply to all elements of the C-2 calculations for health coverages.

235. What is the experience underlying, and derivation of, these additional factors for business subject to regulation or guarantees and the factors applicable to claim reserves.
Subcommittee Referral: Data and Assumptions
Recommended Action: The final report will describe the derivation of all factors, including rate guarantee and approval business and claim reserve factors.

236. The choice of bases for applying the proposed factors, which may be "incurred claims or cost of care incurred," "actual premiums," "premium and premium equivalents, including self-insured claims," or "earned premium," depending on the coverage.
Subcommittee Referral: Formula
Recommended Action: As indicated in the report, the task force's charge was to develop a formula felt to be appropriate and to rely on the NAIC Committee to apply simplifying principles.   The task force generally preferred to use claims where available, easily defined, and anticipated to remain relatively consistent from period to period. When claims would be variable, such as stop loss, or subject to changes in reserving practices, such as disability income, alternative measures of risk were sought.

237. The proposed method for classifying business having reimbursement (usual-and-customary) benefits and indemnity coverage in a single contract.
Subcommittee Referral: Formula
Recommended Action: We are unsure of the distinction between reimbursement benefits and indemnity coverage as intended by the author.   For purposes of RBC, we intend them to have the same factor.

238. The PPO credit of 1% seems low to lock in an inflation rate on medical cost.
Subcommittee Referral: Data and Assumptions
Recommended Action: The PPO credit is appropriate in light of experience and modeling.   Generally, PPO plans represent a discounted fee for service.   This discount can be expressed as a schedule (which locks in cost until it is renegotiated) or a percentage (which doesn't lock in anything).   In either case, there is no control on utilization of the network services, either by providers or insureds.   Other types of plans with control on utilization receive larger credits.

239. The difference in the stop/loss requirement of 75% of premium for $100,000 stop/loss versus 10% of premium for the $25,000 stop/loss seems out of line. Again, this is a major change versus prior year.
Subcommittee Referral: Formula
Recommended Action: The specific values identified were based on early modeling

results presented in the first draft report which clearly indicated that the factors would be changing. The relationship among factors by stop loss trigger point has been reviewed for reasonableness.

240. Although there is not much background analysis available, it appears that the techniques used to develop these factors were the same techniques used to develop the factors for medical expense coverage, which may not be appropriate. We believe that much additional work and analysis needs to be performed on these products, and that it would be advantageous to give the industry experts time to analyze and comment on the level of the factors for these coverages.
Subcommittee Referral: Model Structure
Recommended Action: Implied "universality" of the Task Force model(s) has been addressed at length. See #'s 46 and 255. Applications by line of business to #'s 10-12, 24, 26, 34-37, 52-54, etc. Testing is expected to be conducted under the auspices of the NAIC HORBC Working Group.

241. Since disability income and long-term care are rarely written by health organizations, we strongly recommend that the factors for these coverages not be exposed at this time, but be subject to continuing review and analysis to be finalized at some future time. In the meantime, we recommend continuing the current factors.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

242. The application of the size adjustment concept seems inappropriate. For example, in the first section on major medical hospital coverage, the minimum capital for a company to operate in this market is the capital corresponding to 8,000 covered lives, and there is no discount above that level. This poses two problems. On the one hand, this seems an exorbitant amount of capital for a company just starting out in this line of business. On the other hand, there is no discount for a company covering significantly more than 8,000 lives.
Subcommittee Referral: Formula
Recommended Action: The size adjustment was intended to provide for a minimum level of capital for even a small company starting out. It will be recalculated based on the final risk factors. There may also be size adjustments for different portfolio sizes based on model results. If model results indicate a significant difference in risk for different portfolio sizes separate factors will be built into the formula.

243. The proposal should distinguish between non-can disability income, which has the most risk and other forms of disability income, such as guaranteed renewable, which have less risk.
Subcommittee Referral: Formula
Recommended Action: As noted in the report, additional distinctions may be added to

the list of coverages in Section I, D. after modeling is completed. Material distinctions in risk will be the major consideration in adding to the list.

244. Why is the factor for medical supplement so much higher than basic medical coverage? Given that it is high frequency, small amount business, it seems that a lower factor closer to that of basic medical coverage would be more appropriate.
Subcommittee Referral: Data and Assumptions
Recommended Action: The modeling was based on distributions appropriate to the coverage, and the RBC factors reflect the modeling. The final report describes the methods used.

245. It is not clear why the premium movement factors are needed at all. Since the development of basic factors used experience data as input, if would appear that the effect of rate approvals and rate guarantees would be already taken into account. Even if the model used only one type of business as input, this would be the case. For example, the model used as input indemnity business with a 12 month guarantee, then the load factor for 12 month guarantees should be 1.0 and the other load factors would be reduced accordingly. In any event, the rate approval requirement load factor of 1.5 seems excessive, and may be duplicating the rate guarantee load factor.
Subcommittee Referral: Data and Assumptions
Recommended Action: The data does indeed reflect the impact of business practice and influences. The modeling was designed to remove the impact of these items and separately determine them. This is described in the final report.

246. Many of the sources of data are unclear and subject to interpretation. For example, for an insurance company, what exactly should be included in major medical hospital incurred claims? Or for an HMO, what exactly should be included in major medical hospital cost of medical care? Another example is the term "aggregate cost". This is subject to a variety of interpretations. In addition, many of these items are not included in the statutory financial statements of either life companies or health organizations, making it difficult to ensure that the results of the formula will be consistent from company to company.
Subcommittee Referral: Testing
Recommended Action: We agree that the instructions must be designed so that they are clear and eliminate as much ambiguity as possible. We hope that the formula testing process will give us some of the feedback necessary to eliminate obvious ambiguities.

247. It is not clear what precision is required for the backup to the managed care credits analysis.
Subcommittee Referral: Testing

Recommended Action: Considerable discussion and research went into defining and modeling managed care categories. it was also recognized that this work was creating the precedent for initial testing of such classifications and that the definitions may evolve over time. Several entities will have business in more than one category. The Task Force developed categories where it believed significant risk differentials existed for the purpose of RBC/regulatory monitoring. The Task Force also recognizes that there are subcategories with smaller risk differentials within each managed care category, but not significant enough for separate treatment.

248. The whole section on alternative funding methods is difficult to understand how to apply.
Subcommittee Referral: Testing
Recommended Action: The Task Force attempted to segregate significant risks. In so doing, they reached into the vernacular of group life & health writers/underwriters. Filling out the formula will involve collecting data not currently reported and will involve the affected departments within each company. Simplification would following testing once significant risk categories have been highlighted in that process. It was also recognized that simplifications means different things to a large diversified life company versus an essentially monoline health entity, that is, refinement may have negligible to minor impact on the diversified companies that overall RBC, but significant impact on the essentially monoline health entity.

249. Under the section for adjustments for limits on premium movement, there seems to be some duplication in Sections 1 and 2. Does this really mean that companies should multiply these two factors together?
Subcommittee Referral: Testing
Recommended Action: A testing group has developed a worksheet to correspond to the final published report. This process and the assistance of companies that have accepted our open invitation to voluntarily submit financial data for testing have flushed out a number of clarifications within Section I of the Draft Report where the formula resides.

250. Do the factors for premium guarantees apply to the guarantee left at the time of the calculation, or to the original guarantee period?
Subcommittee Referral: Formula
Recommended Action: The premium guarantee factors apply to the original guarantee period.

251. It is the dissimilarity between long-term care and medical insurance which leads us to question the appropriateness of using the same basic statistical and financial models to develop RBC factors for both coverages. More specifically, we are concerned about the validity of the underlying claim probability density functions and the historical variance distributions assumed in the modeling for long-term care insurance.

Subcommittee Referral: Model Structure
Recommended Action: Implies "universality" if the Task Force model(s) has been addressed at length. Numerous sub-working groups were formed to review data, models, output, etc. This is a duplicate question see #'s 46 ad 255, in particular.

252. What was the source of the claim probability density function used in the statistical model? Long-term care insurance is a relatively new and immature product. There is very little credible insured data for institutional claim costs. There is even less insured utilization data for home and community based care.
Subcommittee Referral: Data and Assumptions
Recommended Action: The final report describes the sources of the claim distribution. For long term care, the method used reflects its lack of available data.

253. A number of factors need to be considered in determining historical "volatility" of loss ratio results. Size: How statistically credible was the experience reviewed? Given the relatively low claim frequencies and high average claim amounts which characterize long-term care insurance, a block of business would have to be very large before its claims experience would be considered fully credible. Underwriting: Many long-term care policies are medically underwritten. This underwriting will reduce expected claims significantly in the early policy durations (especially at the older issue ages). Loss ratios for recently underwritten business are consequently expected to start low and increase by duration. It is not clear whether this was taken into account by the AAATF when deriving the historical variance distributions for long-term care. Statutory Reserving Method: Most long-term care carriers use either a one year or a two year preliminary term method for statutory active life reserves. Assuming that the Task Force included the change in active life reserves when computing loss ratios, the use of a preliminary term reserving method makes loss ratios heavily dependent on the mix of policy durations, especially for a relatively new block of business. This would also need to be reflected in the development of the historical variance distributions.
Subcommittee Referral: Data and Assumptions
Recommended Action: The final report describes the method used in developing the historic variance distribution. Change in active life reserves was appropriately reflected in the historic distribution development.

254. We are also very concerned about the impact the currently proposed factors may have on the pricing of long-term care policies. If insurers must set aside capital based on RBC needs, we estimate that long-term care premium rates would need to be raised between 30 and 40% with the new earned premium and claim reserve factors, in order to provide adequate returns on this capital. Consequently, consumers will have to pay significantly more for this valuable coverage, and long-term care insurers may find it increasingly difficult, if not impossible, to meet state minimum loss ratio requirements.

Furthermore, the proposed dramatic increases in RBC required to support long-term care insurance may cause some carriers to completely withdraw from the market to concentrate on those businesses which are less capital intensive.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

255. We are concerned that the AAATF model appears to be based on medical expense type business and thus, in the case of group LTD insurance, fails to model the actual economics of the business. In particular, we feel that the model does not recognize the impact of investment income on reserves and the lack of a year-to-year trend effect as in medical insurance. The AAATF also does not appear to take into account any benefit of disability management, which is integral to our new product strategy.
Subcommittee Referral: Model Structure
Recommended Action: Implied "universality" of the Task Force's model(s) has been addressed at length. Significant effort has been applied in data treatment and assumption development in model application by line of business. In so doing, the Subcommittee has encouraged companies to compare results from their models to Task Force model results, where both utilize the same set of assumptions. With regard to "benefit management", the Task Force recognizes that benefit management varies between carriers within any line of business. However, the Task Force is not aware of defined categories of benefit management which reduce variability (deviation from expected) akin to those developed for medical managed care.

Duplicate question on model application by line of business; cross reference to response #46. Applications by line of business; cross reference to responses to #'s 10, 11, 12, 24, 26, 34-37, 52-54, 59, 62, 63, 72, 73, 76, 99, 111, etc.

256. Mini-Premium and Stoploss Insurance - Threshold-based factors for mini-premium and stoploss add significant complexity to the determination of RBC. Tying the formula to specific dollar amount thresholds creates additional complexity because the thresholds would need to be updated or indexed (like tax tables). We prefer and recommend a more straightforward and manageable factor as in the current Life & Health RBC formula.
Subcommittee Referral: Formula
Recommended Action: The current RBC formula does not adequately provide for stop-loss risk, which is highly leveraged. The proposed formula is indeed more complex, but it is designed to recognize risk. The formula, as written, provides for a large measure of attachment point creep without requiring an adjustment. This serves as an approximately proxy for indexing.

257. Administrative Service Contracts - However, basing this RBC factor on premium equivalents may lead to difficulties as not all companies have the same definition of premium equivalents.

Subcommittee Referral: Testing

Recommended Action: We agree that the instructions must be designed so that they are clear and eliminate as much ambiguity as possible. We hope that the formula testing process will give us some of the feedback necessary to eliminate obvious ambiguities.

258. Provisions for reinsurance credit would be cumbersome to administer, particularly if exchange of information and exact mirroring of Assumed and Ceded RBC credit is required. RBC should be determinable by an insurer without relying on others.

Subcommittee Referral: Testing

Recommended Action: Companies are being requested to provide financial data for testing the formula. As part of that process, they are also requested to comment on difficulties in obtaining the necessary data. This feedback will be used to determine any necessary simplifications.

259. The proposed additional C-4 RBC factors go substantially beyond what is necessary. The extra factor of 50% for growth in any category above 20% produces a "double-whammy" effect and will dampen new business and new product development.

Subcommittee Referral: Formula

Recommended Action: The objective of the C-4 factor for increased risk is intended to recognize that extremely rapid growth sometimes accompanies products that may be under-priced or which may incorporate some risks that management has not anticipated when those products were introduced. The additional factor applies only when extremely rapid growth occurs, growth in excess of typical growth rates.

260. Further, the additional complexity of state-by-state guarantee fund assessment charges which depend on the capital levels of all other plans in the area would be an administrative nightmare for both states and companies.

Subcommittee Referral: Formula

Recommended Action: This risk could be calculated by knowing the premium, RBC and capital for every company in the state or in the guarantee fund. All of these amounts are available to the state.

261. The general consensus is that the proposed changes are too complicated. From a practical standpoint, there is much concern that the data needed would be difficult and time consuming to provide.

Subcommittee Referral: Testing

Recommended Action: Companies are being requested to provide financial data for testing the formula. As part of that process, they are also requested to comment on difficulties in obtaining the necessary data. This feedback will be used to determine any necessary simplifications.

262. Because much of the data is not derived from existing regulatory filings, consistent data with reliable results will likely vary significantly from company to company. Many of the terms used in the proposed formula do not now have uniform meaning or definition with the industry. If adopted, all categories and terms will have to be thoroughly described and defined.

Subcommittee Referral: Testing

Recommended Action: We agree that the instructions must be designed so that they are clear and eliminate as much ambiguity as possible. We hope that the formula testing process will give us some of the feedback necessary to eliminate obvious ambiguities.

263. On Administrative Service and (unlimited) Cost Plus Contracts the "risk factor" would seem more related to expenses than to the premium equivalent including self-insured claims, as the insurer is not A"at risk" on the basic benefits portion of the case. I do not think a factor applicable to anticipated benefits is appropriate. Even though the risk factor itself is low it will apply to big volumes of claims. There may be greater risk (bankruptcy of client) on Cost Plus groups paid in arrears that should be recognized.

Subcommittee Referral: Formula

Recommended Action: None. The factors are still under development. The risk to be recognized by this factor is an expense related risk. The committee did consider other risks but felt their level was not material.

264. Dispersion is a factor which influences risk, but is not recognized in the proposed formulas (numbers at risk/geographical spread, etc.) which would lend itself to some sort of size discount/adjustment. The only mention of size is an 8,000 life minimum requirement.

Subcommittee Referral: Model Structure

Recommended Action: The model is based on actual observed historical results. Dispersion is recognized in the aggregate to the extent it is in the historical results. An individual company's dispersion is not recognized in the model.

265. I am also concerned with clear definitions. Examples; under Alternative Funding Methods, B 2. the formula employs the "average expected claims per member". Perhaps the number of expected claims is a standard for ordinary insurance, but is somewhat foreign to Group, we do not normally compute and store such a value for the purpose of tabulating results. Under Aggregate Stop-Loss the term "combined specific and aggregate capital" is used without definition.

Subcommittee Referral: Formula

Recommended Action: Successive iterations of the report will hopefully improve the terminology utilized. The task force anticipated relying on the expertise of the NAIC Committee to assure actual regulations were clearly defined and understandable.

266. Uniformity of data is another concern. Examples: some factors are based on "equivalent premium". I do not think there is universal agreement on what is included (such as margin).
Subcommittee Referral: Formula
Recommended Action: The Task Force recognizes that classification and calculation differences will arise in testing and in actual practice. Every attempt is being made to obtain consistency of reporting and classification for these purposes. This process also has recognized that there is not uniformity of statutory reporting from state-to-state and between health entities.

267. Exhibit 9 and 11 reserves are used without recognition of the adequacy level (which could vary significantly from carrier to carrier.)
Subcommittee Referral: Formula
Recommended Action: We agree. However, the NAIC has directed that redundancy in reserves specifically not be recognized in the determination of RBC.

268. There is no provision for liquidity (the problem is recognized on pages 7-8). In the case of health care unexpected large claims require available liquid assets. Perhaps a requirement is needed that some percentage of health RBC should be presented by publicly traded securities. Along this same line, perhaps real estate and equipment of HMO's should not be admitted because they are not readily available to cover sudden unexpected claims.
Subcommittee Referral: Formula
Recommended Action: Risk-based capital is not an allocation of certain assets of the company. It is a measure of the amount of surplus that the entity needs to have in order to provide for the risk that the entity is taking. Through cash flow testing, a company's appointed actuary will determine whether the assets supporting the liabilities will support the cash requirements of the company.

269. Consideration should be given to use of some measure other than premium as premium can be inadequate or redundant (similar to above comment about margin in reserves) and, in addition, can be influenced by marketing considerations.
Subcommittee Referral: Formula
Recommended Action: Payments are used for many risks and premium was only used where it was deemed to be more appropriate.

270. Where capitation payments are concerned it is unclear why there should be a 4% credit from the 11% charge to a net of 7%. Like ASO, there is no claim risk at all, perhaps the factor should be .5%.
Subcommittee Referral: Data and Assumptions
Recommended Action: There are risks when capitation payments are made. First, there is a risk that the capitated agency fails to perform. Further, there are risks associated with timing of provider contract renewals.

271. It is not clear how the "credits" were determined for payments fixed by contractual agreement. While we have agreement to a specified price for each service we do not have control over the frequency of services.
Subcommittee Referral: Data and Assumptions
Recommended Action: The final report details the calculation of the credits element of the formula.

272. Cover letter - Historical data was gathered from commercial, Blue Cross, Delta Dental and HMO market segments. Questions might include whether the period covered by the data is appropriate ("typical") environmental factors which are unlikely to be repeated? representative of future (ie. what have we learned about predicting and coping with price and utilization trends)? mix of individual vs. group? as applicable to each type of organization as in total? etc.)
Subcommittee Referral: Data and Assumptions
Recommended Action: The final report describes the data used by coverage. The question asks "What have we learned?" By historic standards, we forget what we learn over time and history repeats. That is known as an underwriting cycle.

273. ". .values needed to compute RBC under the new formula are not currently reported through existing Annual Statement blanks." Formulas may be theoretically correct, but some weight must be given to the onerous degree of refinement/requirements for accumulation of data. The calculation of some of the factors must be done on a seriatim basis, recognizing individual characteristics (such as state, expected number of claims per member, attachment point, comparison of Rate Stabilization Reserve to RBC of the policyholder, etc., etc., etc.)
Subcommittee Referral: Testing
Recommended Action: Companies are being requested to provide financial data for testing the formula. As part of that process, they are also requested to comment on difficulties in obtaining the necessary data. This feedback will be used to determine any necessary simplifications.

274. Major Medical Hospital Coverage. It is unclear whether the addition of the words "hospital Coverage" after "Major Medical" are significant. Major Medical normally covers hospital as well as other types of expense (physician, etc.). Is the risk charge applied to only those expenses incurred in conjunction with "hospitalizations" -- if so, some definitions are needed: What is a "hospital" and what kinds of expenses are considered -- in and out patient, free standing surgical centers, extended care facilities, hospices, birthing centers, etc.? How are incurred claims allocated among ancillary, physician, etc.? How are incurred claims allocated among charges -- where does deductible apply? coordination of benefits? etc.
Subcommittee Referral: Formula

Recommended Action: The formula has been changed to clarify the applicability of this section.

275. Risk Charge. While it appears the intent is to assess the charge against what might be termed "traditional insured plans", combinations exist which would not necessarily meet both criteria (i.e. could have a deductible of less than $2,500 but a copay plus self-insured amount of more than 50%, but not a traditional "Minimum Premium" plan). Treatment for such groups is not specified. In order to determine which factors apply (both in item A1 and item A2), an individual case determination would have to be made, the cases "tagged" in some fashion so that premiums and claims payments on those groups would be excluded from this calculation and included somewhere else (where is unknown).
Subcommittee Referral: Formula
Recommended Action: The final report will specify that deductibles greater than $2500 will be treated as stop loss and copays greater than 50% will be treated as other health coverages. It is intended that policies with these varying risk characteristics will be segmented for development of RBC.

276. Managed Care Credit. The detail required here is onerous/impractical/possibly impossible to obtain. Determinations would have to be made at service (line item) detail level. We process between 4 and 5 million claims per year, each of which may average two to five "services", so we may be talking about "tagging"/sorting through 8 to 25 million line items in order to determine this value. Not only would this be required on GALIC-paid claims, but also on claims processed by our third party payers who may or may not have sophisticated enough claims systems to provide the information. (Perhaps the count is on overstatement, as we could first sort out (discard) those claims which did not "match" with the groups considered under item A.1.)
Subcommittee Referral: Testing
Recommended Action: Companies are being requested to provide financial data for testing the formula. As part of that process, they are also requested to comment on difficulties in obtaining the necessary data. This feedback will be used to determine any necessary simplifications.

277. Specific Stop-Loss for Medical Coverages. While the gradual grading of the "Hospital Factor" from the bottom to top of each range may be theoretically correct, is the refinement worth the effort of determining premiums for each possible attachment point within each bracket and applying a formula to graduate to charge? Where an individual case has attachment points that vary by employment class, this could be impossible to determine if the group is self-administered. By having such formulas "attachment point creep" is compensated for, but the administration is complicated. It is unclear what differentiates "other coverages than those including hospital" factored at 1/2 the

hospital factor under B.1 from "Other Coverages" whose calculation is described under B.2

Subcommittee Referral: Formula

Recommended Action: This section of the formula includes a complexity which is designed to provide for the leveraging of attachment points and match the RBC requirement to the risk. The modelling indicated that a differentiation is warranted. A company can, in calculating RBC, take certain short cuts, where the RBC would be slightly overstated, in order to reduce detail in the calculation. For example, the top of each bracket can be assumed for all cases within a bracket.

B.1 reflects medical coverage, with or without hospital, with 50% adjustment applying where hospital is not included. B.2 represents all other coverages, such as AD&D, Cancer, HIP and Disability.

278. Specific Stop-Loss for Other Coverages. We normally do not specifically think in terms of the average expected number of claims per member. Again, a case-by-case determination would have to be made and an indicator attached to each case in order to categorize premiums for this determination.

Subcommittee Referral: Formula

Recommended Action: The Task Force was charged with developing risk-based capital standards that are based on the appropriate measures of risk. The proposed formula represents a theoretically correct approach for measuring risk on the subject types of business. The NAIC will be responsible for determining when to modify the formulas produced by the Task Force for ease of computation.

279. Aggregate Stop-Loss and Minimum Premium. Although the lead paragraph indicates "actual premium" is the base, the table uses "premium equivalent" for some categories. A "general" definition is given for equivalent premium in the glossary but there is not a consistent definition among companies (i.e. is margin included, are adjustments made for otherwise premium taxes, etc.) Also, this is not necessarily a value that is accumulated throughout the year.

Subcommittee Referral: Formula

Recommended Action: When instructions are written for the final formula there should be a definition given that clarifies how premium equivalence is to be calculated.

280. The statement "These factors assume specific stop-loss is sold in conjunction with aggregate stop-loss. When specific stop-loss is not sold, the over $50,000 attachment point factors should be used." is unclear. (A) Does this mean a calculation would have to be made of the premium that would have been charged IF we had sold specific stop-loss in order to calculate or add to the aggregate premium to determine the RBC for the aggregate stop loss? (B) Does the "over $50,000" basically mean $50,001-$100,000 (would there be any reason to use the $100,000 category?) (C) Might be difficult to calculate as we do not always know the total number of employees/members covered when only

aggregate stop loss is sold.
Subcommittee Referral: Formula
Recommended Action: (A) No. The actual premium is the basis for the factor, unless noted in the table. (B) The formula has been changed to require the use of the over $100,000 factor. (C) It was noted that there would be additional information required to accommodate the formula modifications.

281. This is another place where terms applicable to each individual policy affect the formulas (relative attachment point and periods greater than 12 months would require separate classification/adjustment.) In addition, depending upon the cell into which the case falls, a choice would have to be made between use of premium or specific stop-loss factors applicable under B1 or B2 or specifically calculated only for this calculation.
Subcommittee Referral: Formula
Recommended Action: Companies are being requested to provide financial data for testing the formula. As part of that process, they are also requested to comment on difficulties in obtaining the necessary data. This feedback will be used to determine any necessary simplifications.

282. Does the phrase "combined specific and aggregate capital" mean "premium/equivalent premium"?
Subcommittee Referral: Formula
Recommended Action: "Combined specific and aggregate capital" referred to the total C-2 capital requirements on a stop loss policy with both specific and aggregate components. Due to the confusion, this section has been modified for the final report.

283. Administrative Service Contracts and (unlimited) Cost Plus Contracts The "risk factor" would seem more related to expenses than to the premium equivalent including self-insured claims, as the insurer is not "at risk" on the basic benefits portion of the case. I do not think a factor applicable to anticipated benefits is appropriate for ASO. Even though the risk factor itself is low, it will apply to big volume of claims. There may be a greater risk (bankruptcy of client) on Cost Plus groups paid in arrears that should be recognized.
Subcommittee Referral: Formula
Recommended Action: The factor for ASO is intended to recognize the risk of failure to fund claims and the expense risk. Under both ASO and cost plus the insurer may be held liable by the courts and RBC requirements are appropriate.

284. F.1 Adjustment for Limits on Premium Movement (Medical and Dental only) Another "refinement" of all values dependent upon state.
Subcommittee Referral: Formula
Recommended Action: (This is actually E.1 not F.1) The Task Force's perspective was to evaluate an "average" effect due to regulatory requirements across most

states. Though it may be more accurate to vary the adjustments by state, such degrees of refinement would be difficult to determine and would be subject to frequent change as each state modified its approach to rate approval actions. Consequently, an average adjustment was developed.

285. F.2 Adjustment for Premium Guarantees & F.3 Performance Guarantees Additional "refinements" of all values dependent upon guarantees. With added requirement of maintaining records of amounts at risk by case (usually related to an expense structure) where performance guarantees exist.
Subcommittee Referral: Formula
Recommended Action: Companies are being requested to provide financial data for testing the formula. As part of that process, they are also requested to comment on difficulties in obtaining the necessary data. This feedback will be used to determine any necessary simplifications.

286. G. Claim Reserve and Liabilities
Should we presume that the RBC factor applies to all reserves (including "first year") even though first year claims are excluded from the "number" adjustment? This adjustment does not seem appropriate without some recognition of the degree of adequacy in the reserves, the lag in recognizing the liability under exhibit 9 or 11 (i.e. how much is carried as IBNR), etc. and is significantly higher than the current factor of 5%.
Subcommittee Referral: Formula
Recommended Action: None. The committee discussed and determined that there was no workable method for reflecting reserves in excess of minimum requirements.

287. H. Credit for Rate Stabilization Reserves and Retrospective Premiums
Again, this section requires calculation of case-by-case values to compare against available funds. Plus, in the case of Retrospective Premiums, a certification by a member of the American Academy of Actuaries that the case is self-supporting plus an adjustment dependent upon the degree/kind of security involved.
Subcommittee Referral: Formula
Recommended Action: The task force recognizes that this credit requires case by case analysis. It was recognized that some policyholders have rate stabilization reserves established a broad credit may result in insufficient capital in the aggregate (these reserves cannot be applied to losses on other policies). As such, no alternative to individual case analysis was determined. The difficulty of individual case analysis is somewhat dampened by recognizing this is a credit to RBC and if a company chooses that it would not be cost effective to take this credit then no one will object to that company reporting higher RBC level. The actuarial certification is recommended to allow individual companies to maintain confidentiality regarding the pricing tactics and level of stabilization reserves for individual important policyholders.

288. C-4 Calculations. A. Increase Risk Adjustment
Requires separate calculations with respect to each category of premium for which a unique set of factors and categories applies in this formula to compare with prior periods to determine growth in excess of 20%.
Subcommittee Referral: Formula
Recommended Action: The issue here is unclear, unless it is one of complexity. Perhaps the writer means that coverages under 20% offset coverages over 20%. The formula is designed to recognize that growth in risk in a category is an item to watch. By looking at each coverage separately, we accomplish this intent.

289. B. Guarantee Fund Assessment Risk
Attempting to monitor whether every state where there is a potential assessment by a guarantee fund provides information to assess an RBC seems overkill. Could we suggest some easier method such as an overall lag?
Subcommittee Referral: Formula
Recommended Action: The NAIC will be responsible for developing the information necessary for making this calculation. It is also the NAIC's option to simplify this calculation. However, the Task Force took the approach of developing risk-based capital standards that are based on the appropriate measures of risk, leaving any simplifying assumptions to the NAIC.

290. We believe that RBC for life insurance enterprises cannot legitimately be partially reopened. If selected C-2 factors derived on a wholly different basis are to be imposed upon an existing, internally consistent Life RBC formula, the precepts of solvency regulation and actuarial standards require that the entire formula be reopened.
Subcommittee Referral: NAIC
Recommended Action: Outside the scope of the task force.

291. For instance, the model assesses risk charges against capital for "trend miss," despite the fact that the actuarial opinion required of life insurers makes express reference to Actuarial Standards of Practice, which in turn require that reserve liabilities adequately recognize trend.
Subcommittee Referral: Model Structure
Recommended Action: Trend miss measures the variance of each year's experience from its expected average level. It is not a measure of the underlying trend in the claim level from its expected value. The Task Force's model assumes that underlying trend rates have been adequately recognized in reserve levels, as required by Actuarial Standards of Practice. The risk-based capital formula addresses only the variances between the actual trends that emerge and the levels that were expected to emerge.

292. The model also assesses risk charges against capital for an extended period of potential operating losses to be incurred on business not yet written.

Yet RBC is not intended to support such extended periods of adverse results. The NAIC solvency tool developed for this purpose is the Model Hazardous Financial Condition Act, which is required for state accreditation.

Subcommittee Referral: Model Structure

Recommended Action: The Task Force has decided that the modeling to determine the level of risk-based capital to minimize the probability of ruin will be used based on assumptions of essentially a level inforce with a continuing operating company. The risk model does not assume (except through probabilities on a stochastic basis) an extended period of potential operating losses. It is true that with a level block assumption, it would normally be assumed that some business would terminate and some business would be newly underwritten and issued. We view this as the major purpose of RBC, which is to provide a warning indicator for regulators before a company gets into substantial financial trouble. The Model Hazardous Financial Condition Act is intended to permit the commissioner to intervene when there has been a dramatic change in losses in a very short period of time where control is required immediately.

The risk-based capital system is intended to provide an earlier warning so that the regulators may investigate a company at a relatively high level of capital before a potential insolvency can develop within one year. The latter act would become applicable at a 70% level of the 200% regulatory level produced by the RBC factors. Nevertheless, the regulator can intervene and investigate the carrier long before the substantial drop in profits and surplus which are indicated.

293. The June model's time period for assessing the probability of ruin (its "ruin horizon") for its risk components is 7 years, a basis inconsistent with the Life and the P&C formulas. Given the use to which the model results are to be put (justification for partial or total regulatory takeover of a technically solvent company), we believe a 7-year ruin is egregiously long.

Subcommittee Referral: Model Structure

Recommended Action: The model time frame criteria has received considerable attention. See #'s 22, 19, 91 and 205.

294. Actuarial reviewers from both industry and the regulatory community were unable to evaluate the Baltimore proposal from the documents published. Further, we are unaware of any subsequent NAIC document which yet provides an accurate and complete description of the conceptual basis for, and the formula used in developing, the factors exposed in Baltimore.

Subcommittee Referral: Model Structure

Recommended Action: The NAIC and Task Force have made every effort to maintain openness and availability for critique. Critics were asked to join modeling sub-groups and to otherwise participate.

295. Investment income. Investment income is a minor component of revenue

and profit for medical coverages. Investment income is a major component of disability income coverages, in contract and its magnitude and timing is critical to an analysis of the business. The model formula fails to appropriately recognize the difference. Due to the long-term nature of individual and group disability claims, for instance, the bulk of "losses incurred" on new claims consists of increases to reserves, whose earnings in excess of their statutory discount rate flow into the insurer's surplus. The surplus-generating power of these claim reserves and other disability reserves, and the corresponding diminution of risk, cannot be captured by the AAATF formula.
Subcommittee Referral: Model Structure
Recommended Action: Excess interest contributions to profit/surplus have always been recognized and considered in profit assumption development.

296. Susceptibility to geometric tend. The model formula assumes that adverse claims experience in one year results in a new starting point for the following year; the yearly results are then accumulated in a "trend." This trending is effectively a geometric compounding, useful for simulating such economic phenomena as inflation, but totally inappropriate to the non-compounding fluctuations of both group and individual disability-income business. Although the model has subsequently been modified to reduce the amount of this "trending", a portion still remains, contrary to the appropriate modeling for disability.
Subcommittee Referral: Model Structure
Recommended Action: The model has been changed so that variation is measured from the mean rather than last year's result.

297. Commission and expense structure. The model formula treats commissions and expenses as a relatively constant percentage of premiums. The treatment is roughly correct for annually re-written, level-commission products life group medical, but it is grossly incorrect for individual disability income (IDI) business. IDI's first-year income-statement "strain" is infamous: one company estimates that for each $1.00 of first-year premium it receives, it must recognize $1.70 (after tax) of commissions, expenses, and benefits. Product pricing is such that this first-year strain is then recouped in renewal years. Merely by slowing its first-year sales, therefore, the insurer can increase statutory-basis income and surplus in such magnitudes as to substantially mitigate risk. This imbedded, surplus-generating aspect of IDI cannot be captured by the AAATF formula.
Subcommittee Referral: Model Structure
Recommended Action: The model is based on the assumption that a line of business is stable, with constant premium volume from one year to the next. Implicit in this is the assumption that the business inforce is a cross-section of business across all policy durations. As such, the average expense and commission rate for that block of business will be constant from year to year. The expense strain which arises due to

the sale of level premium, high front end expense business such as individual disability income is a predictable amount of cash strain which the company should be anticipating in its operations from year to year. The risk-based capital formula includes a provision for strengthening the capital requirements for lines who are experiencing rapid growth; one purpose for this additional capital requirement is to recognize the additional surplus strains that will arise beyond normal levels which is associated with this rapid growth.

298. Assumption of stationary population. The model formula assumes a more or less fixed premium level over its ruin horizon. Yet this is a questionable basis for assessing the insurance risk associated with issue-age-priced, level premium products like IDI. A more appropriate analysis of such products is to model the ruined of an inforce block of business.
Subcommittee Referral: Model Structure
Recommended Action: This question is very similar to question 292. In projecting risk-based capital requirements, the model assumes that the company will continue in business. If it has issued business at an inadequate premium for DI, then in order to avoid ruin (on at least the block of business), it will have to increase the premium levels of its new business with enough profits to offset the deficits. The carrier can also do other things such as tighten up claim administration, better analysis of recoveries and offsets of Social Security benefits, etc. Also, the modeling will measure the capital requirements for adequacy of reserves for long-term level premium (products) products. Again, the assumption is that the carrier will be remaining in business and that the capital requirements are set up to provide an early warning for analysis and intervention by the regulators.

299. We are close to reaching the $50 million breakpoint, at which the percent of premium requirement drops from 35% to 15%. For Guaranteed Renewable, the factors are 25% followed by 15%. As the industry is poised to target Guaranteed Renewable sales, we find ourselves faced with a problem. Just when our capital requirements would drop from 35% of premium to 15%, we are contemplating entering the Guaranteed Renewable business. Clearly, this is less risky, yet our capital requirements would be 25% rather than the 15% we would face if we stuck to Noncancellable.

This is clearly an unintended result. A simple solution for Disability Income companies would be to add a rule that says: "for companies selling both Noncancellable and Guaranteed Renewable, the risk based capital requirements will not be greater than if all business were Noncancellable."
Subcommittee Referral: Formula
Recommended Action: The proposed formula operates substantially differently than the current life and health formula referred to above. For disability income, a risk capital will be established and then modified based on the proportion will varying rate practices such as guaranteed renewable and non-cancelable.