Statement of Principles Regarding Property and Casualty Valuations

(As ADOPTED SEPTEMBER 22, 1989)

The purpose of this Statement is to identify and describe principles applicable to property and casualty valuations. The Statement establishes fundamental concepts for research and education regarding valuation techniques. The principles in this Statement provide the foundation for actuarial procedures and standards of practice regarding valuations. These principles apply to valuations regarding any risk bearer of property and casualty contingencies.

This Statement consists of three parts: I. Definitions

II. Principles

III. Discussion

I. Definitions

Valuation is the process of determining and comparing, for the purpose of assessing a risk bearer's financial condition as of a given date, called the valuation date, the values of part or all of a risk bearer's obligations and the assets and considerations designated as supporting those obligations.

A valuation is carried out in accordance with specified rules or assumptions selected or prescribed in accordance with the purpose of the valuation.

A risk bearer is a person or other entity that is exposed to the risk of financial losses that may arise out of specified contingent events during a specified period of exposure.

Cash flows are receipts or disbursements of cash.

An **asset** is cash held or any other resource that can generate receipts or reduce disbursements.

An **obligation** is a commitment by or requirement of a risk bearer to make disbursements with respect to financial losses arising out of specified contingent events or with respect to any type of other expense or investment commitment.

A **consideration** is a receipt or a reduction in disbursements in exchange for accepting the risk of financial losses that may arise out of specified contingent events during a specified period of exposure.

II. Principles

1. Every obligation, consideration or asset, with the exception of cash held, is associated with one or more items of cash flow.
2. The value of every item of cash flow depends upon the following valuation variables, each of which may involve uncertainty:
    a. the occurrence of the item of cash flow,
    b. the amount of the item of cash flow,
    c. the interval of time between the valuation date and the date of occurrence of the item of cash flow, and
    d. a rate of interest related to the interval of time between the valuation date and the date of occurrence of the cash flow.

3. The degree of uncertainty affecting each valuation variable for any item of cash flow associated with a given asset, obligation or consideration depends upon:

   a. the nature of the asset, obligation or consideration,

   b. the various environments (e.g. regulatory, judicial, social, financial and economic environments) within which the valuation is being performed, and

   c. the predictive value of the data used to estimate the valuation variables associated with each item of cash flow.

4. In general, the values of items of cash flow associated with a given asset, obligation or consideration, and the values of assets, obligations and considerations themselves are not only uncertain, they are also not independent of each other. Consequently, the degree of uncertainty relative to the combined value of items of cash flow or of assets, obligations and considerations reflects the uncertainties affecting the underlying valuation variables and arising out of the interaction of those variables in the process of combination.

5. The value of an asset, obligation or consideration is equal to the combined values of its constituent items of cash flow.

6. The result of a valuation is the combined value of the assets, obligations and considerations involved in the valuation with due recognition of the offsetting characteristics of receipts and disbursements.

7. These valuation principles apply to any valuation whether it involves a risk bearer's total assets, obligations and considerations as of a given valuation date or only identified segments of the risk bearer's assets, obligations and considerations including:

   a. commitments made on or before the valuation date, or

   b. the commitments in (a) and commitments projected to be made after the valuation date, or

   c. only those commitments projected to be made after the valuation date.

III. Discussion

Although no valuation methodology is appropriate in all situations, a number of considerations commonly apply. Some of these considerations are discussed in this section. These discussions are intended to provide a foundation for the development of actuarial procedures and standards of practice.

Data

Data to be used in valuation include descriptions of the characteristics of the risk bearer's assets, obligations and considerations. The descriptions should be sufficiently detailed to permit reasonable projections of cash flows from these assets, obligations and considerations.

The actuary may use a risk bearer's own experience relative to its assets, obligations and considerations if this provides a basis for developing a reasonable indication of the future. Moreover, the actuary may use external data drawn from relevant experience of the insurance industry, other financial institutions or surrounding environments.

Organization of Data

Organization of data for valuation is affected by the characteristics of the assets, obligations and considerations involved and the characteristics of the valuation variables

connected with them.

Much of the data organizational work relative to obligations and considerations begins with data used in connection with the reserving and ratemaking processes. However, it may be necessary to adjust the results of those processes so as to take into account differences between cash flow dates and the various dates used in those processes. It may also be necessary to identify any relevant expenses that fall outside the data used in the reserving and ratemaking processes and reflect them in the valuation process. It is important, too, to identify potential adjustments to considerations like retrospective premiums or audit premiums that may be received or paid in the future.

If a valuation deals with detailed analyses of cash flows, data organization relative to assets involves principally the work of classifying the assets and developing projections of contractual or anticipated cash flows from them. It is also often necessary to divide assets into classes of investment by such things as time to maturity or quality and to project flows of anticipated receipts into particular classes of investment in accordance with an assumed investment strategy.

Homogeneity

Valuation accuracy is often improved by dividing the data on assets, obligations and considerations into groups exhibiting similar characteristics. Homogeneous groupings recognize, when appropriate, the interrelationships between those assets, obligations and considerations.

Credibility

Credibility is a measure of the predictive value attached to a body of data. Credibility is increased by defining groups of assets, obligations or considerations so as to increase their homogeneity or to increase the volume of data relative to the groups. Increasing homogeneity may fragment the groups to such an extent that their predictive value is reduced to an unacceptable level. Each situation requires balancing homogeneity and the volume of data.

Operating Conditions

Operating conditions should be reflected in valuation. Operating conditions include mix of business, underwriting, claims handling, marketing, accounting, premium processing, portfolio of investments, investment strategy, and reinsurance programs.

Environmental Conditions

Environmental conditions should be reflected in valuation. The regulatory, judicial, social, financial, and economic environments are some of the major ones to be considered.

Losses and Loss Adjustment Expenses

The major obligations of a risk bearer are usually those relating to the future payment of losses and loss adjustment expenses. When these obligations are estimated for purposes of a valuation, their future development may be a factor for consideration. Development of losses and loss adjustment expenses is defined in the Casualty Actuarial Society's Statement of Principles Regarding Property and Casualty Loss and Loss Adjustment Expense Reserves.

Rules and Assumptions

The objective of a valuation is to produce an assessment of a risk bearer's financial condition that will be useful for the purpose for which the valuation is performed. The purpose of the valuation affects the rules and assumptions used.

Cash flow analyses produce projections of receipts and disbursements. These analyses are conceptually the most fundamental of the forms of valuation. The other forms of valuation

can be derived from cash flow analysis by suitable selection of rules and assumptions relative to the valuation variables.

Balance sheets and income statements are often produced internally by a risk bearer using rules and assumptions established by its management to assess financial strength and earning performance.

Appraisals are intended to help determine the value of all or a part of a risk bearer's assets, obligations and considerations related to property and casualty contingencies, taking into account not only financial statement items but also off-balance-sheet items such as investment in staff, leases and so on. Appraisals are usually made in connection with mergers and acquisitions and the sale of parts of a risk bearer's business.

GAAP accounting rules or assumptions are intended to produce financial statements that the financial community believes are useful for assessing a risk bearer's earning capacity.

Statutory accounting rules or assumptions are intended to produce financial statements that regulators believe are useful for assessing whether an insurer's financial condition warrants its being allowed to write insurance.

The value of any of the valuation variables with respect to a given set of items of cash flow may be determined on the basis of any set of rules and assumptions that is appropriate to the purpose of the valuation. Rules and assumptions relative to different classes of assets, obligations or considerations need not necessarily be consistent with each other as long as the differences are consistent with the purpose of the valuation, or the effect of the inconsistencies is not great enough to invalidate the valuation.

Assumptions are based on a reasonable review of whatever appropriate facts are available supplemented by the actuary's experience and judgement as necessary. Rules are helpful to the assurance of appropriately consistent treatment of facts and assumptions in valuation. Both rules and assumptions can be helpful to achieving a result with a degree of refinement consistent with the purpose of the valuation. Anticipated changes in operating and environmental conditions should be reflected in the rules and assumptions applied to a valuation.

Valuation Variables

The valuation variables of occurrence, amount, interval of time and rate of interest describe the quantitative characteristics of all cash flows for purposes of financial analysis. All of the valuation variables are conceptually involved in the determination of the values of all assets, obligations and considerations. The roles of the valuation variables in the determination of values may be limited by the selection of rules or assumptions.

The value of any item of cash flow changes with the passage of time. This implies that valuations of the same sets of items of cash flow performed at different valuation dates will in general produce different results. It further implies that a valuation of one set of items of cash flow performed as of a given valuation date will produce a result that is not directly comparable with that of a second valuation of the same or a different set of items of cash flow performed as of a different date.

Uncertainty

The result of a valuation involves uncertainty because of the uncertainty connected with the valuation variables themselves and because the result of combining valuation variables is affected by whatever relationships may exist among them.

Valuation Risks

The risks associated with valuation can be summarized into the following three broad classes:

1. Asset Risk

   The risk that the occurrence, amount or timing of items of cash flow connected with assets will differ from that anticipated as of the valuation date for reasons other than a change in the interest environment.

   There are several factors that affect asset risk:

   a. Type—This factor relates to whether the asset is, for example, a bond, a mortgage, a preferred or common stock, an agent's balance, a recoverable reinsurance item or interest accrued but not paid. It also relates to such things as whether a bond is callable and, if so, at what premiums; whether a bond has a sinking fund provision; or whether prepayments can be made on a mortgage and, if so, what penalty may apply.

   b. Quality—This factor relates to the financial strength of the entity from which the cash flow is to be received and the relative standing of the type of asset in the hierarchy of financial instruments.

   c. Deferred Acquisition Expenses, Goodwill and Similar Assets—This factor relates to the valuation question of whether any asset of these or similar types involves cash flows that are not explicitly or implicitly recognized elsewhere in the valuation.

   d. Investment Strategy—This factor relates to plans for investment of receipts in various types of security, taking into account such things as the insurer's needs for funds to meet obligations as they mature, market conditions at the time the investments are made, and the overall condition of the insurer's investment portfolio at the time the investments are made.

   e. Trends—This factor relates to changes over time in the valuation variables other than interest, insofar as they affect assets, and in the degree of uncertainty affecting them.

2. Obligation and Consideration Risk

   The risk that the occurrence, amount or timing of items of cash flow connected with obligations and considerations will differ from that anticipated as of the valuation date for reasons other than a change in the interest environment.

   There are several factors that affect obligation and consideration risk:

   a. Coverage—This factor relates to the riskiness of the coverage involved.

   b. Type—This factor relates to whether the obligation is, for example, a loss or loss adjustment reserve, an unearned premium reserve, a contingent commission reserve, a retrospective premium adjustment reserve, a policyholder or shareholder dividend reserve, a premium deficiency reserve, an income tax liability, an investment commitment or an account payable for something such as expenses, taxes, licenses, fees and assessments.

   c. Commitment Provisions—This factor relates to the extent to which the range of the valuation variables may be effectively limited by terms of the commitments out of which the obligations arise. Examples of such commitment provisions are basic

limits, increased limits, aggregate limits, claims made, salvage and subrogation, coinsurance, deductibles, coordination of benefits and second injury fund recoveries.

d. Reinsurance Programs—This factor relates to the extent to which the range of the valuation variables may be effectively limited by the terms of reinsurance programs applicable to the commitments out of which the obligations arise. Examples of such programs are those involving surplus, excess of loss and catastrophe reinsurance. Frequency and severity of losses, attachment points and upper limits of reinsurance are features of the programs relating to their limiting effect. On the other hand, reinsurance programs also involve uncertainty as to whether reinsurance will be collectible.

e. Exposure—This factor relates to the uncertainty involved in measuring or projecting levels of exposure, and for periods beginning after the valuation date, the considerations for those periods and the obligations to arise out of them. Obligations and considerations related to these periods of exposure may be offset against each other in recognition of the fact that the obligations would not arise if the considerations were not received. Determination of whether obligations and considerations relative to such periods should be recognized in a valuation depends upon the timing relative to the valuation date of the commitments to accept risks for those periods.

f. Loss Development—This factor relates to the uncertainty arising out of changes over time in patterns of emergence, development, reopening, settlement and payment of claims.

g. Trends—This factor relates to changes over time in the valuation variables other than interest, insofar as they affect obligations and considerations, and in the degree of uncertainty affecting them.

h. Large Latent Losses—This factor relates to the treatment of identifiable classes of very serious potential losses for which probable frequency and severity can not be reasonably estimated for a considerable period of time.

i. Off-Balance-Sheet Items Such as Long-Term Leases and Commitments to Buy Securities—This factor relates to the valuation question of whether any obligation of these or similar types involve cash flows that are not explicitly or implicitly recognized elsewhere in the valuation.

3. Interest Risk

The risk that different amounts of change in the anticipated values, and the degree of uncertainty therein, of obligations and of the assets and considerations with which the obligations are being compared will occur:

i. simply because of a change in the interest environment, or

ii. because a change in the interest environment brings about a change from expected experience as to the occurrence, amount or timing of items of cash flow connected with assets, obligations or considerations.

There are several factors that affect interest risk:

a. Mismatch of Asset and Obligation Cash Flows—This factor relates to the development of an excess of a risk bearer's receipts over its required

disbursements or vice versa.

If an excess of receipts over required disbursements develops, the risk bearer may not be able to invest the excess cash at yields that will produce future cash flows large enough to meet its obligations as they mature. This is "reinvestment" risk.

If an excess of required disbursements over receipts develops, the risk bearer may have to borrow or liquidate assets with yields below then current market rates to make up the difference. Borrowing at a relatively high interest rate, or inability to invest the difference at then current market rates produces a reduction in the risk bearer's future profits. This is "market" risk.

b. Changes in the Timing of Receipts and Disbursements—This factor relates to the preference of borrowers to prepay debt carrying high rates of interest when rates go down and to defer repayments of debt carrying low rates of interest when rates go up. For risk bearers of property and casualty contingencies, this risk affects mainly their assets.

c. General Economy—This factor relates to the way in which things such as liquidity, inflation, demand for cash to fund expansion, government debt, trade imbalances and distortions in the yield curve affect the general level of interest rates.

d. Trends—This factor relates to changes over time in the interest valuation variable and in the degree of uncertainty affecting it and how those changes affect the other asset and obligation valuation variables.

Interaction with Other Professionals

The uncertainties that affect other actuarial fields, such as ratemaking and reserving, also affect valuation. In addition, valuation is affected by uncertainties met in other fields, such as marketing, underwriting, finance, regulation, risk management and so on. This implies that professionals working in other fields can be helpful in gathering information and developing rules and assumptions to be used in valuation.

Actuarial Judgment

It is important to apply actuarial judgment based on education and experience in selecting and organizing data and making rules and assumptions to be used in the valuation process and in assessing the reasonableness of the results.