CASUALTY ACTUARIAL SOCIETY
COMMITTEE ON RESERVES

POSITION PAPER*
CLOSED CASE METHOD FOR REVIEWING THE ADEQUACY OF LOSS RESERVES

Comparison of the cost of closed claims to reserves has been used for many years, often simplistically, to evaluate loss reserve adequacy. Recently a particular "closed case" method, developed by the Internal Revenue Service, has received attention within the insurance industry. The Committee on Reserves has reviewed this method for its adherence to sound actuarial principles. The Committee finds that the closed case method is seriously inconsistent with the Casualty Actuarial Society's "Statement of Principles Regarding Property and Casualty Loss and Loss Adjustment Expense Liabilities" and is inappropriate for testing the adequacy of loss reserves. The following statement expands upon this finding.

Description of Method

In its basic form the closed case method of testing loss reserves examines claims by line of business which were reported and case reserved, but unpaid, as of an earlier reserve evaluation date and which have been settled subsequently.

It develops an "experience rate" by dividing the amount reserved for these settled claims at the reserve evaluation date by the total amount paid on them subsequently. The experience rate is applied to (divided into) total reserves, reported and unreported, as of the current reserve date to adjust current reserves to an indicated zero redundancy/deficiency level. Typically, the earlier reserve date (test year) would precede the current date by five to seven years, and the experience rate would be the average of the rate developed for each of the test years.

Implicit Assumptions

Application of the closed case methodology carries certain implicit assumptions. For its indicated results to be valid, satisfactory testing of the acceptability of these assumptions would be necessary. Major implicit assumptions are:

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* This is a position of the Committee on Reserves and of the Casualty Actuarial Society Board of Directors. It is not a position of the entire Society membership.

(a) The relative strength of case reserves at the earlier reserve evaluation date, for claims that are settled by the current reserve date, is comparable to that of total reserves at the current reserve date.

(b) The relative strength of the estimate for incurred but not reported (IBNR) claims at the current reserve date is comparable to that of the case reserves. The implication here is that the combined frequency and severity components of the IBNR reserve are comparable in strength to the severity component alone of case reserves. Alternatively, if the strength of the severity component of the IBNR reserve alone is comparable to that of the case reserves, then the frequency component is exact.

(c) The relative strength of the reserves for reinsurance assumed from all sources is comparable to that of the direct case reserves.

(d) Estimates of credits for ceded reinsurance are proportional to the direct case reserves and to assumed reinsurance in their impact on relative adequacy.

Adherence to Actuarial Principles

The "Statement of Principles Regarding Property and Casualty Loss and Loss Adjustment Expense Liabilities" outlines a series of principles which must be considered for a reasonable and appropriate review of reserves. A comparison of these principles to the closed case method clearly illustrates that this method does not meet the criteria established by the CAS for proper review or establishment of reserves.

Key principles outlined in this statement and corresponding deficiencies in the closed case method are:

1. "Loss reserving procedures should operate on well-defined groups of losses" and give consideration to all elements of the total loss reserve.

   The closed case method:

   (a) gives no consideration to IBNR claims or reopened claims in the determination of the experience rate.

   (b) ignores the extent to which reinsurance arrangements applicable to claims outstanding at the current reserve date might differ from programs in place for claims in the test years and the effect such differences might have on claims emergence and development patterns.

(c) has drawbacks even as a means for testing only the case reserves. The implicit assumption that the relative strength of case reserves has remained constant is always questionable absent a review of average outstanding values over successive periods. Further, the method does not consider claims reserved at the test date but not yet settled nor any changes in the reserves thereon. These are the claims likely to be in litigation with their ultimate settled values less certain. For workers' compensation, permanent disability claims and even certain temporary disability claims would remain open and not considered even though periodic payments are being made on them. Additionally, if the case reserves are meant to contain a provision for reopened claims, the closed case method of testing would not consider this element since the reopened claims would not have been specifically case reserved at the reserve evaluation date.

2. "Understanding the trends and changes affecting the data base is a prerequisite to the application of actuarially sound reserving methods. A knowledge of changes in underwriting, claims handling, data processing and accounting, as well as changes in the legal and social environment affecting the experience is essential to the accurate interpretation and evaluation of observed data and the choice of reserving method."

"It is not sufficient for the actuary merely to apply historical analytical procedures in the calculation of reserves. Whenever the impact of internal or external changes on claim data can be isolated or reasonably quantified, adjustment of the data is warranted before applying various reserving methods."

"A competent actuary will ordinarily examine the indications of more than one method before arriving at an evaluation of an insurer's reserve liability for a specific group of claims."

The closed case method:

(a) does not recognize or adjust for changes in size of distribution, external influences, operational changes, reinsurance retention changes, aggregate limit changes, or other underlying changes affecting losses;

(b) is a straight application of a formula with no consideration of trends or changes affecting the data;

(c) is generally used as an only method rather than in conjunction with other reserving methods.

3. "The actuary should be conversant with the general characteristics of the insurance portfolio for which reserves are to be established." There should also be a thorough knowledge of claims practices. This principle implies that having this knowledge will affect one's reserve evaluation.

   The closed case method does not fulfill this requirement in that:

   (a) it ignores general characteristics of the nature of losses between various lines of business. The method is assumed to work equally well for low frequency/high severity lines as it does for high frequency/low severity lines of business;

   (b) out-of-the-ordinary claims practices, such as discounting loss reserves, are not given special recognition;

   (c) it provides no variation for differences in settlement patterns among different groups of claims, which is contrary to the Statement of Principles note that "the length of time that it normally takes for reported claims to be settled will affect the choice of the loss reserving procedure";

   (d) all data is treated to be fully credible, with no consideration given to the lack of credibility of indications based on small volumes of historical data.

Proponents' Viewpoint

Proponents of the closed case method argue that it is improper to use estimates to test reserves that are themselves estimates. They believe that the use of a test period of claims settlements produces a more accurate indicator by which to adjust current reserves. However, proper use of estimates in no way violates the Statement of Principles. Rather, the closed case method ignores significant information, which can be valuable when used with proper analytical techniques.

Committee Position

The Committee on Reserves believes that the closed case method of testing the adequacy of loss reserves, as described in the foregoing statement, does not conform to sound actuarial principles. While the method provides indications as to the historical adequacy of case reserves, such indications are incomplete and may be misleading. The committee has no objections to the underlying data used in the closed case method. However, they are appropriate only when used with proper actuarial techniques. In general, the committee finds that the closed case method is unsound and should not be used to evaluate total loss reserves.

SPECIAL MEETING ON PROPERTY-CASUALTY RESERVES

Editor's Note

The following is an edited transcript of a portion of the joint meeting of the Casualty Actuarial Society and the Canadian Institute of Actuaries held in Toronto, November 6–8, 1983.

Two sessions on the subject of loss reserving are included. The first session deals with the general principles involved in loss reserving. The second session contrasts Canadian requirements and practices with US traditions.

The transcripts have been edited to clarify references to visual aids used at the meeting and, in general, to translate the verbal presentations for the *Proceedings* reader.

FRED KILBOURNE:

I am Fred Kilbourne, President of the Casualty Actuarial Society for another twenty-four hours. This is the commencement of our joint meeting, being the last day of the CAS meeting and the first day of the Canadian Institute of Actuaries meeting. I'd like to welcome all who are joining us and turn the podium over to Chris Chapman, the President of the Canadian Institute of Actuaries.

CHRIS CHAPMAN

Thank you, Fred. I want to take this opportunity on behalf of the Canadian Institute of Actuaries to express our delight with this very unique commencement to our meeting. It's really very unusual and a very welcome way to begin a meeting in the Canadian Institute. We are very pleased that we are able to have this joint meeting. I have been working with the casualty people so much recently that I now am going to refer to you as *the* Society. In any event, welcome. We are very much looking forward to having participation in this joint meeting by the members of the Canadian Institute who are not members of the Casualty Actuarial Society.

SESSION 1—CONSIDERATIONS GOVERNING THE RESERVING PROCESS

MARTIN ADLER:

Good afternoon. I am Martin Adler and with me today is Dave Westerholm. The title of this panel is "Considerations in the Reserving Process" according to the CAS program. I believe that the CIA program calls it "Considerations Governing the Reserving Process." Either way I assume that my discussion will be relevant.

In this presentation we will focus on the Casualty Actuarial Society's *Statement of Principles on Loss Reserves*. Our purpose is to provide a foundation for tomorrow's panels on loss reserving techniques. We are going to be very basic.

Let's start out then by defining a loss reserve. I will define it as an amount set aside to settle a claim. The key characteristic of a loss reserve is that it is an estimated liability. That is very important to grasp. The precise amount needed to settle a claim cannot be known until after the claim is settled. Then why bother to set a reserve? Why not wait until the claim is settled and simply record the precise payment? I assume that everyone in the audience knows the answer, but let me repeat it anyhow. An insurance company needs to estimate its reserves in order to make a reasonably accurate evaluation of its financial position at any given time and, ultimately, to ensure its ability to discharge its fiduciary responsibility to pay the claim it has insured. Of course, what is most important to the insurer is not so much the reserve on any specific claim but the total loss reserve. The reserve on an individual claim is only a building block to determine that total loss reserve. The total loss reserve for a well-defined group of losses represents the amount that must be paid in the future to settle all losses which have occurred on, or prior to, a particular accounting date. It is estimated as of a given valuation date. Because reserves are estimates, the insurers estimate of the total loss reserve will likely change from one valuation date to another, as more facts become known.

Now let me make some distinctions among different types of dates which are pertinent in reserve evaluations: The *accounting* date identifies the group of losses for an accounting or statistical purpose. The *valuation* date is simply the date the evaluation was made on that group of losses. The *accident* date is the date on which the loss occurred; or, in the situation in which the loss results from an accumulation of exposure, it is the date on which the loss is deemed to have occurred. Finally, the *report* date is the date on which the loss was first

reported to the company. In practice it is more likely to be the date on which it was first entered into the company's statistical records.

Exhibit 1 is meant to show graphically the distinctions between the various dates to which I have referred. The left most date represents the date on which the accident occurred. The next one, as we move right, represents the date on which the claim was considered by the company to have been reported, probably the date on which the company actually opened the file and entered the claim into its records. Further to the right are the dates on which various valuations were made. Of course, the company does not make evaluations only on the last date of the quarter, as shown here. The valuation at the end of the quarter would simply be the reserve on record at that date. The accounting date shown is the end of the year. The claim will fall into the category of claims accounted for as of that date. There will be subsequent evaluations of the claim until it is finally settled.

Let's go back now to the concept of the total loss reserve. There are five elements, although most companies will not use all five. Rather, as I will show, in practice companies use various combinations of the five. The elements are:

1. case reserves;
2. the provision for future development on known claims;
3. the reopened claims reserve;
4. the provision for claims incurred but not reported, commonly referred to as IBNR; and,
5. the provision for claims in transit.

Case reserves are set for known claims. They may be the values for individual claims assigned by claims adjusters; they may be set by formula; or they may be some combination of the two. Depending upon company practice, the individual estimates may or may not have a provision for development. If the case reserves are set by formula, they may be derived by averages applied to all claims in a specific category, or they may be derived by applying a single bulk amount to all claims in that category. To provide insight into reserving practices, I am going to draw a distinction between the adjuster's estimates, which I will call "pure case reserves" and reserves set by averages.

To get a better grasp of the distinctions let's look at the life cycle of a typical claim reserve on Exhibit 2. This is an automobile bodily injury claim for the example. The specific reserve arose from an accident which occurred on the evening of April 15th. It occurred in the United States as the driver was rushing to get his tax return postmarked by midnight. At the moment the accident

took place, the claim to the company was incurred but not reported. The particular policyholder did not report the accident until two weeks later. From the moment the company received notification, the claim was deemed to be in transit. After going through the appropriate claims department procedures, the claim was opened and entered in the company's records, most likely into its computer system. Because of the company's practice, the reserve was set by average the moment it was entered into the computer. Approximately three months later the claims examiner established his first estimate of the ultimate cost of the individual claim. As soon as that estimate was entered into the computer the claim became what I call a "pure case reserve" in the more restricted sense—that is, it was based on an individual estimate. Four to five months later, when reviewing the file, the claims examiner revised the estimate, based on the emergence of more facts. About six months after that, the settlement was agreed upon. Up to this point the claim was still a case reserve. Not until payment was actually made was the claim closed, eliminating any reserve for it. At that point there was some small possibility that the claim would have to be reopened at a later date. The company, however, does not know in advance which claims will have to be reopened. If it did, those claims should not have been closed. The reserve for reopened claims thus is set by formula.

I have given some general idea of the manner in which a company reserves for known claims. What about IBNR? By its very nature IBNR must be set by formula. The formulas may be simple or complex. Company practices also vary considerably regarding the elements that are included in IBNR. The formula must take into account which elements the company includes. Here are various combinations which may be used:

1. "true" or "pure"—that is, claims not yet reported, nothing more;
2. true IBNR plus claims in transit, which is a more likely combination;
3. true IBNR plus claims in transit plus a provision for development of known claims;
4. true IBNR plus claims in transit plus a provision for reopened claims; or,
5. all of the above elements.

Now I would like to discuss the conceptual difference between reserve maintenance and reserve testing. I have identified the five elements of the total loss reserve. I also have pointed out that companies will use different approaches to develop those elements or combinations of those elements. Establishing and following procedures to build the elements is what I call "reserve maintenance."

How does the actuary or reserve specialist know that the procedures are establishing adequate reserves?

One way would be to wait for all the claims to settle and simply compare the amounts with the reserve set as of the valuation date. It should be obvious that the company cannot wait that long; at least not on a line where it takes years to settle the claims. The company cannot wait that long to know the answer, and the actuary would not have his job very long if he used that approach. What the actuary tries to do is test the reserves. By testing, I mean that he will apply various assumptions statistically to see how the claims will run off. This is called a *prospective* test. Before making the assumptions, he will likely look at how claims developed in the past in order to gain insight into the adequacy of the reserve methodology. This is referred to as a *retrospective* test. The actuary may not necessarily apply the test to each element of the claim reserves. He is more interested in testing the aggregate reserve—that is, the total reserve for that well-defined group of losses under consideration.

In testing, the actuary will focus on the development patterns. Exhibit 3 is a simplified example of development of claims for accidents which occurred during 1980 and are therefore referred to as the 1980 accident year. It is meant to represent a specific coverage and for this example I have used auto bodily injury liability.

The first line shows the amount paid for those 1980 accidents during each of the first four years from the beginning of the accident year. The second line shows the reserve for known claims at the end of each year. The third line shows the cumulative amount paid through the end of each year and the fourth line shows the cumulative incurred amount as of the end of the year. You will note that the cumulative incurred amount for the accident year is equal to the cumulative amount paid plus the reserve at the end of each year.

We have not previously defined incurred losses. The general definition is that incurred losses for a specified period of time equal the losses paid during the period plus the change in loss reserves over the period. Now since an accident year starts out with zero reserves, accident year incurred losses simply equal the cumulative amount paid plus the reserve at the end of the given period.

The bottom half of the exhibit shows the ratios between successive valuation dates. Thus the first entry on the payment line, 4.0, represents the growth in cumulative payment, from twelve months (the accident year's age at the end of the first year) to twenty-four months. That is, $4 million paid as of the end of 1981 for 1980 accidents is divided by $1 million paid as of the end of 1980.

Each of the other ratios represents the cumulative amount at the later age divided by the amount at the earlier age. Dave will discuss at greater length the use of such ratios.

There are two other concepts I would like to discuss. One relates to claim counts. The number of claims is a very useful parameter for the actuary in evaluating loss reserves. The amount of losses incurred during an accident period, and thus by implication the reserves for losses not yet paid, is a function of two things: the number of claims incurred, and the average size of those claims. Consistency in counting the claims is essential to measuring both of those elements. Here, too, company practices differ. Company guidelines vary on when to open a particular claim file. This is particularly true for those claims which the examiners estimate will never materialize, but have been reported just to put the company on notice. Some companies put such claims into a suspense category. But the distinctions do not stop there. Even in regard to claims which are opened, companies will differ on how they count the reported claims. Some companies assign one count per accident; whereas others assign a count for each claimant in the accident. Differences also exist in regard to the counting of closed claims. Depending upon the purpose, some reports may count claims as closed only if a payment has been made, whereas others count closures regardless of payment. If a claim is closed and then reopened, some companies' statistical systems count the claim again. These differences plus many others make comparisons between companies very difficult.

Reserves also must be maintained for the cost of settling the claims. These costs are referred to as loss adjustment expenses. Loss adjustment expenses are divided into two general categories: allocated and unallocated.

Allocated expenses are those which can be assigned to a specific claim. Examples of such expenses are attorneys' fees, legal expenses, court costs, witness fees, and (for some companies) independent adjusters' fees.

Unallocated expenses, on the other hand, cannot be assigned to a specific claim. One may think of them as overhead to the claims settlement process. The most specific costs are the salaries and related benefits of the claims department personnel. But there are also the general overhead for the claims department, the cars used by the adjusters, the rent charged for the space the department occupies, the supplies needed, and so forth. Some elements of company overhead also are charged to the claims function; and for some companies independent adjusters' fees are considered as unallocated, rather than allocated, expenses.

Dave Westerholm will discuss pertinent considerations in the actuary's evaluation. After Dave's presentation we will entertain questions from the floor.

DAVE WESTERHOLM:

Thank you, Marty. In this half of the presentation I will focus on some of the more important considerations that must be addressed in the loss reserving process. I will start out by discussing homogeneity and credibility: two key, but often conflicting, considerations in any reserve analysis. I will then move into data availability. The availability, or lack, of relevant data plays an important role in the kind of reserve analysis you can complete, and in the degree of credibility you can place in the resultant findings. Emergence, settlement, and development patterns will then be discussed. As Marty pointed out these are the key items on which the actuary will focus when doing his reserve testing and analysis. Next, internal and external considerations—the factors that impact the loss development pattern of a group of claims—will be discussed. Finally, we will get into the application of professional judgment. We will discuss the need to apply judgment throughout the reserving process which, as most of you know, is essential, since in very few cases can you rely strictly on the results of a mathematical formula or model.

You can't discuss the homogeneity and credibility considerations adequately without getting into the law of large numbers, which often is misinterpreted to mean "more is better." More specifically the law means that the larger the volume of a sample of homogeneous data, the closer the experience is likely to be to the expected value for the universe from which the sample is taken.

Arthur Bailey, in his paper "Sampling Theory in Casualty Insurance," stated that the losses incurred during a given time period never actually reflect the hazard covered but are always an isolated sample of all the possible amounts which could have been incurred. When you combine these two statements and apply them to the homogeneity and credibility considerations of loss reserving, they tell you to organize your reserving data into groups of claims that exhibit similar characteristics and that will yield statistically reliable, i.e. credible, loss development patterns.

Thus, when you are grouping claims for reserve analysis, you want to group them on the basis of relevant factors that will impact their loss development patterns: line of business (workers' compensation, general liability, homeowners, boiler and machinery); coverage (bodily injury, property damage); primary versus excess; personal versus commercial; size-of-loss distribution; or settlement pattern.

Homogeneity and credibility, as I mentioned earlier, are often conflicting considerations. Credibility is increased by the proper homogeneous grouping of claims and by increasing the number of claims analyzed within each group. Homogeneity is increased by refinement and fragmentation of the total data base. Thus, in your homogeneity consideration you can reach a point of refining your data to such an extent that the resultant groups are too small to provide any credible development patterns. Therefore, each reserve grouping requires a balancing of the statistical credibility and homogeneity considerations.

If you could measure these two factors, you would want to continue to refine your data until the marginal increase in homogeneity is offset by the marginal decrease in credibility. I leave it to the more statistically minded to come up with a procedure to do this effectively. I think a few examples might help emphasize this point.

Let's suppose your reserving data claims are represented as shown on Exhibit 4 and you have four different types of claims, A, B, C and D. You can try to set a reserve by looking at the loss development patterns in total or you can break them into the four pieces. Some of you might recognize this picture as being borrowed from Stephen Philbrick's article on credibility. Let's get into some more specific examples.

Let's consider general liability. You can look at your GL losses in total. I would not recommend this unless you absolutely must. A better idea is to break them into bodily injury and property damage components. Better still would be to break them into OL&T, M&C, products, professional, and all other components; and if you still go further, break these into their BI and PD components, as shown in Exhibit 5.

Consider one more example: automobile. You can look at auto in total, but again you would be better off at least splitting it into the private passenger and commercial pieces. If you go that far, why not break it into the liability and physical damage components? Once you have gone that far, what about BI, PD, comprehensive, and collision? Now if you are really getting carried away, you can continue until you get what is noted in the upper left hand corner of Exhibit 6: a single, 27 year old female farmer in Manhattan who drives a 1981 corvette and has one safe driver point. There are not a whole lot of us who can get down to that level of detail with any credibility.

It's the reservist's job to make sure that the data required for reserve analysis is available and reconcilable, or else take steps to see that such data and procedures are developed. I generally like to have the following data types

available for the claim groupings used in any reserve analysis (Exhibit 7): paid losses, outstanding losses, incurred losses, paid allocated loss adjustment expense, reported counts, closed counts, reopened counts, outstanding counts, and earned and written premium and exposures. With regard to how the data set is organized, I would organize it by accident year—a record of losses for claims which have occurred during a given twelve month period regardless of when they are reported; by calendar year—a record of all loss transactions which have taken place during a given twelve month period regardless of when they occurred; or by policy year—a record of losses from claims arising from contracts which became effective during a given twelve month period. Report year or notice year I generally regard as a finer breakdown of policy and accident year data on the basis of date of loss and date of notice relativities. For some lines, especially some of the casualty lines, it would be very beneficial to have limited or layered losses. For example, I mean losses where you have segregated the first $100,000 of each loss.

Regarding the reconciliation of reserving data, the reserve groupings that you deal with generally represent aggregations of more detailed company financial records. The data used in your reserve analysis must be reconcilable to official company financial records. You must verify the internal consistency of all your reports, making sure that nothing has "fallen between the cracks." For example, if you are reserving general liability, you might decide to look at only products, umbrella excess, OL&T, and M&C. If that is all you do, you probably have forgotten about owners and contractors protective and contractual liability. You don't want to implicitly set a zero reserve, so it is always good to make sure you have accounted for all of the pieces of data. Make sure your inclusions and exclusions are reasonable and make sure you can balance them with other company records.

Generally, you never have all the data you want. I am sure some of the consultants in the audience could tell real horror stories regarding the data they had available, given the assignment with which they were charged. Generally, you don't have all the data types you want, or it's not organized the way you require. If you are lucky enough to get both of those, you probably don't have historical claim developments for as long as you would like. It's in situations like this where you have to adapt, improvise, or—to borrow a line from *Star Trek*—boldly go where no actuaries have ever gone before. Come up with some new procedures to fit the situation. I think one of the best things that you can do is to step back and recognize your limitations, recognize the biases and constraints that are introduced due to incomplete or limited data, and try, to the

best extent possible to quantify them. If nothing else, try to get some feel for which way the available data is going to lead you.

As Marty mentioned earlier, when the actuary is testing and analyzing reserves, he is focusing on loss development patterns and must recognize and attempt to quantify relevant factors which could affect the reserve and expected future loss development patterns. When analyzing loss development patterns for a particular group of claims, it's often helpful to look separately at the factors affecting the emergence and settlement patterns that make up the group's total loss development pattern. Emergence is defined to be the time between the occurrence of a claim and when it is recorded on the company books. Settlement is the time between the reporting of a claim and when it is settled. I have shown a couple of examples on Exhibit 8. Auto physical damage generally displays a short time between the emergence of a claim and when it is settled. At the other extreme, where there is generally a long time between emergence and settlement, are products and medical malpractice. Later on I will discuss in detail some of the key factors that you should consider that will affect the loss development patterns you are analyzing.

Very basically, reserving boils down to predicting future loss development patterns from actual historical loss development patterns. The top half of Exhibit 9 is a triangle of incurred losses for accident years 1973 to 1982 at twelve month intervals. Below it are the incurred yearly loss development link ratios: 12–24 months, 24–36 months, 36–48 months, etc. As a reservist all you have to do, assuming ultimate at 72 months, is predict what each accident year loss will be at 72 months of development. Without knowing anything about loss reserving, anyone with some mathematical background could do a number of things with these loss development factors to predict future loss development trends. You can take simple averages of them, trend them, look at the most recent five factors, throw out the high and low and take an average of the middle three, or any number of things. However, it's a terribly uninformed way to go about doing things. What you want to do, is find out and quantify the effects of what is occurring today, and what will occur in the future, which will produce loss development patterns materially different from historical trends.

On Exhibit 10 are listed some of the internal considerations you need to address. Generally, the relative adequacy of case reserves is not terribly important to the reserving actuary as long as it doesn't change. A basic underlying premise when beginning most reserve analyses is that history will repeat itself. If the claim department *consistently* has overestimated or underestimated their case reserves, it will be reflected in your loss development patterns. What you

don't want them to do is change it. If you found out that historically they have been 10% deficient on initial reserve estimates, the worst thing you can do is tell them because they will probably increase their reserves by 10% (no one wants to be "wrong") and you now will incorrectly build in another 10% development on top of that.

Other changes you have to consider are changes in claim handling procedures, such as when the claim department implements a fast track or average reserve valuation system, common for some auto physical damage types of claims. Changes in claim counting is another possibility. Has the claim department switched between a per accident or per claim type of counting or have they implemented a bulk reserving type of procedure? Do allocated loss adjustment expense payments reflect a change from pay-as-you-go throughout the life of the claim to a pay-at-time-of-closing procedure? Has there been an acceleration or slowdown in loss payments? Has there been an increase in the use of partial payments? What about the use of structured settlements? All of these factors can have a significant impact upon the loss development pattern you are analyzing. Has the claim department decided to adopt a get-tough claim litigation policy? What about the use of company adjusters versus independent adjusters? This will switch dollars between allocated and unallocated loss adjustment expense. Changes in pricing strategy: it is very important to find out what our counterparts in pricing are doing. Has there been a coverage that has been added on for free with the thought that it won't produce many claims? Have we tried to "buy" our way into the market? What about changes in underwriting programs or guidelines; changes in new versus renewal ratios; changes in the types of reinsurance and retention levels; changes in policy limits and deductibles? All these factors are internal to a company and definitely can affect the development patterns.

External factors include participation in voluntary pools and associations such as the National Workers' Compensation pool, assigned risk and fair plans—these are costs of doing business. Inflation, both economic, which can be measured, and social, which generally cannot be measured, are other external factors. What about claims consciousness of the public? How will that affect the counts and dollar amounts in a given line of insurance? Seasonality of loss experience is a factor you may or may not want to reflect. Legal or legislative changes can be a major external factor. If we ever get an asbestosis decision on which theory to use—manifestation, exposure, band theory, or a combination of all of them—it definitely will impact how much money a company will have to set up on reserve. The products liability model law, no fault, comparative versus contributory negligence; all of these laws will impact given lines of

business to different degrees. The general state of the economy will impact workers' compensation, fidelity, and surety claim developments—both frequency and severity.

Ideally, you want to quantify the impact of all of these factors for each of your lines of business or at least recognize that a given factor can impact the line of business you are looking at.

To arrive at your final recommended loss reserve for a given line of business you may have used two, three, or half a dozen different techniques. The reserve you end up with is generally some combination or average of them and that's where your judgment comes in. You have to realize that when you finally recommend a reserve that it is a point estimate of a company's outstanding liability and that you have estimated it based on (hopefully) the best available data at the time. Given the nature of the line of business you are dealing with and the variability of the reserve indications, you want to move slowly towards the "correct" reserve.

Whenever possible, you want to measure the reasonableness of your loss reserve against relevant parameters such as premiums or exposures so you can come up with some sort of frequency, severity, or loss ratios that make sense. Ideally, you want to use one technique that relies on paid losses; one on incurred losses; one that utilizes counts multiplied by averages; and one that uses limited or layered losses, so that you expose yourself to the various biases that can impact your data and see what different results you achieve using each of these different techniques. Then try to reconcile the differences between them.

Finally, the underlying assumptions and methodologies that you use should be documented and subjected to a sensitivity analysis. You want to document, wherever possible, your underlying frequency and severity assumptions, so that you don't have to start your reserve analysis from scratch each time. You want to have some sort of report card to keep score of the accuracy of your assumptions.

At this time Marty and I will try to field any questions that you may have. Thank you.

SPEAKER UNIDENTIFIED:

What management is the final decision maker?

MARTIN ADLER:

At what level of management is the final decision made? I believe it depends upon which company one works for. At my particular company, it's finally made, or at least the final veto is, at the chief executive's desk. At other companies, it's at the chief actuary's desk. I am sure there are other variations as well.

SPEAKER UNIDENTIFIED:

What about the time value of money?

MARTIN ADLER:

The question relates to the time value of money. We did not define that in the presentation. You might say we did not touch that with a ten foot pole. There is a difference in the way the companies treat the time value of money or, to use the forbidden term, "discount reserves." Some set reserves without consideration of discounts and others do it either explicitly or implicitly. It's simply an additional consideration, with a lot of ramifications on its own. It would take quite a long session to go into what would be done with discounting. We have not even come to grips with a general question of whether or not it should be done.

It's my personal belief that the reserves should have a margin for adverse development because of what I consider the fiduciary nature of the insurer's obligation. I think that it should be in terms of the absolute amount of reserve estimated, and if it is discounted for any reason, that the discount rate be assumed conservatively. That is, it should be relatively low compared to what one might hope for in terms of the value of investing the money behind the reserves.

SPEAKER UNIDENTIFIED:

There didn't seem to be much in the presentation discussing the reserve for allocated expense. How does one approach the reserve for expense?

DAVID WESTERHOLM:

At my company we have by-line paid allocated expense development by accident year from 1965 to the present. I monitor, by accident year, paid allocated to paid loss ratios; project them out to ultimate; and at the same time monitor calendar year allocated paid-to-paid loss ratios. Thus, given an esti-

mated ultimate incurred pure loss, I can expect X% of it to be an estimate of ultimate incurred ALAE.

ED SHOOP:

I guess I don't have so much of a question as I do an observation. May I get your or anybody else's reaction? In thinking about reserves and choosing methodologies and techniques and how you go about doing it, whether it's incurred, paid and so on, two things always seem to stand out and tend to be overriding considerations that you just couldn't ignore. One is that in the absence of anything changing the value of a claim between the time it is incurred and the time it is closed, by way of something like a benefit change, the ultimate value you predict for a group of claims shouldn't change, so that each time you do the reserve evaluation you should come up, not with the same reserve, but with the same ultimate values. The second characteristic is that those ultimates ought to be correct. Regardless of the methodology that you choose, if it's doing those two things for you reasonably well—always producing the same ultimates—and by retrospective testing those ultimates proving out to be pretty reasonable, I think that you have done a pretty good job at that and I would like the reaction of people in the audience or yourselves.

DAVID WESTERHOLM:

I agree, as long as you say that you use some retrospective tests on it so that the technique you use isn't so ignorant of what is happening out there that no matter what happens it will produce the same result until something really drastic happens in your development factors. If the reserving technique you are using continues to predict the same ultimate, you must ask if it is because it's a good technique or just blind to something that is happening out there in the real world. But if you are reasonably confident that it does react to movements out there in the real world, you should come up with the same ultimate, or reasonably close indications, each time.

MARTIN ADLER:

Ed, do you really think that the reserve patterns are so stable? Exhibit 9 is something that is probably more typical. In fact, it's my observation that it is a fairly stable pattern of development from year to year. But if you were selecting a number for the twelve to twenty-four month development, you would have five numbers, or a combination thereof, to choose from. It is highly unlikely that you are going to select a factor which would be a multiple of all the possible

twelve to twenty-four, that is, the year-to-year development ratios, which will exactly reproduce your estimates. In fact, if I got exactly the same reserve estimate one year later I would begin to question whether I was being open-minded enough in my analysis of the reserves.

ED SHOOP:

Maybe I didn't make my observation clear, but what I am saying is that, given all claims incurred for accident year 1977, the way they have developed is from 27.3 to 38.9 and, I assume that the no change from 60 to 72 months of development occurs because all the claims finally closed by the end of the 72nd month. What I am saying is that every time you run your reserve evaluation for accident year 1972, you should have developed 38.9, and the test of the goodness, so to say, of the methodology is if in fact this occurs. If back in the year 1977 you are in fact estimating something around 40 million and you continue to do that throughout all the subsequent evaluations for that accident year, and you develop about the same ultimate and it doesn't change, that's one good test of methodology. The second one is, "Did you get the number right"? If you can do those two things right for any particular block of claims, I think you have a good method.

MARTIN ADLER:

That's true, but you continually have to make sure that nothing has changed in the operations of the company that would make that inapplicable as a predictor.

SPEAKER UNIDENTIFIED:

I didn't know if you had any comments regarding whether the actuary should make some judgment regarding the likelihood that a certain event would take place, for example, a class action against the industry that may be three years before final judgment is made.

MARTIN ADLER:

What we have is a particular problem that has emerged in the United States in recent years. I am not aware of the extent to which it may be a problem in Canada as well. I call it "changing the rules of the game after the game has been played." The claims department settles claims under an assumption that a law works a certain way and then finds out, as a result of a class action case, that the industry loses four or five years later that they settled the claims wrong and everything is reopened.

My general answer is that the company has to have some kind of reserve for that event. It is obviously very difficult to quantify. I even wonder whether it's an IBNR type of reserve or perhaps a reserve for an event that has not yet occurred but for which the company's already responsible—the event not having occurred is the court decision. The actuary has a responsibility to consider that, but it's a matter for all of management to try and make the best estimate of how much is going to be needed for that.

Do you have anything to add, Dave?

DAVE WESTERHOLM:

In terms of reserving for asbestosis claims, the actuary should establish estimates on the basis of both the manifestation and exposure theory. The recommended reserve necessarily involves considerable judgment and will in all likelihood be an appropriate compromise between each of the two theories and what the company can afford.

MARTIN ADLER:

I really don't think that the actuaries possess all the necessary wisdom within the organization. If they do, the organization is probably in trouble.

PAUL SINGER:

Should such a consideration be incorporated in loss reserves at all or should it be treated as the event to be disclosed by the auditors?

MARTIN ADLER:

The question is whether the consideration should be in the loss reserves at all or whether it's a contingency amount to be disclosed by the auditors. I don't think that the definitive ruling has come down on this. The events that give rise to this type of situation are still relatively new. I think somehow there must be a reserve. I am not sure whether anyone could have foreseen the emergence of the asbestos problem—certainly not the magnitude of it. But there are other things such as class action suits that have a material, but not devastating, impact on the company which one might consider in the overall IBNR reserve that the company sets.

SPEAKER UNIDENTIFIED:

By their nature, they may turn out to be zero or they may turn out to be catastrophic. Reserves are merely disclosed to the possibility.

I have a more general question along that line. If you have a ten percent chance that you are going to lose a $100 million case and the result will either be zero or a $100 million that you pay, what is the reserve you set? If you follow the usual actuarial formula you put up the expected loss of $10 million and if that is all that's involved and you don't have a spread of these things, your expected reserve is going to be wrong. It's either going to be too high by $10 million or too low by $90 million. This is a more philosophical question and I don't think that this panel on basics is really equipped to handle it.

Sooner or later we are going to be told, and I hope that the actuaries have input in deciding just how it is going to be handled.

SESSION 2—COMPARING AND CONTRASTING U.S. AND CANADIAN PRACTICES

HERBERT PHILLIPS:

Good afternoon, ladies and gentlemen. Welcome to the second of the four panels of this joint meeting between the CAS and the CIA. The subject for this second panel as it appears in the CAS brochure is "Analysis of U.S. and Canadian Reserving Practices." I think the one that is in the CIA program is possibly more descriptive of what will be covered here today and it is called "Compare and Contrast." The three panelists are gentlemen who have had insurance experience in both the United States and Canada, two having worked extensively in the United States as well as in Canada.

While we have a common border and it is undefended, economies that are interwoven closely, a common language and so on, there are many differences as respects insurance operations in general and loss reserving in particular. So I now would like to introduce each of the three panelists in the order in which they will make their presentations.

On my immediate left is Mr. David Oakden, actuary with the Aetna Casualty of Canada, who will speak first. On my right is Mr. David Atkins, a partner with Coopers Lybrand in Canada with accounts in both the United States and Canada. On the extreme left is Mr. Alain Thibault, a consulting actuary with Blondeau and Company. He was previously in the company ranks and also has worked extensively in both countries. So with that, I will turn the podium over to Mr. David Oakden.

DAVID OAKDEN:

Thanks, Herb. Before we get into the more technical presentations with Messrs. Atkins and Thibault, I am going to spend the next few minutes giving

you an overview of the Canadian insurance scene. Before I get to the Canadian insurance market, let us start with the country itself.

Canada, with an area of 3.8 million square miles, is the world's second largest country, yet the population is a mere 24 million people. Canada stretches 4,000 miles from sea to sea and yet 90% of the population live within 100 miles of the U.S. border. This must rank as the world's narrowest and longest nation. However, while Canada has a small population, it has the world's ninth largest economy, and with annual premiums of $7.3 billion, is the fifth largest market for property-casualty insurance in the world. Politically, Canada is a federation of ten provinces and two northern jurisdictions. The system of government is based on English parliamentary democracy. There are basically three major political parties in Canada. The Liberals, who form the current government, are slightly left of centre; the Progressive Conservatives are slightly right of centre (at times they are slightly left of centre); and the New Democratic Party I would describe as a far left wing party. Fortunately, they are the smallest of the three major parties in Canada.

At the provincial level, there are two other parties which are fairly significant. The Social Credit Party, which is the current government in B.C., is a right wing party. The Party Quebecois, which is the current government in the province of Quebec, is left of centre, and some would say quite a bit left of centre. The PQ are a very independent Quebec party. At the present time, neither one of these two parties plays a factor at the federal level but that could change.

The Liberals, under Trudeau, form the current government and in fact, they have governed Canada for almost the entire century with just a few exceptions. However, at the provincial level the New Democratic Party (that's the left wing party), is very strong in Central and Western Canada. In fact, they form the current government in the province of Manitoba and they have also governed in Saskatchewan and British Columbia. The fact that these three provinces have provincial auto insurance plans is no coincidence. With the Party Quebecois in Quebec, politics in Canada are much further to the left than they are in the U.S.A.

The federal and provincial governments are known for their co-operation. This fact is clearly illustrated by the fact that it took a mere 115 years to agree on the Constitution.

Culturally, Canada is split between the French and English communities. I could go on for half an hour on this, but I will keep my comments brief.

Twenty-five percent of all Canadians, including at least twenty-five percent of the actuaries in the Canadian Institute, are French speaking. There are significant French Canadian minorities in all the provinces. French and English are both official languages of Canada. However, French is the official language in Quebec and in the remaining provinces English is the official language. This can, and does, create problems for companies operating in both Quebec and the remaining provinces. In fact, many companies get around this problem by operating only in Quebec, or only in the remaining provinces. Others have Quebec subsidiaries to handle the special problems of Quebec.

Another unique factor about Canada is its winter; and people do joke about the winter in Canada. All of Canada does experience a severe winter and in fact, Canada's capital city, Ottawa, has a colder winter temperature than Moscow (in spite of the fact that Moscow is colder than Canada on average). As a result of this, loss ratios in Canada are about 8–10% higher in the first and fourth quarters than they are in the second and third quarters. This is a factor which must be contemplated in setting year-end reserves. When I was working in the U.S., I did not notice any significant seasonal variation in the loss ratio, although I believe that some lines do experience some seasonal variations.

The Canadian legal system in all provinces but Quebec is, like the U.S. system, based on British Common Law. However, contingent fees are not permitted; Canadians are less litigious; pain and suffering awards have not exceeded $200,000; punitive damages have not yet arrived; and awards are generally much smaller than they are in the United States. We have not had a medical malpractice, products liability, or asbestos crisis. Our excess limit factors seem insanely low to U.S. actuaries. Someone last night was telling me they took about 25% of the U.S. excess limits factors for use in Canada. Also, our reserves have a much shorter tail on third party lines.

Canadians are great savers. The savings rate in Canada is 15% versus a rate of about 5% in the United States. This is partially due to the higher interest rates in Canada; the favourable tax treatment for investment income; and the fact that mortgages are not tax deductible. However, I believe this higher savings rate is due also to the fact that Canadians are more conservative with their money.

Canada has converted recently to the metric system, as some of you may have noticed when you listened to the weather in the morning. However, we have abandoned the decimal currency as our dollar is now worth 81¢.

Canada is a safer place to live than the United States. The murder rate is one-fifth of the U.S. level and that is an incredible difference for a country that has basically the same society. Serious crime is much lower and it is safe to walk the streets of our major cities. However, things are tending to trend towards the U.S. direction.

Now I will turn to the insurance market. The regulation of insurance is split between the federal and provincial governments, with the federal government being concerned with solvency and the provincial governments being concerned with rates and day-to-day matters. Regulation, especially at the federal level, has been strong, consistent, and fair. The Federal Department of Insurance, I believe, enjoys a very good reputation. At the present time, there are about 200 companies or groups operating in Canada competing for that market of about $7.3 billion. Most of them have federal licenses which permit them to operate in all ten provinces; however, some regional companies operate under provincial licenses which, in some cases, are less restrictive.

The Canadian market is dominated by foreign insurers. In fact, only six of the largest fifteen insurance companies in Canada are Canadian. Four others are British and four others are American. The British influence is especially strong in Canada and I feel this is responsible for many of the subtle differences that the American actuaries will notice between the U.S. and Canada. The lines of insurance written in Canada are similar to those written in the United States. The major exception is workers' compensation, which is run by provincial boards; and health insurance, which has been nationalized for hospitals' and physicians' fees. Automobile insurance, as I mentioned earlier, also has been nationalized in three provinces: British Columbia, Saskatchewan, and Manitoba. Even with the defeat of the socialist governments that enacted these laws, the auto plans in these provinces have not been dismantled and are still in effect. In addition, Quebec has taken over the bodily injury portion of automobile insurance.

On the brighter side, there is very little rate regulation in Canada. All lines except auto are open competition and auto rates are regulated in only three provinces: Alberta, New Brunswick, and Newfoundland. The residual automobile mechanism in Canada is the Facility, or in most provinces now the Facility Association, which is similar to a JUA. The Facility originated in Canada in 1967, however, it now has been replaced in all provinces except Quebec by the Facility Association. Both the Facility and the Facility Association, while they have provincial bodies, are national organizations and, while they are separate legal entities, they have the same general manager and the

same managing staff. More than one consulting actuary with a Canadian client has had trouble interpreting the reports set out by the Facility and I would advise you all to study them very carefully if you find yourself in a similar situation.

The company interests in Canada are represented by two bureaus. First the Insurance Bureau of Canada, or the I.B.C. (as we refer to it), to which almost all companies in Canada belong. It is the industry's statistical arm and in addition handles legal, research, and public relations functions. The second organization is the Insurers' Advisory Organization of Canada, or the I.A.O. This represents about half the market and is responsible for ratemaking, engineering, and inspection.

The actuarial interests in Canada are represented by the Canadian Institute of Actuaries. A Fellow of the Casualty Actuarial Society working in Canada automatically qualifies for membership in the CIA. A foreign resident must demonstrate a need before he is permitted to join and, as I found out last night, he also must continue to demonstrate that need before we will let him stay in the organization. In addition, life actuaries must pass a foreign specialty exam before they are permitted to join the Canadian Institute of Actuaries. This applies to Canadian residents and foreign residents. I believe it is only a matter of time before casualty actuaries also are asked to pass a specialty exam. Associate actuaries are not permitted to join the CIA, however, associates who are resident in Canada are permitted to join as students.

The legal definition of an actuary in Canada is membership in the Canadian Institute of Actuaries. This places the Institute in a very strong position vis-a-vis the American Academy. The Institute has had a good relationship with the Department of Insurance and in the past has played an important role in developing insurance regulations. I believe that this role will continue. The Institute holds three meetings each year. With the increasing number of casualty actuaries in Canada there are usually several workshops of interest to the casualty actuaries.

I will conclude my talk today by mentioning some sources of statistics that are available to actuaries doing work in Canada.

First the Insurance Bureau of Canada, the industry statistical arm, publishes automobile, personal property and commercial statistics. These are referred to as the "Green," "Brown," and "Red Books," respectively. I should warn you, however, that you should consider these exhibits very carefully. They were designed for non-actuaries and as a result can be confusing. They contain

actuarial adjustments, such as loss development factors, and the expense treatment is unusual. You should not waste any time looking through the Green Book for any age or symbol information.

The annual statement required by Canadian companies comes in a green cover and, for clarity, it also is referred to as the Green Book. The Federal Department of Insurance has a data base of almost all the information on the annual statement. This is available either on tape or on a time-sharing basis for a slight fee. In addition, the summary of this data plus corresponding data for some provincial insurers is contained in the "Track Report" which is published by Collander Publications Limited. The Department of Insurance also publishes a volume each year with a summary of the industry results.

Statistics Canada maintains a data base for property casualty companies which is continuous since 1966. Their exhibits contain a detailed balance sheet and a revenue statement for the industry, as well as loss ratios for automobile, property and liability. This information is available on a quarterly basis. Statistics Canada is also a good source of general economic data in Canada. In addition, the Canadian Institute of Actuaries publishes selected economic figures each year.

Each year, the Canadian Underwriter and the Canadian Insurance magazine publish summary data on each company and group. Charts ranking the companies and showing premiums by province also are included. Stone and Cox publish the "Brown Chart" which shows the premiums in Canada by company group and by line and also by province. The Facility and the Facility Association publish monthly and annual reports to the companies in Canada. Also, most provincial insurance departments publish annual summaries of the results in their province.

I have tried to cover a lot of ground in a very brief period of time. I trust that you are now all experts in the Canadian insurance scene but, on a serious side, I hope that I have been able to convey some of the unique characteristics of the Canadian insurance market. I will now turn the microphone over to David Atkins, who will describe the Canadian annual statement and perhaps, if we are lucky, convey some of that unique British influence that I mentioned previously.

DAVID ATKINS:

As Dave has indicated, there are two kinds of federal insurers. There is the Canadian company and there is the Canadian branch of a non-resident company.

Their reports are somewhat different. They were very different in the past and they have come together. They are reasonably similar now, except there are still some minor differences.

The next point is that the annual statements filed with the federal authorities are on the basis of generally accepted accounting principles. This is a major difference between Canada and the United States. The only exception to GAAP is that these companies do not consolidate the results of their subsidiaries. They show their results on what is called an "equity" basis. There is an option not to follow deferred tax accounting, although that is rare. Most Canadian casualty insurers follow deferred tax accounting, so it is a GAAP statement that you are looking at for federal companies.

There are two types of provincial company financial statements: those relating to Quebec, and those relating to the other provinces. These statements are not prepared on the basis of generally accepted accounting principles. In particular, provincial companies show unearned premiums on a discounted basis to allow for deferred policy acquisition costs on a national basis, which of course is not a generally accepted accounting principle. All Canadian and provincial companies require an audit from an independent firm of chartered accountants, and it is likely that all Canadian branches of foreign insurers also will require an audit. This is contained in a new bill, which no doubt Bob Hammond talked about yesterday.

Just before we proceed to the treatment of investments for federal companies, I would note that the provinces are getting together to advance the method whereby they require the companies within their jurisdiction to report in a special way in the area of investments. The provinces are beginning to recognize some form of unrealized gain or loss through the income statement of provincial companies. This is not yet law but, to a certain extent, the provincial Superintendents of Insurance are considering it seriously.

Back to the federal companies. I generally will restrict any discussion to federal companies. (When I don't mention the jurisdiction, it will be federal because most companies here are federal companies.)

As far as investments of federal companies are concerned, bonds are shown at amortized cost; that is, on a yield basis or a straight line basis. Stocks are shown at cost. The deferral or amortization basis, which I will explain, is permitted. When a bond is disposed of and there is a realized gain or loss, that realized gain or loss may be amortized to the date of maturity of the bond. This

enables some recognition of the yield inherent in a realized gain or loss on a bond. There are some rules associated with the practice. There is normally a requirement for replacement by a similar security, and one certainly is not disposing bonds for trading purposes or to liquidate the portfolio.

There is an investment valuation reserve. This reserve recognizes market declines of investments. It is treated as an appropriation of surplus, not as a liability, and there is a gradual approach in recognizing market declines on stocks. I believe it is two or three years. (I think now it is three years.)

In Canada, expenses are allocated as to premium acquisition costs, claims, investments and general expenses. The premium acquisition costs are deferred in line with the unearned premiums and, of course, we go through the process of assessing the recoverability of deferred premium acquisition costs. Claim expenses include both external and internal adjustment expenses. In assessing the recoverability of deferred policy acquisition costs, accountants here do look at the yields on investments and use some form of a discount in trying to assess the recoverability of DPAC. If that is done, then that fact must be disclosed in the notes of the financial statements and the yield rate disclosed.

In regard to losses, there is a five year run off on exhibit 35 in the Annual Statement, which, incidentally, is not public information and is not obtainable from any of the sources mentioned by David Oakden. There is some discussion as to whether that exhibit will be available to the public in the future and, judging from the current attitude of officials of the Department of Insurance in Ottawa, I would say that it will become available. Incidentally, the exhibit will be breaking out reinsurance ceded and it also analyzes the IBNR inherent in the losses by year. So there will be far more disclosure of losses in Canada in the future, if the federal officials have their way.

Discounting of loss provisions, and I can use that expression as an accountant and not use loss "reserve," is permitted and it is a good principle. The only problem is in its application—in trying to assess the appropriate yield rate and in trying to assess the appropriate term. I have seen it done. It is extremely difficult and this is normally when I obtain the services of a casualty actuary.

We also have premium deficiency provisions in Canada. If there is a premium deficiency, first the deferred policy acquisition costs are written down and, when they have been written down, then a provision occurs up on the right-hand side of that balance sheet. Again, yield rates on investments are taken into account and, if that practice is followed, it should be disclosed along with the yield rate used.

As stated, only the main exhibits of these federal insurance companies are available to the public but the really interesting data still is hidden.

There has been much greater emphasis on reinsurance in Canada. We have had about nine company failures in the past fifteen years. These are relatively small companies and possibly three of those failures can be attributed to poor loss reserving. The vast majority of those failures have been the result of the inability to collect on unlicensed reinsurance, or a misunderstanding of terms and an unwillingness to pay on the part of the reinsurer. That has been the real problem in Canada—collectability of reinsurance—and, as in the United States, the notes to the financial statements of insurance companies should disclose the contingent liability of the netting of reinsurance against outstanding claims. That figure should be shown as a contingent liability.

In addition, it is likely that chief executive officers of insurance companies in Canada will be required to sign some kind of a memorandum or report setting out their existing reinsurance arrangements and their strategic plan for future reinsurance arrangements: net retention, and so on. That report will be submitted to the Superintendent of Insurance in Ottawa.

There will be some statement of existing reinsurance programs and impending and proposed reinsurance. We also, of course, are deeply influenced by the AICPA, such as the United States guideline on auditing for reinsurance. In other words, it is essential as an auditor that one finds in one's client the controls over reinsurance that one feels should be there. For example, where a company is ceding business into the reinsurance market, one assesses the reinsurer's ability to pay and meet commitments. In terms of assumed business, one should find controls assessing the timeliness and accuracy of reports received from ceding companies. Those controls should be in existence. We are very similar to the United States: our concerns are identical.

Turning to federal regulation: all federal insurers are subject to examination by the Federal Department of Insurance and, of course, to its supervision. These examinations are on the annual accounts, but they are often quite late. When you get an early examination, you can start worrying. If they delay that examination, you can relax a little bit. The examiners work closely with auditors. We do get calls from the Federal Department asking if they can look at certain files. Those files are never released without the client's permission. Frequently, however, the client is only too delighted that we can explain certain things to the Federal Examiners and, with our client's permission, we do that. So we work closely with them in that way. February 28 (like you in the States) is the

deadline in Canada for submission of the annual statement; but, unlike you we get a 15 day grace period for reinsurance companies. They normally file on March 15.

In regard to Department of Insurance reserves: these are treated as an allocation of surplus, except for guarantee reserves which are treated as liabilities. These reserves include non-admitted assets such as over-ninety-day balances, furniture, fixtures, and prepaid expenses. There is a reserve for unlicensed reinsurance (I guess you would call it unauthorized reinsurance) which effectively is a reserve equivalent to the net amount that would be receivable from that market, if the company had to collect on every single reinsurance amount due to or from it on a wind-up. There is the investment valuation reserve that I mentioned earlier. The guarantee reserve for fidelity and surety is based normally on premium volume. There is a reserve for excessive deferred policy acquisition costs, and there are special solvency ratios used in Canada.

I would like to talk a little bit about these solvency ratios. You probably have heard about the 15% add-on for outstanding claims and you may have heard also of a potential 15% add-on for unearned premiums, dependent upon the loss ratios. Of course, these solvency tests are assessed after deduction of Department of Insurance reserves (i.e., on the free surplus and capital). Canada looks as if it is moving too towards the EEC solvency ratio, which is a volume-to-surplus type ratio, combining both premiums and claims. The European Economic Community ratio takes into account reinsurance, but only gives credit of up to 50% of it. It uses a three year average and, if losses exceed a given ratio, then there is a flip into claims so that claims become the basic method of computing surplus. So we are moving towards a EEC type of reserve in addition to our existing solvency ratios. One still sees the old three-for-one ratio being used as well (in the back pages of these annual statements). So those are some of the solvency ratios.

Concerning actuaries and auditors: the hallmark of a professional is to know when he's getting out of his depth. I think this applies to accountants as well as to actuaries. There is presently a joint task force of the CIA and the CICA, which is the Canadian Institute of Chartered Accountants. We are looking at the relationships of actuaries to auditors. Let me give you some ideas as to how we are pursuing this.

The auditor obviously needs the actuary in the life insurance environment, but we are not here to discuss that. The auditor definitely needs the actuary in some tricky areas of loss reserving and, when discounting is being used, I think

a casualty actuary is vital. Certainly in assessing premium deficiencies, a casualty actuary is vital. Very frequently, the auditor needs the casualty actuary. I would think that the actuary would need the auditor when it comes to assessing the validity of data: assessing, for example, the solvency of reinsurers; or assessing the completeness, accuracy and validity of accounting transactions making up claims. We are working out ways in which we can use each other's services: not necessarily delineating lines of competence—that is always a dangerous thing to try to do—but rather addressing the manner in which we will be working with each other.

I think, viewed in that light, we have these professions working together. Both professions have a lot to give to the industry, providing that we can work together. I think that would be absolutely fabulous. We are working that way in Canada and its coming off very nicely. There will be a joint task force report, produced probably within the course of the next two months, to each professional body. That report will not be authoritative until the actuaries have decided to adopt it at their institute and the accountants have decided to adopt it as well. But we are moving ahead and it's a very good sign. Thank you very much.

ALAIN THIBAULT:

Thank you, Dave; ladies and gentlemen.

Well, you know being part of the minority can be at times a frustrating experience, and I would think that most people have experienced this at one time or another, or in one way or another during their lives. But frankly I have to admit that being a Canadian, French-speaking, property casualty consulting actuary is stretching the concept of minority status to its dangerous limit. The danger, of course, being falling into non-existence. Needless to say, I am reminded constantly of my humble position in our actuarial profession. I have come to take this philosophically. However, I have to say that I never have been as conscious of my position as the day when Carl Honebein, for whom I was working at the time at Fireman's Fund in San Francisco, got upset at me because he had just found out that I could not even qualify for his affirmative action goals. This is why I feel very privileged today to have a chance to be heard and I would like to thank Herb, the CAS, and all of you for the opportunity.

After these two excellent presentations I think we now have a pretty good overview of what the Canadian insurance and accounting environments are like. What I would like to do is give you my opinion of the state of loss reserving in Canada.

We have seen that there are many differences between our environments and in itself the existence of difference should not affect the theory and the objectives of loss reserving; but, in practice, it is having an impact on the development of this activity here in Canada and on its importance. It probably would be fair to say that generally in this country loss reserving as a rigorous science is in its infancy. Of course, some form of loss reserving does take place in every company. However, it is only in the most recent years that a handful of companies, mainly the larger ones, really have started to devote the time and efforts necessary to develop the information systems and also the reserving methodologies that are needed to control this area properly. Some of these companies have put in place practices that are sophisticated and could compare with what you would find in many of the larger U.S. companies. For the majority of companies in Canada, however, the loss reserving process is based strictly on the case-by-case approach and normally includes an IBNR provision which is determined in a more-or-less arbitrary manner. Overall analysis techniques are largely unknown. Even the use of fast track or average reserves is only starting to get wider acceptance. While the science of loss reserving in this country may not yet correspond exactly to the ideals that most of us in our areas are striving to attain, there are a number of practical reasons that can explain why reserving perhaps has not received so far the kind of attention that we think it deserves.

First of all, we should point out that there is in Canada an obvious shortage of qualified people, actuaries or others, who have not only the technical skills to establish a reserving process from scratch but also have obtained the experience and the status in their companies to get the support from their employers and the commitment of resources.

Although the property-casualty actuarial profession is growing at a substantial rate here, actuaries are still a relatively new and rare commodity. Since there is a lot of work to be done in all areas of our business and just a few of us to do it, the priorities have not always been placed on loss reserving. Probably another factor behind the lack of emphasis that has been placed on loss reserving is a relatively smaller exposure to long tail reserve development. To elaborate further on this, it might be helpful to briefly review some of the data that will give us a more concrete idea of the significance and makeup of loss reserves for the Canadian industry.

The figures I have compiled represent about 85% of the Canadian insurance industry and they include all Canadian federal companies and foreign insurers operating in Canada, but they exclude provincial companies. Total loss and loss

expense reserves at the end of 1982 were approximately $4.1 billion. This represents about 68% of the earned premium volume of $6 billion for 1982. If we want to have a different measure of the significance of loss reserves, we can compare them with the industry's capital and surplus. With the latter accounting to about $3.9 billion on a GAAP basis, as Dave has explained, we see that the reserve-to-equity ratio is almost one-for-one. If we were looking at equity on a traditional statutory accounting basis then the reserve-to-surplus ratio would be about 20 points higher.

If we look at the reserves by line of business, we see that auto liability and accident benefits represent by far the most important lines with about 40% of total reserves. General liability comes second with 23% of the reserves, and property follows closely at 22%, while all other lines combined represent about 15% of our reserves. As we can see, the lines that have a potential for a long term development represent about 63% of our reserves.

One last item I would like to review is the rate at which payments actually materialize. Since industry data are not available in this format I have obtained this information from a large company having a book of business that I believe is representative of the industry. These data show the cumulative percentage of accident year losses incurred which have been paid after 12, 24, 36 months, etc., for all lines of business combined. About 50% of our losses are paid the same year in which they have been incurred. This proportion increases to 82% twelve months later and two years after the close of the accident year almost 90% of the losses have been paid.

Although this conclusion does not necessarily apply in the case of each individual company, this quick analysis shows that our industry is not highly leveraged and the potential inadequacies in reserve levels probably could be absorbed without excessive pain. Further, we have mentioned that our exposure to long tail development is less than in the U.S. and accident year results materialize relatively quickly. In this context, perhaps it should not be surprising to find that the industry has not placed more emphasis on the development of improved reserving methodologies.

Why is the long term exposure relatively less significant in Canada than in the U.S.? Well, the fact that workers' compensation is not written in the private sector is certainly a part of the reason, but there are also a number of differences between our legal systems that can further explain the situation. For example, our courts generally have maintained a more conservative approach than in the U.S. and the concept of negligence has not been eroded to the same extent.

One important difference mentioned by Dave Oakden is that, unlike the U.S., in Canada juries usually are not involved in civil cases but only in criminal cases. The judge, who is less likely than the jury to be overly sympathetic to the plaintiff's case, fully controls the outcome of the trial and decides what damages are granted. Awards for pain and suffering generally are kept to a reasonable level. There is also a difference between our two countries in the way attorneys are compensated. In the U.S., it is common practice to have the attorney's compensation based on a percentage of whatever amount he is able to win for his client. With these contingent fees the claimant has little to lose by suing. In Canada this practice is prohibited and this will normally discourage most people unless they feel they have a strong case.

Perhaps because of these reasons, and also because of general public attitude, Canadians do not have the same propensity to claim for damages and take legal action. In general, our traditional emphasis has been on the interest of the collectivity as well as on individual rights. This has probably contributed further to keep the ultimate costs for the liability insurance system under greater control.

Another major reason for the slow development of loss reserving techniques in Canada probably depends on the structure of the market itself. A survey of all Canadian federal companies and foreign insurers, 280 companies altogether, indicates that the average loss reserve was about $14.5 million at the end of 1982. More than half of the companies had loss reserves smaller than $5 million and 75% of the companies had reserves of less than $25 million. There is obviously not much incentive for the vast majority of companies to develop any kind of complex reserving methodology.

The one last factor that may have contributed to the slow development of loss reserving techniques is the relatively confidential nature of insurance company results in Canada in comparison with the U.S. While a summary of each insurer's results is published each year by the Superintendent of Insurance, the annual statements themselves are not public and no data on the reserve developments are made available. Also, all but a few companies are either private companies or branch offices of foreign insurers, and do not have to make detailed financial statements available to the public at large. A company's reserve position is not, therefore, under constant scrutiny by stock analysts, competitors, and the public in general. Conversely, a CEO has no means of comparing the performance of his company from a reserving standpoint with that of his competitors. This reason, in addition to those mentioned earlier, illustrates why modern loss reserving techniques are only starting to be implemented. However, there are potential changes on the horizon that could signif-

icantly impact the attention that loss reserving has received and bring about a much more rapid development of this activity.

I think we have touched upon these developments but, at the risk of repeating what has already been said, I can give you a brief overview of what is coming. On September 20, 1982, probably as a direct consequence of the recent bankruptcies of two insurers—something that Canadians had almost come to forget could happen—the Federal Department of Insurance issued a memorandum outlining a series of proposed legislative changes that could have a significant impact on our industry. These proposals were designed to increase capitalization requirements, control the utilization of reinsurance, and tighten reporting requirements. The main changes proposed include an increase in the minimum capitalization requirement for a new company from $1 million to $5 million. Thereafter any company whose capital and surplus fell below $4 million would have its license automatically revoked. A new minimum capital formula also would be implemented for ongoing companies based on a combination of premiums and claims volume.

Reinsurance transactions also would be regulated. New and small companies could cede reinsurance only to authorized reinsurers and no company, with the exception of the new ones, would be allowed to cede more than 50% of its premiums. New companies for a period of five years would be allowed to reinsure up to 75%. A solvency guarantee fund would be created to which all federal and foreign insurers would have to contribute. Provincial companies would participate on an optional basis.

Another area of change that is of direct interest to the actuarial profession would require every insurer to have its loss and loss expense reserve, as well as its unearned premium reserve, certified by an actuary, which in Canada means a Fellow of the Canadian Institute of Actuaries. However, since the department recognizes that there is not a sufficient number of actuaries to fulfill the demand this would suddenly generate, the proposals also provide that a non-actuary meeting certain qualification requirements could certify a company's reserves if this company could demonstrate that it was unable to secure the services of a fully qualified actuary. The implication would be that, over time, the responsibility for the certification would be completely assumed by the actuarial profession as is the case in life insurance.

Already one year has gone by since these proposals have been made public and the necessary legislative amendments have not yet gone to Parliament. With the general improvement in the industry's results in 1982 and 1983, some of

the pressure to get these changes enacted quickly may have disappeared. Whether or not, and at what time, actuarial reserve certification will become required remains unclear. However, the proposals already have opened an interesting debate on loss reserving and have created a greater awareness of the industry's needs and weaknesses in this area.

I spent the last few minutes talking about current reserving practices in our industry and observed that there is really a long way to go before loss reserving is performed on a scientific basis. The first major challenge that the valuation actuary will encounter in most companies will be the absence of the minimum information necessary to a reserve analysis. I would think that reserving standards would have to be phased in over a certain period of time as information systems are developed. It's not clear how difficult a job it will be to have those information systems implemented. While the industry does not oppose the principle of reserve certification, it seems obvious to me that few insurers, if any, initially perceive any benefit for themselves—especially if they previously have not deemed it desirable to put any more than a minimum effort into loss reserving. In this context it may be a very difficult task for the actuary to obtain the necessary support and financial commitment to make this exercise as worthwhile as it can be.

Another issue that we will face will be the size of the average company whose reserves we have to certify. As mentioned, 50% of the companies have reserves under $5 million and 75% are under $25 million. The question that arises concerns the role, from the loss reserving standpoint, and the cost benefit, I should say, of an actuary in a company with only $5 million in reserves spread over five different lines of business. At what reserve level do actuarial techniques start to have a minimum of statistical as well as practical meaning? At what point does our role really start to become different from that of the claims examiner or the accountant? Reserve certification will require our profession to do a serious introspection about the way we are to approach the small company situation. Some form of actuarial standards will have to be developed and it will be very important that we are able to recognize our strengths as well as our limitations.

Other issues that will arise relate to a variety of questions such as the role of the valuation actuary versus that of the auditor; and, the scope of certification with respect to reinsurance, especially in a heavily reinsured company. We have heard Bob Hammond tell us that he expects a valuation actuary to form an opinion on the soundness of the company's reinsurance program as well as on the recoverability of the reinsurance reserves. Needless to say, this will be a very challenging task for the actuary. Another issue will be the nature and

difficulty of our involvement in determining unearned premium adequacy. How are we going to approach the case of a reinsurance company, for instance, or else a company with a large volume of commercial lines business in an environment where commercial lines pricing is not even controlled or monitored, which is the case in a lot of our companies? This actually means that the actuary will be asked to assess the company's underwriting practices and marketing strategy. Reserve certification, in the way it is being proposed, will pose a major challenge to our profession. To succeed we will need to be thoroughly familiar in all aspects of the company's operation. What I call the number-crunching approach is not going to do the job, and in addition, more than ever before, the ability to communicate effectively will be an indispensable asset.

I believe, as Bob Hammond mentioned, that certification could be a tremendous boost for our profession and ultimately a great benefit to our industry. The risk of failure will be equally significant and cannot be ignored. There is no doubt that to succeed we will require a great deal of dedication and leadership from every one of our members.

Thank you for the opportunity to share my thoughts on the state of loss reserving in Canada and the challenge faced by the property casualty actuary.

HERB PHILLIPS:

I believe the panel has done an excellent job by exposing, in about 70 minutes or so, the significant differences between the countries, and the credibility problem we definitely are going to have in Canada because of the overall size of the economy. I think that we have, with this presentation, presented to you the differences in the Canadian environment so you realize the potential problems, particularly those of you involved with United States or British subsidiaries.

SPEAKER UNIDENTIFIED:

In the proposals for certifying reserves and the valuation actuary, do they have to be independent or can they be employees of the company if they are a member of the CIA?

ALAIN THIBAULT:

I would have to think that an employee of a company could certify a reserve. I do not think that this has been conclusively determined yet.

FRED KILBOURNE:

This concludes the afternoon session. Thank you very much.

EXHIBIT 1

LIFE CYCLE OF A CLAIM RESERVE

RELEVANT DATES

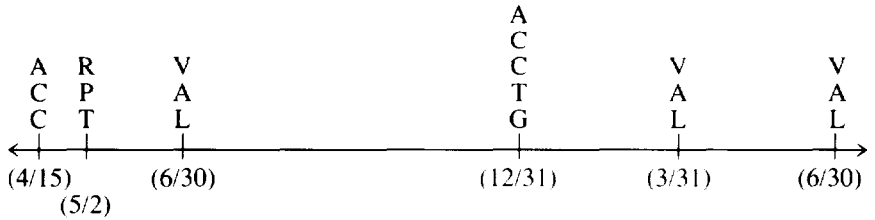


EXHIBIT 2

LIFE CYCLE OF A CLAIM RERSERVE

Date	Activity	Status
4/15/80	Accident Occurs	IBNR
4/30/80	Accident Reported	In Transit
5/02/80	Entered Into Records (System)	Avg. Reserve
7/28/80	Individual Reserve Estimate	Case Reserve
12/17/80	Estimate Revised	Case Reserve
6/04/81	Settlement Agreed	Case Reserve
6/11/81	Payment Made	Closed

EXHIBIT 3

1980 Accident Year Development

	Activity Year			
	1980	1981	1982	1983
Amount Paid ($000)	1,000	3,000	2,000	1,500
Reserve ($000)	5,000	3,500	2,500	1,500
Cumulative Paid	1,000	4,000	6,000	7,500
Cumulative Incurred	6,000	7,500	8,500	9,000
	Development Ratios			
	12-24	24-36	36-48	
Payment	4.000	1.500	1.250	
Incurred	1.250	1.133	1.059	

EXHIBIT 4

HOMOGENEITY & CREDIBILITY

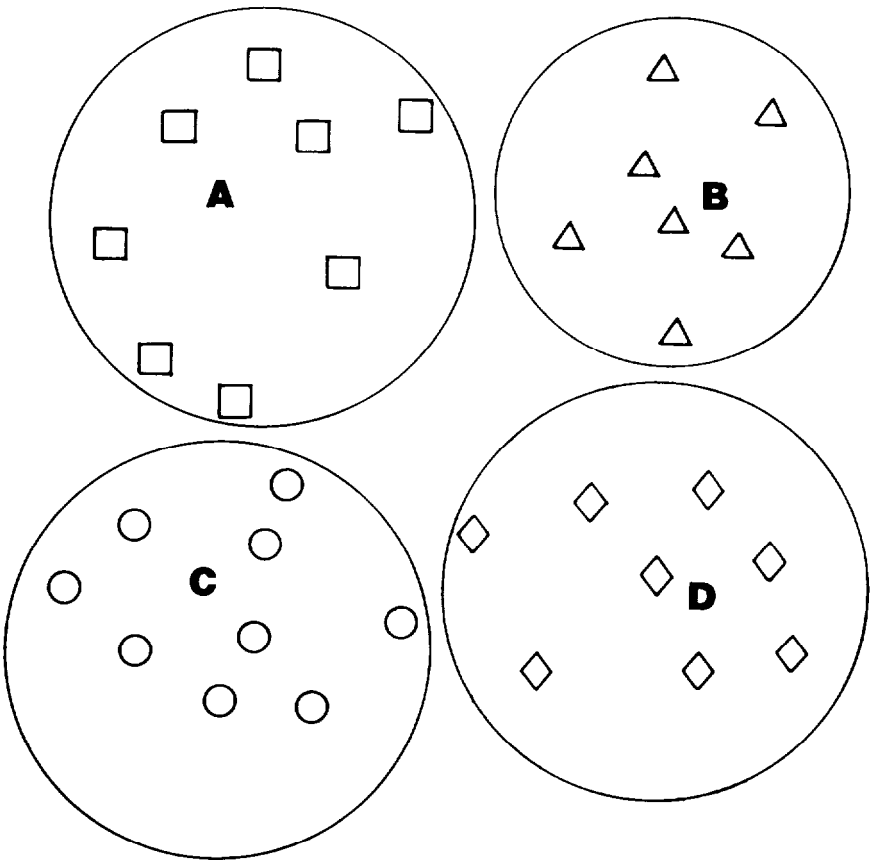


EXHIBIT 5

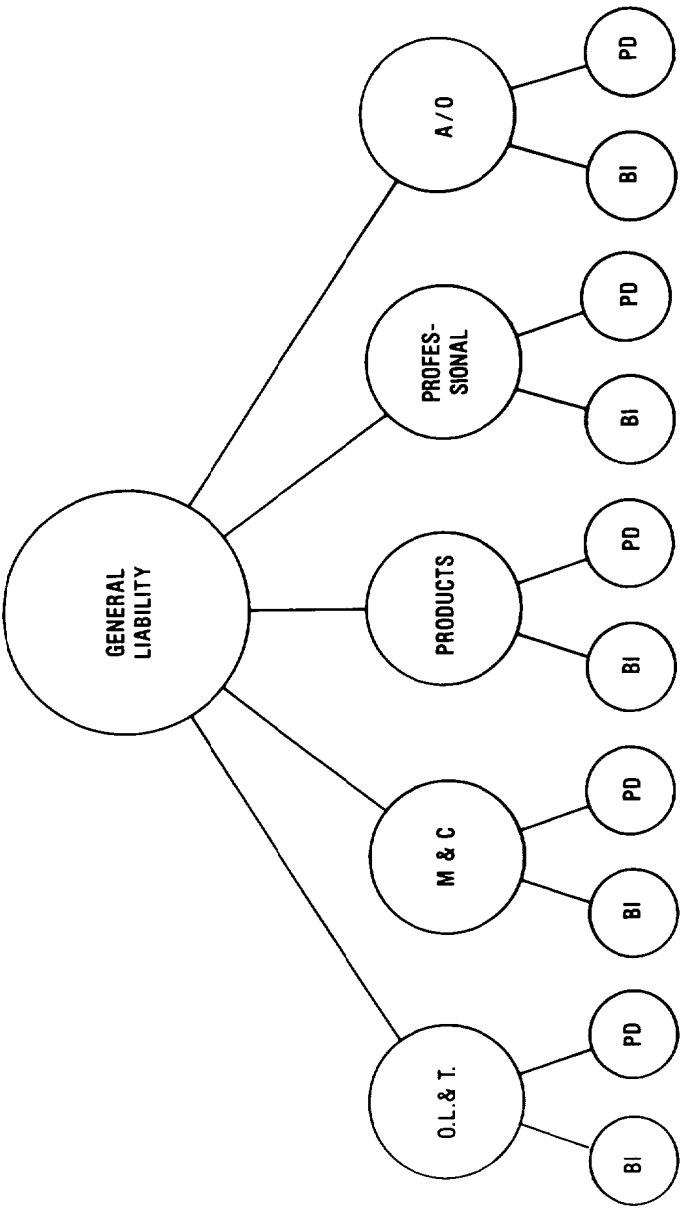

GENERAL LIABILITY
A/O
PD
BI
PROFES-SIONAL
PD
BI
PRODUCTS
PD
BI
M & C
PD
BI
O.L.& T.
PD
BI

EXHIBIT 6

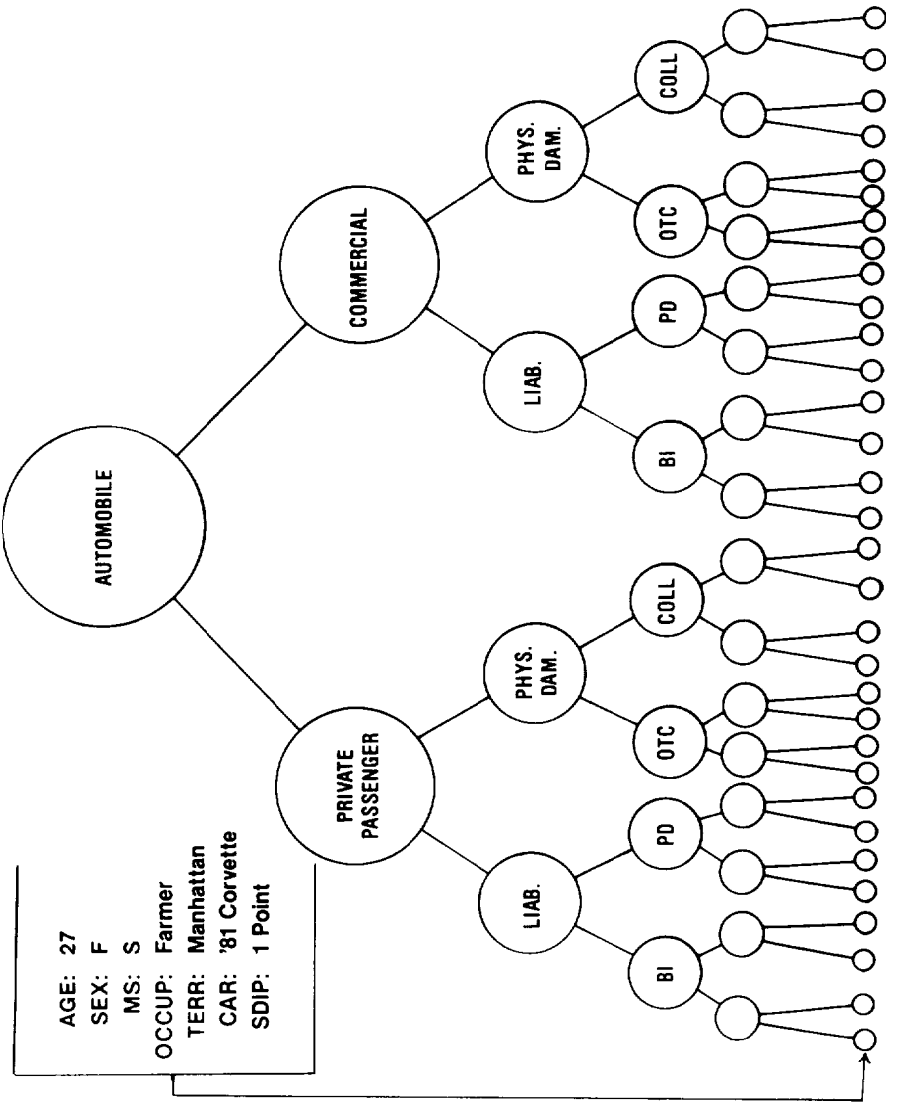

AUTOMOBILE
PRIVATE PASSENGER
COMMERCIAL
LIAB.
PHYS. DAM.
LIAB.
PHYS. DAM.
BI
PD
COLL
OTC
BI
PD
OTC
COLL
AGE: 27
SEX: F
MS: S
OCCUP: Farmer
TERR: Manhattan
CAR: '81 Corvette
SDIP: 1 Point

EXHIBIT 7

DATA AVAILABILITY

I. Data Types
   a. Paid Losses
   b. O/S Losses
   c. Incurred Losses
   d. Paid ALAE
   e. Reported Counts
   f. Closed Counts
   g. Reopened Counts
   h. O/S Counts
   i. Earned & Written Premium/Exposures

II. Data Organization
   a. Accident Year
   b. Calendar Year
   c. Policy Year
   d. Report Year
   e. Limited/Layered Losses

III. Reconciliation of Reserving Data

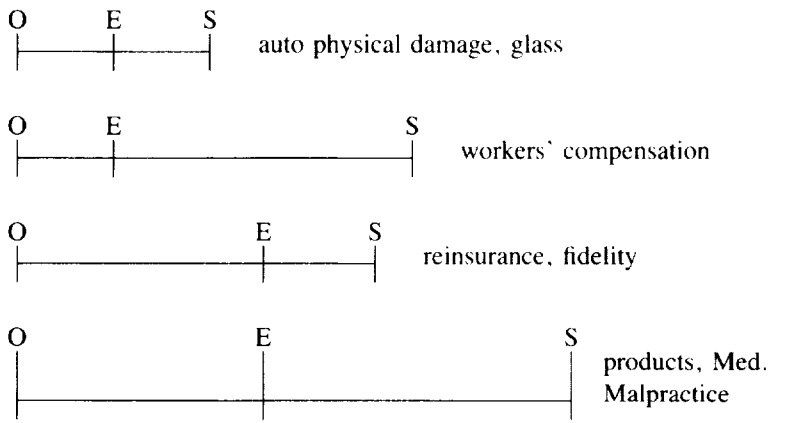
IV. Data Limitations/Incomplete Data

EXHIBIT 8

EMERGENCE, SETTLEMENT, DEVELOPMENT PATTERNS

Emergence: time between the occurrence of a claim and when it is recorded on the company books.

Settlement: time between the reporting of a claim and when it is settled (closed).



Development Pattern: historical record of the loss evaluations, from 1st reporting to closing, for a fixed group of claims.

EXHIBIT 9

CUMULATIVE ANNUAL INCURRED LOSS DEVELOPMENT
ACCIDENT YEARS 1973–1982

	Months of Development					
Acc. Yr.	12	24	36	48	60	72
1973	11900	14200	14240	14640	15100	15290
1974	16600	20500	22100	22740	23300	23640
1975	18690	24780	26740	28100	28600	28900
1976	22440	30540	32200	33200	33400	33800
1977	27290	35440	37600	38340	38900	38900
1978	32040	39100	39800	39940	40300	
1979	32640	38800	39510	40600		
1980	35280	43100	46210			
1981	36050	44400				
1982	48730					

	Loss Development Factors				
	12-24	24-36	36-48	48-60	60-72
1973	1.193	1.003	1.028	1.031	1.013
1974	1.235	1.078	1.029	1.025	1.015
1975	1.326	1.079	1.051	1.018	1.010
1976	1.361	1.054	1.031	1.006	1.012
1977	1.299	1.061	1.020	1.015	1.000
1978	1.220	1.018	1.004	1.009	
1979	1.189	1.018	1.028		
1980	1.222	1.072			
1981	1.232				
1982					

EXHIBIT 10

INTERNAL & EXTERNAL CONSIDERATIONS

Internal

I. Changes in Relative Adequacy of Case Reserves
II. Changes in Claim Handling Procedures
  a. Fast Track/Average Reserve Valuation System
  b. Claim Counting
  c. ALAE Payments
  d. Loss Payments
  e. Claim Litigation
  f. Company vs. Independent Adjusters
III. Changes in Pricing Strategy
IV. Changes in Underwriting Programs/Guidelines
V. Changes in New vs. Renewal Ratios
VI. Changes in Type of Reinsurance and Retention Levels
VII. Changes in Policy Limits and Deductibles

External

I. Participation in Involuntary Pools/Associations
II. Inflation
III. Claims Consciousness of Public
IV. Seasonality of Loss Experience
V. Legal/Legislative
VI. Economy