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ROLE OF THE VALUATION ACTUARY IN THE UNITED STATES, CANADA, AND THE UNITED KINGDOM

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- o Overview of the valuation actuary's role in each country
- o Product development implications in each country
- o Actuarial profession implications in each country
- o Implications for regulators in each country
- o Implications for insurance company management in each country

MR. JOHN A. FIBIGER: We are fortunate to have Mr. T. C. Jenkins from the Institute of Actuaries of Australia as a member of our panel. Therefore, this session will not only cover developments in the United States, Canada, and the United Kingdom, but it also will cover developments in Australia.

It is particularly interesting and helpful to look at developments in other countries if people in other countries do things the same way that you're doing it. That indicates that wise men agree on certain ways to do things. Even more instructive may be the differences among countries. The differences can be for a lot of different reasons. They may be because of the legal climate in another country, the regulatory environment, different products, a different competitive environment, or differing structure of companies, but the differences may just simply be because people, who have looked at the situation in another country, have found a better way to do it.

MR. T. C. JENKINS: Australia is a country with a tradition that follows the British. Like the United States, Australia has a state and federal system of government. In Australia, life insurance is controlled by a specific federal legislation, which is administered by a single regulatory authority called the Life Insurance Commissioner. Under the legislation which is called the Life Insurance Act, the actuary of the company is given a number of statutory responsibilities. These include:

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1. Approving premium rates including a statement of the maximum commission terms associated with those rates.

2. Conducting the valuation of liabilities so as to place a proper value on them subject to that value not being less in aggregate than that under a prescribed minimum valuation basis.

3. Reporting to directors on the company's financial condition.

4. Approving the treatment of participating policies and the release of surplus proposed by directors.

Financial reporting under the Act is structured so as to allow the actuary to perform his tasks without audit; instead, the auditor relies upon the actuary as an expert. The auditor is responsible for the statutory revenue account and balance sheet, relying upon the actuary's opinion that the balance of revenue accounts is sufficient to meet liabilities. Quite separately, the actuary reports upon the valuation and presents a valuation balance sheet for each revenue account. The form and content of the statutory financial reports are prescribed, and the whole process is subject to the constraint of the minimum valuation basis. As a result, statutory reports obscure the underlying processes at work and are of limited use to the outside observer. This has been recognized by the profession and consideration is being given to the development of suggestions on how public reporting could be improved. However, the actuary is also required by the Act to report to directors on the company's financial condition. The profession expects him to use this document to give directors a clear picture of material financial aspects. The profession applies a professional standard to the financial condition report, which deals with a range of matters under the following headings:

1. Report identification
2. Nature of business
3. Identification of funds
4. Policy guarantees
5. Reinsurance arrangements
6. Experience -- recent and expected
7. Assets
8. Investment policy
9. Adequacy of premium rates
10. Valuation of liabilities
11. Distribution to participating policies and release of surplus
12. Benefit illustrations

The Commissioner routinely receives a copy of this report.

The existence of a minimum valuation basis, which over time had become progressively stronger as interest rates rose, had the effect of imposing a strong capital base upon the industry in Australia. Recently however, relaxing this minimum basis and the emergence of various unbundled policies with no specific minimum bases yet in place as well as a swing towards initial loads has reversed this effect and the industry has an increasingly freer capital base.

Adequacy of reserves is, therefore, not a public issue for the profession in Australia at this time. Furthermore, much of the business in Australia has the effective means for policyowners sharing in the results of experience, and there has been, over the years, a general awareness of powerful options and guarantees. On the other hand, the equitable treatment of older types of policy (or more precisely, convincing observers that treatment has been equitable) has become a major issue. Not only does the industry increasingly market new types of policy with low initial loads than in earlier years, but also its reports disclose large amounts of free surplus becoming available.

While the Act does not explicitly charge the statutory actuary with clear responsibilities for advising on equity, it requires him to approve the directors' treatment of participating policies. Furthermore, the range of responsibilities given to the actuary so that many aspects of financial management must rely upon professional advice for their soundness suggests that the legislators clearly intend the actuary to be concerned about equity. Under current conditions of structural change, this takes the profession into complex areas with which it is only beginning to grapple. Our first steps have been to develop a statement of the basic principles involved in giving actuarial advice to life insurance companies. However, neither the process of trying to articulate the concepts and principles nor the process of trying to secure reasonable acceptance within the profession is proving simple.

While the conceptual work is proceeding, the profession is also discussing with the commissioner possible proposed alterations to the act to consolidate the various statutory actuarial responsibilities more clearly in an appointed actuary, along lines similar to those in the United Kingdom. Particularly, it is felt that there should be special guidelines concerning appointment, termination, and conflicts of interest of the statutory actuary. This increased formality is also desirable to sustain the recognition given to the statutory actuary by the auditing profession, where reliance on an employed actuary requires special treatment within general international practice relating to the work of experts.

The main premise which underlies the Australian structure is that the actuary, as an employee or even as a consulting actuary, can and does function as both:

1. a key member of the management team and
2. a professional advisor.

The profession, therefore, has a considerable interest in protecting and enhancing the second of these dual roles. The legislators, the commissioner, the auditing profession, and ultimately, the policyowners and the public rely heavily on the professional role of the actuary despite the fact that the actuary is a member of management. The profession has a special responsibility to set standards for the work of the statutory actuary to issue statements on important principles and to provide general guidance to members.

We've begun to meet this responsibility, spurred on by structural change and the resulting issues which have emerged, but we have a

long way to go before the range of our guidance begins to meet the need for it.

Because of the extent of the reliance on the statutory actuary by the commissioner and the auditor, close liaison is maintained with both the authorities and the auditing profession. Issues of mutual interest are discussed, concerns are raised, and responses are developed. Without such forums, misunderstandings can arise or concerns can fail to be addressed, leaving the profession exposed to unexpectedly losing part of its responsibility.

The profession has a secondary interest in keeping the actuary as a key member of the management team, as this gives him an intimate involvement in company affairs, which helps him discharge the degree of responsibility explicitly and implicitly imposed upon him by the Act. The profession, therefore, does not favor the introduction of guidelines for the appointed actuary because it might tilt the balance of the dual role too much towards making the actuary akin to, say, an independent auditor appointed by a meeting of shareholders. The actuary would be seen primarily as a full and internal auditor and would become increasingly divorced from the top management team.

In the environment established by the Australian Act, the commissioner places heavy reliance upon the actuary and expects him to discharge his statutory responsibilities of skill, judgment, and priority. The commissioner supervises the work of the actuary because he has the actuary's financial condition report to the board of directors available to him as well as the various statutory returns. If necessary, the commissioner can ask for any other documents he needs for supervision including the actuary's reports on premium rates for policies.

The commissioner uses a system of guidelines to set forth these requirements in various areas, and the actuary would be expected to work within those which are relevant to his responsibilities. Many of these guidelines are prepared by select committees appointed by the commissioner from persons employed within the industry -- including actuaries. The result is a flexible and useful structure of guidance much of which has been developed by a form of coregulation.

Thus, in normal circumstances, the actuary goes about his job without any requirement for him or the company to refer to the commissioner to obtain approval for decisions. For example, new products do not require approval by the commissioner. They would not be likely to be challenged by the commissioner unless the product failed to comply with guidelines.

If, upon review, the commissioner has questions or concerns about decisions taken on the advice of the actuary, he would take them up with the company and, if necessary, hold discussions with management and the actuary. This process generally leads to a satisfactory outcome, and it would be rare indeed for the commissioner to consider using his powers of intervention in order to have his viewpoint respected.

ROLE OF THE VALUATION ACTUARY

MR. ALLAN D. AFFLECK: In the U.S. today, the only form of responsibility placed on the valuation actuary is that he determine reserves based on statutory requirements and express the opinion that these reserves make good and sufficient provision for the company's obligations. There is no obligation to report to the company's board of directors or to review the adequacy of premium rates in Australia.

The situation here is complicated by the completely separate financial statement that is prepared according to generally accepted accounting principles (GAAP). The actuary enjoys a much less formal role with the accounting profession on GAAP issues than he does with regulators on statutory issues.

The role of the valuation actuary in the future clearly will depend on the profession's ability to implement the recommendations of the Joint Committee on the Role of the Valuation Actuary in the United States, a report that has now been endorsed by the Boards of both the Society and the Academy. These recommendations will call upon the actuary to express two important opinions:

1. That anticipated cash flows, arising from assets equal in amount to the company's reserves, make an appropriate provision for future obligations of the company on a basis sufficient to cover reasonable fluctuations and future experience.

2. That the company's internally designated surplus funds, together with reserves, make appropriate provision for plausible fluctuations (i.e. wider than reasonable) in future experience.

For the first time, we will require an actuarial report to management in which the actuary will be called upon to summarize his findings and identify the amount of surplus the company would require under various scenarios as to future interest rates.

While most of you are familiar with the structural changes recommended by the Joint Committee, let me briefly summarize the major recommendations:

1. The board of directors of every life insurance company would be called upon to appoint a valuation actuary.

2. Every company would be required to inform the Insurance Commissioner of this appointment, and subsequent appointments of the valuation actuary.

3. All published financial statements would include the statement of opinion of the valuation actuary.

Assuming these changes are implemented, the valuation actuary clearly will have a much expanded role in the future.

What are the implications for the profession? We have a tremendous educational task within the profession, so we can become comfortable with these additional responsibilities. The Society of Actuaries has a

Committee on Valuation Principles addressing these concerns. Working parallel with that group is an Academy committee developing standards and practice. Two other groups are involved -- one group to establish qualification standards (i.e., education and experience) for an individual to become a valuation actuary. The other is a well functioning discipline process. We hope that these requirements will give the public and the regulators confidence in the work of valuation actuaries and confidence that the profession will take appropriate action against inadequate actuarial work products.

Can the profession assimilate all these changes within a few years? I believe we can, but it will take much hard work and many programs like this meeting to help individual members of the profession to become knowledgeable about these concepts.

There is a related implication for the profession that is easy to overlook since it is of a long-term nature. Clearly the profession will have more exposure in the future. The expanded actuarial opinion will be relied upon to a greater extent than the existing one is. The board of directors of every life insurance company will be aware it is appointing a valuation actuary. Management will receive an actuarial report telling it how much surplus it needs to designate to protect the company against possible fluctuations in future experience.

Does the profession have, and are we developing enough actuaries who can respond to this type of environment? Communicating the surplus needs and the rationale underlying them takes a skill that does not come naturally to many actuaries. Quality work is clearly important, but the future will emphasize the need to balance this quality with an ability to communicate, to view the broad problem, and to bring a greater degree of business judgment to important issues.

Where are we today in this transition in the role of the valuation actuary? The current track is for the Academy to release, at the end of June, an exposure draft of a new statement of actuarial opinion and related standards of practice. The Academy is not in a proactive posture in terms of seeking adoption of these new standards, but wants to be in a position to respond, if the NAIC adopts a new opinion. I gather that the general consensus suggests that 1987 will be the first year for which an expanded opinion will be required. In moving forward, we have not yet done an effective job of communicating our concerns about the present valuation actuary environment to management and obtaining its support for the changes we are recommending. At the moment, we are responding to requests from the NAIC in a rather low-key manner. If we want the recommendations of the Joint Committee to be implemented, we must make a greater effort to involve management and seek its support.

My view of how regulators perceive the role of valuation actuary has changed in recent years -- unfortunately, not for the better. I see more evidence that insurance departments have less respect for actuaries and actuarial opinions. Many insurance departments believe actuaries have improperly taken reinsurance reserve credits for surplus relief arrangements which do not really transfer risk.

It is my sense that in other countries -- specifically Australia, Canada and the U.K. -- actuaries in companies work quite closely with actuaries in the regulatory arena and that this cooperation and mutual respect does exist. That's not the case in the U.S. today, and whether the problem lies with the regulators or the industry is not important at this time. I believe our insurance departments are woefully understaffed. For example, in Canada twenty-eight members of the Society of Actuaries work for the Department of Insurance either in Ottawa or in Quebec. In the U.S., with approximately ten times the population and virtually ten times the amount of insurance company assets, there are a total of forty-two actuaries employed by state regulatory agencies -- twenty of them by the New York State Department of Insurance. Can we expect this relationship to improve unless the insurance departments are able to add the actuaries needed to help them address today's complex issues?

MR. HORACE W. MCCUBBIN: When compared to the situations described for Australia and the United States, it is apparent that the position in the United Kingdom lies at one extreme of a spectrum and Canada about the middle.

My own company operates in the United Kingdom, Canada, and the United States. For the Canadian and United Kingdom jurisdictions, we file worldwide business reports which require compliance with the valuation standards of those jurisdictions. In reviewing my experience with these reports, there is certainly a discernable difference in the responsibilities placed upon the valuation actuary in both jurisdictions. I have a bit of a problem when talking about the role of the valuation actuary because the role depends on the perspective from which you wish to view it. Do you want the regulator's view, the professional view, the auditor's view, or just your own personal view? In most discussions, the first view normally referenced is that of the regulator, and in both Canada and the United Kingdom, there is a specifically defines role for a valuation actuary.

The role of the valuation actuary is not fixed; it is developing and evolving, particularly in Canada. The United Kingdom has a well established role, Canada and Australia have an existing but changing role, and the U.S. is trying to define a role.

The traditional role of the valuation actuary was indeed a person who calculated reserves and guarded solvency. This meant that, even as a member of management, the actuary's role was primarily related to reserve calculation; the regulator looked to the actuary to make sure he complied with all those various regulations; and, the auditor probably found the actuary to be an annoying professional who got in the way of audit certificates. The actuary and the reserves were one.

In recent years a number of outside stimuli have affected the traditional role of the valuation actuary. In the early 1970s, a number of life companies in the United Kingdom got into difficulty and failed. We've also experienced the inflationary conditions in recent years which have caused many companies to have cash-flow and expense problems. These conditions have brought fears of more government regulation and

direction, and indicated that companies certainly needed more technical guidance from their actuaries. The desire on the part of the accounting profession to get better life company financial reporting has caused the actuarial profession to worry about its turf. In Canada, a joint effort in the actuarial and accounting professions along with the regulatory authorities brought major financial reporting developments in Canada and introduced the position of a valuation actuary into law in 1978.

Another factor that affects the valuation actuary's role is the increasing strength of the actuarial profession, particularly in North America. Actuarial bodies in all jurisdictions have taken initiatives recognizing their role -- creating an atmosphere for acceptance and demonstrating their willingness to take on responsibility. The older U.K. Institute is somewhat ahead in this regard, but the Canadian and Australian bodies are catching up fast as statutory recognition and regulation creates more accountability.

Importantly, the actuarial profession has recognized the changing times and has increased the emphasis on members' activities. To satisfy the broadened role and the public trust, the professions have been rapidly developing standards for and guides to practice and paying much greater attention to their own self regulation.

The last factor affecting the valuation actuary's role is the changes in statutory requirements for actuaries in recent years. Canada, the U.K., and Australia all have defined roles which require the profession to respond in a professionally responsible manner.

In Canada, the role of the valuation actuary is essentially just a valuation role with the actuary being responsible for setting appropriate valuation assumptions and insurance the adequacy of reserves to be satisfactory to the circumstances of his own company -- but subject to minimum reserve levels based upon a defined modified reserve method. Premium deficiency reserves may be required, and their calculation incorporates any existing dividend scales on participating products. There is, however, no direct statutory responsibility for pricing or for dividend equity. The professional actuarial standards as developed by the Canadian Institute of Actuaries (CIA) require the recognition of both the balance sheet and the income statement, and we use a single set of reserves for both statutory and published statements. The valuation actuary is required to file a report on an annual basis with the Superintendent of Insurance in Ottawa.

In the United Kingdom, the current role of the actuary is much broader. An appointed actuary is responsible for reporting on the financial condition of the company, which includes liabilities and surplus by fund. The appointed actuary is required to recognize the dividend policies and the intents of his company at the same time he is trying to satisfy valuation regulations promulgated by the government actuary. The professional standards of the U.K. Institute require that the appointed actuary take responsibility for product pricing, that he be aware of the company's financial condition on a continuing basis not just a statement date, and that he report to management and to the

government authorities as soon as he sees any particular problems. The appointed actuary has to file an abstract of his actuary's report with the required annual statement.

It is apparent that the current role in the United Kingdom and Canada is not dissimilar to that in Australia except the Canadian actuary does not have any direct responsibility for pricing or dividends. In contrast, the United States is in the early discussion stages concerning a statutory role for a valuation actuary, although a similar role exists for GAAP reporting in which the actuary must respond to the valuation standards of the Academy.

The models in the United Kingdom and Australia will have an influence on developments in Canada and in the United States in the future.

Certainly, the increased recognition of the valuation actuary in any jurisdiction requires that the professional bodies earn and maintain the public trust by demonstrating an adequate level of qualification and self regulation. All bodies must provide standards of conduct and practice and support these with the tools with which the actuary can fulfill his responsibility. It's necessary to have continuing education to ensure response to new developments and principles of practice. The profession will need to initiate programs to improve recognition of the valuation actuary's role with regulators, employers, and auditors.

All professional actuarial bodies have codes of conduct and discipline procedures to back them up. None of the bodies, however, have a mechanism for monitoring adequate compliance with those standards of practice with which the valuation actuary is expected to comply. It is imperative that monitoring takes place, that it is effective, and that it is seen to be effective. The disciplinary process by itself is not enough. The monitoring responsibility cannot be left to the supervising governmental authorities, although they obviously will be in a position to spot difficulties.

The CIA has a great deal to do as the valuation actuary's role unfolds. It needs to establish a reasonable role for the valuation actuary, probably modeled on the U.K. situation and therefore somewhat broader then it is today. The CIA has already formed a committee to consider a broadened role. This group will look at an extended involvement of the actuary in such things as the financial solidity of the company, the financial feasibility of the company's marketing plans, the appropriateness of the nature and value assigned to existing assets in relation to liabilities, and the appropriateness of asset and liability management and of the company's policyholder dividend and pricing practices. Not an insignificant undertaking. Additionally, the CIA will need to continue working with the accounting profession to enhance the financial reporting for Canadian companies. An example of the good relationship that these two professions have in Canada with each other is a recent proposal for a joint policy statement which recognizes the roles of both the actuary and the auditor in the financial statement preparation. Presently, the valuation actuary in Canada, although appointed by the board, is not required to report directly to the board, and the CIA should rectify this situation. A continuing development and refinement

of the standards is required, particularly in respect to new products, and it is hoped that the standards will adequately reflect the actuarial appreciation of various risk levels.

In the United Kingdom, the position is more advanced, so I would anticipate only continued development of their guidance notes for the valuation actuary, except that noted requirement for monitoring compliance with the standards.

The regulator and the implications for that position are extreme and broad. In all the jurisdictions, the regulators must monitor the standards of the profession, give guidance to the reporting form and content to be used in the statutory reporting, employ professional, qualified actuarial staff, and keep open lines of communication with the profession. In Canada, it is recognized that the actuarial profession can be increasingly relied upon to provide quality valuations because of the adoptions of standards of practice by the CIA. It's also recognized, however, that the statutory reporting, which is required by the valuation actuary, does not actually deal with the overriding question of solvency. The Department of Insurance in Ottawa should welcome initiatives of the CIA in establishing and maintaining reasonable solvency standards in Canada. Currently, both the department and the CIA are studying minimum capital and surplus requirements as part of the solvency concern. Taking a lead from the United Kingdom, the Canadian authorities should be receptive to the valuation actuary taking direct responsibility for equity and pricing rather than having to rely on the valuation process to make up for any shortcomings.

The U.K. Institute has demonstrated its responsibility through its standards and guidance notes, and requires that its members report to the government authorities on solvency concerns even though not required by statute. The relationship of the U.K. Institute and the authorities is such that there appears to be little further implication for the regulators.

In contrasting the various jurisdictions, I would suggest that the implications of an evolving valuation actuary's role in the U.K. are minimal, in Australia are moderate, in Canada are significant, and in the U.S. are gargantuan. The roles, the regulations, and the guidelines promulgated by regulatory authorities will be inversely related to the stage of development in which each jurisdiction finds itself today.

MR. JENKINS: In the structure which flows from the Australian legislative environment, the pricing and valuation responsibilities are unified in one person -- the statutory actuary. This means that the person who sets the terms and conditions of the business is also responsible for its ongoing financial control. An actuary, moreover, is not only responsible for premium rates but also must indicate the maximum commission terms for which he has allowed under that business.

The pricing process, therefore, is not under direct marketing control, and pricing is conducted within the actuarial responsibility. The result is that the chief marketing officer and the actuary must work closely

together in reaching policy terms acceptable to each. For the relationship to be effective, there must be mutual regard and open communication on all the considerations involved in finally striking a set of policy terms.

The actuary is also responsible under guidelines issued by the commissioner and concurred with by the profession for ensuring that benefit illustrations used for sales purposes are consistent with the creation of reasonable expectations concerning the level and variability of benefits. In short, the statutory actuary is expected to exercise a high measure of control over the liabilities that have been assumed by his company.

The final topic is implications for management. In life insurance the actuarial profession is rather unusual because it has the dual role referred to earlier requiring other members of the management team to accept the actuary as both a member of top management and as a person with special statutory and professional responsibilities. In particular, management needs to accept having among its number a person whose responsibilities involve him in taking a close interest in its areas and involve him in routinely giving the directors and the Commissioner an objective appraisal of the company's financial affairs. The chief marketing officer and the actuary must work together on product development and benefit illustrations; the chief investment officer and the actuary need to confer, as the financial condition report will analyze the company's assets and will comment on the investment policy, the results achieved, and the suitability of investment policy as to liabilities; the chief administration officer and the actuary need to confer on the records of the company; and so on.

There are simple reasons for the actuary's focal position in Australian life insurance: (1) statutory recognition and reliance, (2) the requirement for a financial condition report, and (3) the success with which actuaries have been able to conduct their dual role.

Clearly the Australian structure leads to tension between the actuarial function and other divisions of the company. However, by and large this has been a controlled and healthy tension which does not threaten the actuary's role as a manager. If this is to remain the case, actuaries need to become more effective communicators, using all means at their disposal by way of projection, simulations, and other tools to explain to their fellow managers the constraints they placed upon the assumption of liabilities, the commitment of surplus, and the term and nature of assets. Provided we can continue to do as we've done in the past -- namely, meet all the diverse and demanding requirements of the dual role -- then the Australian community will continue to be served well by the present structure of the role of the statutory actuary in Australia.

MR. AFFLECK: There is no question the valuation actuaries are becoming more involved in product development. It's my own belief, however, that this is largely the result of the interest-sensitive products that are now being offered, rather than the fundamental change in attitude. For example, I don't see that same involvement

taking place in companies where interest-sensitive products are not that important.

Here is a description of the characteristics of interest-sensitive products which I think are leading to this involvement:

I. Product pricing.

Product pricing for interest-sensitive products is done continuously, not just when a product is developed. Unlike traditional products, the actuary cannot establish a price when the product is sold and then sit back and watch experience emerge. Interest-sensitive products must be repriced each year. In fact, the long-term financial success of a block of business is probably more dependent on managing the block effectively after it's on the books than it is on setting the initial price when it is sold. Interest-sensitive products require active year-to-year management if initial target profit objectives are to be realized.

II. Interrelated assumptions.

Many of the major assumptions are interrelated. Table 1 shows five assumptions which are very dependent on each other. There needs to be one individual within the company who can understand the relationships between these parameters for purposes of initial pricing and future pricing. When experience is monitored, it is not enough to examine patterns for any one of these variables. Understanding the correlation and dependencies between the different assumptions is as important as considering variations in any one of them.

III. Pricing methodology for the initial pricing.

Traditionally, actuaries have used the best-estimate approach for pricing new products. Profit studies are developed using these best-estimate assumptions, or perhaps with modest added margins, and results are compared to a company's profit criteria. Some assumptions may be varied, and the profit studies rerun, for example, in order to see the impact of higher lapses or mortality.

TABLE 1

INTERRELATED ASSUMPTIONS

1) YIELD CURVES

2) INVESTMENT STRATEGY

3) CREDITED RATES

4) LAPSE RATES

5) POLICY LOAN UTILIZATION

With interest-sensitive products, pricing must be more sophisticated. For several years, we have been using scenario techniques, particularly regarding interest and lapse rates. As an example of this technique, Table 2 shows six illustrative yield curves. At the time this particular product was tested, yield curve #1 represented current interest rates -- a typical positive yield curve at the time, with most of the slope between the rates for maturities of one and four years.

TABLE 2

ILLUSTRATIVE YIELD CURVES
YEARS TO MATURITY

Curve	1	4	7	10	20
1	11.65%	13.00%	13.25%	13.38%	13.50%
2	13.00	14.25	14.60	14.70	15.00
3	14.00	15.50	15.75	16.00	16.50
4	16.50	17.00	17.25	17.50	18.00
5	18.00	18.00	18.00	18.00	18.00
6	19.00	18.00	17.00	16.50	16.00

Our starting point for profit study testing would be to assume a stable interest rate environment and use this yield curve in all years. Our client would specify its investment strategy, that is the allocation of cash flow between investments with different maturities.

Our scenario testing, for example, would continue yield curve #1 for three years and then move through yield curves #2, #3, and #4 over the next three years. Then we might return to yield curve #1. Different clients would want to test different variations in the yield curve; some would want to see the impact of an inverted yield curve at some point in the future which would be yield curve #6 in this table. Others would be satisfied with yield curve #4 as an upper boundary, while some would want to test as high a scenario as 20 percent long-term interest rate.

In each scenario, the other assumptions in the first table would have to be modified to follow the interest rate assumption for that particular year. For example, when interest rates moves to yield curve #4, two choices are available:

1. The credited rate continues to be based on the portfolio average for the block and lapse rates are increased significantly, since we assume higher market rates are available from other companies.

2. The credited rates would be allowed to follow market rates, probably resulting with a negative spread for some period.

Scenario testing allows company management to visualize what will happen under each set of future interest rate paths. It is then in a position to decide whether it is willing to accept the level of risk implied by some of the adverse scenarios.

More recently, some Milliman and Robertson actuaries have moved to probablistic approaches in our pricing work. For example, we would expand the number of yield curves from the few shown to perhaps as many as twenty. These yield curves would be both above and below current interest rate levels, and we would attach probabilities that given we are starting curve #1 today, we will move to curve #2, curve #3, and so on next year. Monte Carlo techniques are used to move from one year to the next, and many trials are simulated in order to achieve statistically reliable results.

Superimposed over the simulation can be a determination of the investment strategy which results in the maximum profits in this block of business for a specific financial criteria. These criteria might take one of the following forms.

1. Maximum statutory loss in any calendar year of $X.

2. Maximum statutory loss over the lifetime of the block of business of $X.

3. Losses in any two consecutive calendar years restricted to $X.

We have not completed the evolution of pricing techniques for interest-sensitive products. The movement from best estimates to scenario testing to probablistic approaches is a response to management's desire to better understand the risk associated with a block of business and to gain insight into the most effective investment strategy for minimizing that risk and achieving an acceptable level of profit. This leads to the valuation of interest-sensitive products.

Since the actuary will be called upon to express an opinion that the future cash flows make an appropriate provision for future obligations, it is essential to coordinate the testing that will be done by the valuation actuary with that done by the actuary doing the pricing. If the valuation actuary employs scenarios which are significantly different from those of the pricing actuary, a potential problem can arise. Clearly, companies will want to use the same methodology, scenarios, and related assumptions for their pricing and valuation work. The pricing actuary will need to understand the valuation requirements and be able to illustrate to management the reserve and surplus levels needed to support the product under assumptions of "reasonable" or "plausible" fluctuations in future interest rates. Consistency is critical. Companies will not be able to properly evaluate new products unless the pricing actuary can illustrate the internal surplus required to cover these "plausible" fluctuations.

The last element is subsequent pricing. Interrelated with the work, which the valuation actuary must complete for statutory statements, is the work which the product line manager must do in setting the

credited rate on a block of business in the future. Obviously, the emerging experience must be monitored and compared to the initial objectives. If target spreads are not being achieved and/or the current credited rate is uncompetitive, trade-offs must be evaluated. What will happen to the lapse rate if the credited rate is lowered or maintained? It is better to make small changes to move toward the required spread? Or is it better to make the full change immediately? Does the competitive situation significantly affect business in renewal years? How much of a deterrent are the surrender changes?

The point to be emphasized is that, once again, close coordination and cooperation between the valuation actuary and the pricing actuary are essential. There is no reason why both actuaries cannot use the same systems and methodology, but that clearly requires advance communication.

Mr. Jenkins commented that the profession in Australia does not favor the introduction of guidelines for the appointed actuary which might tilt the balance of the dual role too much toward making the actuary akin to an independent auditor appointed by a meeting of shareholders. Once that were done, the actuary would be seen primarily as a form of internal auditor and would become increasingly divorced from the top management team.

We are clearly taking a step, and I am not sure how large a one it is, in the direction of making the actuary more independent within the management group. I too hope this would not lead to the actuary eventually being placed in the same role as the internal auditor. On the other hand, I am greatly concerned that regulators in the United States will not be prepared to accept the actuary's opinion as being objective, if he continues as an integral part of management. Although concerned about this issue, I offer no suggestion other than to go ahead with the recommendations of the joint committee to have the valuation actuary appointed by the board of directors and hope that our experience in that environment will be positive. The actuary will be called upon to give objective, realistic, and reliable reports to regulators. At the same time, he must be able to work effectively with management and not always be viewed only as the one member of management who applies the brake.

MR. MCCUBBIN: The implications for product development in the valuation actuary's role is entirely dependent upon the responsibility you want to assign to that role in respect to pricing, equity, and general financial condition. At the one extreme, the U.K. appointed actuary is responsible for all three of those items with reference to the U.K. Institute guidance notes to premiums, equity, and bonus reserve valuations. At the other end, we have Canada with no defined role for pricing or equity.

The present Canadian statutory regulations require that the valuation actuary hold a premium deficiency reserve when necessary. This gives the valuation actuary an interest in the pricing and dividend levels of his company, even though he may have no direct responsibility for them. As I intimated earlier, the current developments suggest

strongly that the valuation actuary's role will be extended soon to encompass pricing, equity, and financial condition concerns.

Product development is far more than just setting the price. An increased valuation actuary's role will require a complete awareness of all of the impacts of any new product development. The valuation actuary will need to consider the premium rates and dividends, the cash flows, suitable asset support, statutory reserving requirements, financial reporting implications, and surplus appropriateness in respect to solvency -- for example, cash value floors. For one person to be both a product development and a valuation actuary requires a high level of professional integrity. You are asking that individual to ensure compliance with the valuation, professional, and regulatory standards whiles at the same time trying to give full weight to the marketing considerations of his own company. In a management relationship, this is going to be difficult to satisfy. In Canada, one opinion suggests that the embodiment of this rather large responsibility in one individual is proper. However, the opposing view is that the product development is done better by a separate individual, with the valuation actuary having his say as a person with an independent perspective. If these two positions are distinct, there is the obvious need for coordination and communication at all stages of the product design and pricing so that the risks can be identified and the valuation strain surprise avoided.

Interestingly, the U.K. and Australian models suggest one person carry the ultimate responsibility for product development and valuation. Current initiatives in Canada lean in the same direction, but it remains to be seen whether the opposing view will prevail.

Whether the valuation actuary is on the management team or an outsider, management must rely on his advice and support his freedom to act in a professional manner. Management should encourage a close relationship between the actuary and the company auditor. Management should seek to retain a qualified valuation actuary on a continuing basis and should provide adequate resources and authority for that valuation actuary to do a professional job.

If the valuation actuary is a member of the management team, the rest of management must recognize and accept that he does have a dual role, which he has to play out, and particularly, management must recognize that the valuation actuary's role at times will be dominant. It is not difficult to conceive situations where this dual role will have a constraining affect on management and would make the valuation actuary's role difficult.

In Canada, the actuary generally enjoys a strong and respected position so that the valuation actuary's role assigned to him back in 1978 has caused few problems, but there have been some. It is to be expected that an increased role for the valuation actuary will be equally well received, except as the valuation actuary's appointment and reporting aspects might be concerned. The suggestion that the actuary report directly to the board will be received negatively and will require efforts on the part of the CIA to make it a viable and workable proposal. On

the other hand, a suggestion that the valuation actuary be elected by the shareholders and policyholders of the company is not likely to be well received by many company managements. That proposal has already been made by a joint task force of the CIA and Canadian Institute of Chartered Accountants (CICA), which is the accounting body in Canada. In 1985, managements will probably be faced with the introduction of the previously mentioned joint policy statement which will indicate that the actuary and the auditor are relying on the work of each other. This statement will require disclosure of this relationship in the published financial statements of the company, and the auditor's opinion will no longer reference the actuary's role in the determination of reserves and liabilities. For those of you not familiar with the Canadian Auditor's Statement, it has always merely said, "that in respect of the policy benefit liabilities, we have relied upon the opinion of the valuation actuary." Management acceptance of this particular change in practice has yet to be determined. Even if the status quo continues in Canada, management will be required to recognize the importance of the valuation actuary's report to the regulatory authorities even through this report is not presently required to be given to the management or the company board officially.

The accepted role of the appointed actuary in the United Kingdom suggests that there are few management implications. In Australia, we see a mandated and recognized role, but there are current concerns about the independence of the actuary and, therefore, his ability to perform the traditional dual role of a valuation actuary and a management person. In Canada, the management implications are greater than either the U.K. or Australia but when compared to the uphill battle for management recognition in the United States, Canada's position doesn't appear bad at all. In the U.S., to ask management to rely on an actuary's reserve levels, which differ from prescribed minimum reserves, will be a gigantic step.

MR. AFFLECK: Mr. Jenkins, picking up on your comment about the actuary being able to remain a member of the management team while still providing this independent objective opinion, have you got any observations as to why that is likely to be successful in Australia? Is there a particular relationship between your life insurance commissioner and the profession?

MR. JENKINS: There's a long standing tradition of the actuary being a key member of the top management team at the same time being responsible professionally under the Life Insurance Act. For a long time, this was an easy dual role because the environment was quite stable. With the degree of upheaval and change in the environment that has occurred in the last ten years, the pressure is to improve guidance and standards and work in the professional area, but it's happened from within a structure that was already in place, so it was much easier to upgrade the professional role. It's been evolutionary rather than revolutionary.

MR. D. BRUCE DIXON: If you consider for a moment a large multinational insurance company doing business in all product lines in Canada, the U.S., the U.K., and perhaps a few other places and then

think of the role of the valuation actuary as we're describing it, the actuary is going to sign off on reserves which means an understanding of the regulations and requirements in the U.K., and the United States, Canada, and other places. He probably will be asked to sign off on tax reserves at some point which means an understanding of tax rules in all three countries. He is supposed to have a complete understanding of pricing considerations, solvency, and investment strategy. This is an enormous task. I don't think one man can address all of those areas unless, as a practical matter, the job is split through some kind of segmentation of the company or if he has the right to say, "I have explicitly relied on the work of some other person in this particular segment of the company." What do you people think of splitting the job that way?

MR. MCCUBBIN: Your point is exceptionally well made. The task we are defining for the valuation actuary is extremely broad, particularly for the multinational. I don't feel that the job can be split. I think it is the responsibility of a single individual because the interrelationship of the various segments, which you have defined, are all going to have an impact somewhere on the total corporation, and unless someone draws those together, then although the pieces may be well handled, they may be in opposite directions. That does not say that the valuation actuary is not well supported by any number of other individuals. In our own shop, we have probably a half-dozen people doing valuations by product line, and we require of those individuals the responsibilities of a valuation actuary for those lines. They certify to the single valuation actuary of our firm that they've done a certain kind of a job. It imposes upon the valuation actuary the responsibility for ensuring that he has set the appropriate criteria and given the direction that he feels will allow him to, in good conscience, sign that single opinion. There is indeed the possibility of what you might call suboptimization -- people looking at their own product line and not considering the general overall welfare of the corporation even though what they do in one product line may have implications for the rest of the corporation. That's why, in general, there is a tendency to go through one individual who is responsible in a sense for considering the overall welfare of the organization whether it's different countries, different product lines, or anything along that order.

MR. WALTER SHUR: Mr. McCubbin mentioned the insolvencies in the U.K. during the 1970s. Were those attributed to failure on the part of the valuation actuaries? Did the reputation of the valuation actuary suffer as a result of that? Were there significant legislative changes in the responsibility of the valuation actuary? Was his freedom limited in some way?

MR. MCCUBBIN: I was not directly involved in that but, someone in the audience was on the scene. Mr. Loney, would you like to respond to that question as being a U.K. actuary in that era?

MR. DAVID A. LONEY: The effect on the valuation actuary's role stemming from these insolvencies was to considerably strengthen it. The role was somewhat ill-defined before, and afterwards. the role was significantly strengthened. The major reason the company went broke

was that it was selling guaranteed accumulation bonds with high guaranteed cash values. The importance of the cash value option was not properly appreciated by the people who approved the issuance of those contracts, and that was what led to the debacle.

MR. AFFLECK: One of the major concerns in this issue is to structure the actuary's opinion in such a way that he isn't held responsible for mismanagement in the company.

MR. SHRIRAM MULGUND: The role of the actuary in the past few years has changed. Previously, the role was the balance sheet, and the main emphasis was on solvency. Now, the role is changing in the direction of the earnings side. For example, what is the effect of increased sales on the valuations? This is the main reason for the interaction between the accounting and the actuarial professions. Do you see any continuation of that effect?

MR. MCCUBBIN: Our experience very much has been an evolution along those lines. We still have our balance sheet role. Our opinion is very much a point of time opinion on the proper value of liabilities. The need to look at the company more fully in an ongoing sense hasn't affected that; it's led to the development and refinement of the financial condition report process. Unlike the direction in the United States, the direction in which we're going is that we're not changing the opinion too much at this stage, but we have a report that goes from the valuation actuary to the board. The regulator receives a copy of it. The report is expected to deal with all the issues fully so that directors get full advice and the regulator can rely upon them. If the report indicates a problem, the directors act or the regulator steps in. If the regulator doesn't think the quality of the advice is good, he confronts the profession and the actuary. All the time there's more issues being put into the financial condition report.

MR. AFFLECK: In the United States, because of the separation of GAAP from statutory, the focus now is more on the solvency-and statutory-related issues. GAAP has been going along as it has been over the last several years, and there are no major issues there at the moment.

MR. MCCUBBIN: The purpose of the statement needs to be recognized. Mr. Affleck was referring particularly to the Canadian Statement, and that serves the fuller role of statement reporting in Canada, i.e., a single set of reserves for published and statutory purposes. It is that dual role of the statement that has required the actuary to take a more active interest in the income statement side of reporting. In the other jurisdictions, if you're limiting yourself primarily to a solvency type reporting, then you can limit yourself to the balance sheet as well.