LIFE INSURANCE (C3) SUBCOMMITTEE

Reference:
   1979 Proc. I p. 553
   1979 Proc. II p. 468

J. Richard Barnes, Chairman— Colorado
Richard S. Baldwin, Acting, Vice-Chairman — Iowa

AGENDA

1.   Report of the Standard Nonforfeiture and Reserve Valuation Laws Task Force.

2.   Report of the Life Insurance Cost Disclosure Task Force.

3.   Report of the Task Force on Revision of Group Life Insurance Model Laws.

4.   Report of the Task Force to Evaluate the NAIC Model Life Insurance Solicitation Regulation.

5.   Group accident and sickness conversion privileges.

6.   Change of carriers for group health insurance.

7.   Integration of Social Security Benefits with LTD.

8.   Workers comp. exclusion.

9.   Any other matters brought before the subcommittee.

CONTENTS

The Life Insurance (C3) Subcommittee met in the Sacramento Room of the Bonaventure Hotel in Los Angeles, California, at 1:00 p.m. on December 3, 1979. All members were present or represented except Iowa, Guam and Maryland.

The chairman noted that items 5, 6, 7 and 8 on the agenda have been moved to the Accident and Health (C1) Subcommittee agenda for discussion on Wednesday at 9:00 a.m.

1. Life Insurance Cost Disclosure Task Force

Task Force Chairperson, Erma Edwards of Nevada presented the report, a copy of which is attached to this report. The report was received and adopted by the subcommittee. (Attachment One)

2. Report of the Task Force on Revision of Group Life Insurance Model Laws

The chairman reported it is still difficult to select a new chairman for this task force. This should be accomplished this week.

John Meyerholz of the American Council of Life Insurance pointed out that the last model group law was adopted in 1956. Virtually all states have made major or minor amendments since then resulting in almost no uniformity. He urged early completion of the task force work, followed by adoption by the states.

3. Report of the Task Force to Evaluate the NAIC Model Life Insurance Solicitation Regulation

In the absence of Commissioner Hemmings of Michigan, Bill Wadsworth reported that the public hearings were held by the task force in Detroit on November 19 and 20. A full transcript and summary should be available through NAIC Executive office in January. A copy of the task force report is attached. (Attachment Two)

4. Report of the Standard Nonforfeiture and Reserve Valuation Laws Task Force

John Montgomery reported for the task force (Attachment Four). It was moved, seconded and unanimously passed that a recommendation be made to the parent committee that the Central Office edit and compile the work accomplished over the past few years by the task force. A great amount of valuable information has been accumulated.

Richard Barger, attorney, and Gregory J. Carney of Anchor National Life proposed certain amendments to the task force report which would apply the changes only to policies subsequently issued, and not retroactively. The subcommittees voted to take it under advisement. (Attachment Three)

It was moved, seconded and passed that the task force report be adopted.

5. Other Matters

George Hardy, Legislative Council of NW Mutual Life Insurance Company, presented the status report on states' adoption of changes in policy loan interest rate laws. A copy of the summary is attached for reference (Attachment). It was moved, seconded and adopted that recommendation be made to the parent committee that a study be made of the advisability of the use of dynamic (or floating) interest rates of mortgage loans be considered.

There being nothing further, the meeting adjourned at 2:40 p.m.

J. Richard Barnes, Chmn., Colorado; Richard S. Baldwin, Acting, V-Chmn., Iowa; Wm. H. L. Woodyard III, Arkansas; James Montgomery III, Acting, District of Columbia; Ignacio C. Borja, Guam; Edward J. Birrane, Jr., Maryland; Walter Weaver, Nebraska; Donald W. Heath, Nevada; Lowell L. Knutson, South Dakota; Durwood Manford, Texas; Susan Mitchell, Wisconsin.

(ATTACHMENT ONE)

(C3) Cost Disclosure Task Force

Los Angeles, California
December 2, 1979

The Life Insurance (C3) Cost Disclosure Task Force met on September 25, 1979 at the Detroit Plaza Hotel in Michigan and on December 2, 1979 at the Bonaventure Hotel in Los Angeles.

Written status reports were received from Thomas Kelly, Chairman of the Advisory Committee on Manipulation; Charles Greeley, Chairman of the Advisory Committee on Monitoring the impact NAIC model life solicitation regulation, and Helen Noniewicz, Chairman of the Advisory Committee on Policy Lapsation. The written reports are attached to the task force report.

The Advisory Committee Report on Manipulation is confined to the discussion of manipulation in connection with the use of cost indices in the sale of new policies. Manpulation is said to be present if a policy's progression of premiums, dividends and benefits makes the policy appear unrealistically attractive in competition and such progression is determined to have no acceptable rationale. A final report on this assignment is expected to be submitted to the task force at the June 1980 meeting.

The advisory committee requested further guidance from the task force on the scope of its future work that could cover broader areas.

The advisory committee on monitoring the impact of the NAIC Model Life Solicitation Regulation reported on the four studies currently being worked on by the committee. The studies include: The Degree of Company Compliance, the Impact on Company, the Impact on Agents, and the Impact on Consumers. A questionnaire concerning the impact of the regulation on the companies has been prepared and is being pre-tested through mailings to 17 companies. The questionnaire will be sent to a larger group of companies after the pretext results have been analyzed by the committee. The committee anticpates the preliminary report based on the results of the completed projects to be submitted to the task force in 1980.

The advisory committee on policy lapsation has prepared two different questionnaires for testing the lapsation disclosure system. One questionnaire concerns company informational items. The second questionnaire contains reporting forms for the test data. The two questionnaires have been distributed to 1,100 companies. A report on the results of the testing will be submitted to the task force in 1980.

The dividend philosophy report was given by Thomas Kelly in the absence of John Harding, chairman of the committee. The committee plans to meet early in January and is currently working on the development of a format and language for the actuary's disclosure of his company's dividend practices. The committee is expected to consider disclosure on the annual statement and separate disclosure in relation to dividend illustrations. The written report is attached to this report.

William Snell, Chairman of the Wisconsin Special Task Force to Study Rate of Return, reported on the progress of his committee. Mr. Snell said their report will deal with three proposed uses of Linton Yield, or rate of return. The uses are to compare similar plans, compare dissimilar plans, compare Whole Life with Buy Term and Invest the Difference. The completed report should be ready by March 1980. Mr. Snell's report is attached.

John Booth of the American Counsel of Life Insurance requested to amend the NAIC Model Annuity and Deposit Fund Regulation to clarify certain exemptions relating to variable annuity contracts. Mr. Booth suggested the following changes in the language of the model regulation. (Underlining indicates additions and bracketing indicates deletions.) (As adopted December 1979.)

Sec. 3 SCOPE

    A.   . . .

    B.   This regulation shall apply to:

        1.   Individual deferred annuities and group annuities other than contracts exempted by Section 3(C) below. [(a) variable annuities; (b) investment annuities; and (c) contracts registered with the Federal Securities and Exchange Commission.]

        2.   . . .

    C.   This regulation shall not apply to:

        1.   Individual deferred annuity contracts and group annuity contracts which are: (a) variable annuities; (b) investment annuities; (c) contracts registered with the Federal Securities and Exchange Commission; and (d) contracts which have variable annuity features available at the option of the contract owner.

        (Renumber Sections 1 through 6 and Sections 2 through 7.)

The task force voted to accept this proposal.

In closed session, the task force voted to instruct the Manipulation Advisory Committee to limit its initial activities to the detection and prevention of manipulation in new sales as opposed to ongoing disclosure for in-force policies. The task force also voted to request the special Wisconsin Task Force to provide a statement dealing with the advantages and disadvantages of the rate of return disclosure in replacement situations.

A model regulation on partial-endowment-type ("Deposit-Term-Type") insurance policies was discussed during the closed session. The task force voted to submit the regulation as an exposure draft with this report. The task force will consider all responses to the exposure draft at their next meeting and hope to propose a final regulation at the June 1980 meeting.

The meeting adjourned at approximately 5:30 p.m. on December 2, 1979.

Erma Edwards, Chairperson, Nevada; William H. L. Woodyard, Arkansas; J. Richard Barnes, Colorado; Larry Gorski, Illinois; Richard A. Hemmings, Michigan; Thomas Kelly, New York.

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To: Life Insurance (C3) Cost Disclosure Task Force

From: Advisory Committee on Manipulation

Date: November 28, 1979

Re: Interim Report

Owing to time constraints, this interim report of the Advisory Committee on Manipulation has not been reviewed and approved by all the members of the advisory committee. However it is felt appropriate to make this interim report to the (C3) Cost Disclosure Task Force inasmuch as this report reaches no final conclusions and inasmuch as dissents to this report can be filed at a later date by any Advisory Committee members who want to do so.

The current membership of the advisory committee is as follows:

Mr. Thomas J. Kelly, Chairman
Chief Life Actuary
State of New York
Insurance Department
Two World Trade Center
New York, NY   10047

Professor Joseph Belth
Professor of Insurance
Indiana University
School of Business Building
Graduate School of Business
Bloomington, IN   47405

Mr. Kenneth J. Clark
Vice President & Chief Ordinary Actuary
Lincoln National Life Insurance Company
1300 South Clinton Street
Fort Wayne, IN   46801

Mr. Thomas F. Eason
Vice President & Actuary
Security Mutual Life Insurance Company
P. O. Box 82248
Lincoln, NB   68501

Mr. Walter N. Miller
Senior Vice President and Actuary
New York Life Insurance Company
51 Madison Avenue
New York, NY   10010

Mr. E. J. Moorhead, F.S.A.
2594 Woodberry Drive
Winston-Salem, NC   27106

Mr. Richard C. Murphy
Actuary, Life Division
Aetna Life & Casualty
151 Farmington Avenue
Hartford, CT   06156

Mr. Paul J. Overberg
Senior Vice President & Chief Actuary
Allstate Life Insurance Company
Allstate Plaza
Northbrook, IL   60062

Mr. C. Norman Peacor
Executive Vice President and Chief Actuary
Massachusetts Mutual Life Insurance Company
1295 State Street
Springfield, MA   01111

Dr. Brenda Roberts
Firemans Fund Life Insurance Company
1600 Los Gamos
San Rafael, CA   94911

Professor William C. Scheel
Associate Professor of Finance and Insurance
School of Buisness Administration
University of Connecticut
Storrs, CT   06268

Professor Harold Skipper, Jr.
Associate Professor of Insurance
Georgia State University
University Plaza
Atlanta, GA   30303

Mr. Julius Vogel
Senior Vice President & Chief Actuary
Prudential Insurance Company
Prudential Plaza
Newark, NJ   07101

The advisory committee has met five times. Much of the discussion has consisted of attempts to delineate the scope of the issues the Advisory Committee should be considering.

This interim report is confined to a discussion of manipulation in connection with the use of cost indices in the sale of new policies. However, the Advisory Committee has not made a final decision on the scope of its work, and it is possible that future reports may cover other or broader areas. Further guidance on this matter from the (C3) Cost Disclosure Task Force will be appreciated.

For purposes of this interim report, manipulation is said to be present if a policy's progression of premiums, dividends and benefits makes the policy appear unrealistically attractive in competition and such progression is determined to have no acceptable rationale.

In the advisory committee's preliminary studies, it appeared that manipulation may be identified by certain discontinuities in cost indices and in the policy data underlying such indices. The advisory committee proposes that quantitative standards be developed which will eliminate some minor discontinuities from being considered as indicative of manipulation. Such standards will constitute a kind of safe harbor for policies. Thus, if the company's actuary certifies that the policy meets the quantitative standards, the policy will prima facie be considered free of manipulation. In such a case, no detailed submission of premiums, dividends and benefits to the insurance commissioner will be routinely required, unless of course, a commissioner asks to review the actual figures.

However, if the actuary is unable to certify that the policy's premiums, dividends and benefits fall within the quantitative standards, then the advisory committee proposes that the company be required to submit all the numerical data for the policy to the insurance commissioner, and the burden will be on the company to explain why the policy values should not be considered manipulated. If the commissioner accepts the company's explanation, then the policy will not be considered to be manipulated. However, if the company's explanation is not acceptable to the insurance commissioner, the policy will be considered to be manipulated.

The advisory committee has not yet decided what quantitative standards a policy's values must satisfy in order to fall into the safe harbor of policies that are prima facie considered free of manipulation. An extensive data base of policy premiums, dividends and benefits is available to the advisory committee and computer tests of various proposed quantitative standards are under way.

Although some preliminary calculations with the data base used several types of cost indices, the advisory committee has agreed that the quantitative tests should use the data that enter into the interest adjusted net costs and net outlays. Obviously such tests will involve durations in addition to the 10 and 20 year periods that are used in the NAIC Life Insurance Solicitation Model Regulation.

The question whether the data should be analyzed on a year-by-year basis, or for holding periods of various lengths, has not yet been settled. There are good arguments on both sides.

Some of the quantitative tests under consideration are:

(1)   Fitting trend lines or curves to cost indices at various durations and comparing the expected costs and outlays at durations 10 and 20 derived from those trend lines or curves to the costs and outlays actually quoted at durations 10 and 20.

(2)   Putting limits on the squares of the second differences of year-to-year policy costs.

(3)   Testing whether there are durations at which it would pay an individual to borrow (from the policy or elsewhere) the money needed to keep the policy enforce an additional year.

As indicated above, the advisory committee's current thinking is that the company's actuary should certify that a policy meets the quantitative standards that are ultimately adopted. A new certification will be required whenever premiums, dividends, or benefits are changed on a policy. If the actuary is unable to make the certification and if the company is unable to carry out its burden to explain to the insurance commissioner's satisfaction why the policy should not be considered manipulated, then the commissioner will have a spectrum of remedies available. Some possibilities are:

(1)   The commissioner can require that for sales of the policy in question cost indices be displayed for durations in addition to the normal durations 10 and 20.

(2)   The commissioner can require a warning to be printed on the policy summary to the effect that the cost indices at durations 10 and 20 are unrepresentative of the costs at other durations.

(3)   The commissioner can disapprove the policy for sale in that state.

The advisory committee believes that state requirements and regulations with regard to the detection and control of manipulation should be as uniform as possible. The advisory committee further suggests that insurance commissioners underake a review of their legal authority to deal with instances of manipulation.

The advisory committee is making every effort to submit a final report on this phase of its assignment, together with any dissenting comments or recommendations, to the (C3) Cost Disclosure Task Force prior to the June 1980 NAIC meeting.

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To: Life Insurance Cost Disclosure (C3) Task Force

From: Joseph M. Belth, Member Advisory Committee on Manipulation

Date: December 11, 1979

Re: Interim Report of Advisory Committee on Manipulation

Introduction

As indicated in the interim report of the advisory committee on manipulation dated November 28, there was no opportunity for all the members of the committee to review and approve the report prior to its submission. At the committee meeting on November 20, Mr. Kelly (of the New York department, and chairman of the committee) assigned to Mr. Vogel (of the Prudential, and a member of the committee) the task of preparing the interim report. I received a copy of the report by express mail on November 29, and discussed the report briefly with Mr. Kelly on the telephone that day. I informed him that I would be submitting a memorandum expressing my concerns about the interim report.

Scope of Manipulation

The advisory committee has thus far devoted itself almost entirely to what I view as one small aspect of the manipulation problem. The definition of manipulation in the third paragraph on page 3 of the interim report, for example, is one of numerous definitions that have been considered by the committee, and is one of the more narrow of those considered. In my opinion, a sufficiently comprehensive definition of manipulation is as follows:

> Manipulation is present when, because of the absence of requirements for full disclosure of the structure of all its new and existing policies, at least some of a company's offerings tend to make the company look better to a policyholder or to a prospective buyer than the company deserves to look. The emphasis in this defini-tion is on the policyholder or prospective buyer. When manipulation is said to be present, there is no intent to suggest that the manipulation is necessarily deliberate on the part of the company.

Encompassed in the above definition are not only the kinds of year-to-year price discontinuities encompassed by the definition contained in the interim report, but also a variety of practices excluded from consideration by the latter defini-tion. For example, the subject of manipulation may be divided for convenience into the following three categories: Class A manipulation includes practices that are revealed through full disclosure of the structure of existing policies as well as new policies; Class B manipulation includes practices that are revealed through full disclosure of the structure of two or more new policies; and Class C manipulation includes practices that are revealed through full disclosure of the structure of a single new policy.

In my opinion, what the committee has been concentrating upon comprises only one aspect of Class C manipulation. The interim report states that future reports may cover "other or broader areas," and seeks guidance from the task force. I feel future reports must cover broader areas, and that guidance from the task force is not needed. Presumably the advisory committee was appointed for the purpose of providing advice to the task force concerning manipulation, and it seems to me that the advisory committee should be providing guidance to the task force rather than the other way around. To put it bluntly, I detect a desire among most of the advisory committee members to prevent the advisory committee from getting into various sensitive and controversial areas by interpreting its charge in an extremely narrow fashion.

Long-Time Policyholders

Without doubt the most sensitive and controversial subject of all is the treatment of long-time policyholders, which falls into the category of Class A manipulation. In the words of James F. Reiskytl, F.S.A., in his March 26 letter to the advisory committee:

> The public record shows that there are mutual companies that have not changed their dividend scales for blocks of old business for long periods of time, some as long as 20 years. At the same time, these companies have introduced improved illustrated dividends for new issues every few years. Thus, old policyholders have received no share of improving mortality and higher investment earnings, even though such improvements are passed along to successive new groups. At best it may be some sort of half-baked, undefined investment year method. At least it appears to clearly qualify as malignant manipulation.

We know that often the actuaries of these companies have been concerned, but they have received no support from their companies; nor from the regulators, nor even from the actuarial profession. Nobody cares. We think it is time somebody cared!

Most of the members of the advisory committee on manipulation seem content to await the results of deliberations by the dividend committees of the Society of Actuaries and the American Academy of Actuaries. Recently a report was released by the Society committee, and now it appears that the critical decisions rest with the Academy committee, which has not yet issued a report. I believe the advisory committee on manipulation should not be awaiting action by the actuarial organizations. Rather, I believe the advisory committee on manipulation should be taking the lead in recommending appropriate action by the NAIC. I intend to continue my efforts to persuade the committee to tackle the dividend area.

Other Controversial Matters

Although the treatment of long-time policyholders is the most sensitive and controversial issue, there are other controversial areas that have been skirted by the committee. One such area, which falls into the category of Class B manipulation, involves so-called bait-and-switch tactics. For example, a company might issue a favorably priced policy with a small commission for the agent, and an unfavorably priced policy with a more attractive commission for the agent. Prominent publicity might be given to the favorably priced policy, but most of the sales might involve the unfavorably priced policy.

Another controversial area skirted by the committee – and one which falls into the category of Class C manipulation – is the development of so-called partial endowment type (deposit term) policies. If the excess first-year premium (which is not a deposit) and the tenth year cash value are specifically related to one another in such a way that sales materials can refer to a 10 percent annual rate of return on the so-called deposit, the situation clearly qualifies as manipulation.

Although the committee thus far has avoided these and other controversial areas, I intend to continue my efforts to persuade the committee to tackle them.

Prohibition versus Disclosure

There are two general approaches to dealing with the manipulation problem – the prohibition approach and the disclosure approach. The advisory committee on manipulation has concentrated its efforts to date almost exclusively on the prohibition approach, and in my opinion has failed to give adequate consideration to the disclosure approach.

Under the prohibition approach, it is necessary to arm the insurance commissioners with techniques for detecting situations that may involve manipulation, and then arm them with the necessary weapons for dealing with manipulation once it has been detected. This approach not only imposes enormous burdens on insurance commissioners, but also gives companies the opportunity to persuade the commissioners that any situation in question has an "acceptable rationale." In my opinion, the prohibition approach is doomed to failure.

Under the disclosure approach, it would be necessary for companies to reveal fully the price structures of their new and existing policies. In this fashion, not only would insurance commissioners have the opportunity to identify situations that may involve manipulation, but also the information would be available to agents of both the company in question and competitors of the company, to actuaries of the company's competitors, to consumers, and to various outside observers. In my opinion, the disclosure approach has considerable potential for dealing successfully with the manipulation problem.

Since the life insurance industry is adamantly opposed to the concept of rigorous disclosure, and since a majority of the advisory committee on manipulation consists of life insurance industry representatives, it is not surprising that most of the committee members take a dim view of the disclosure approach. I intend to continue my efforts, however, to persuade the committee to give careful consideration to the disclosure approach to the manipulation problem.

Committee Documents

Since readers of a committee report are likely to assume that all the committee members had equal access to committee documents, it is essential to point out that some members of the advisory committee on manipulation had the benefit of committee documents that were not made available to certain other members of the committee. The interim report states that the committee met five times. This is not correct; the committee met seven times, and was reconstituted after the first

two meetings by the addition of several new members. I was one of the new members. At the first meeting of the reconstituted committee, I requested the minutes of the two meetings of the original committee, together with all memoranda, correspondence, and other documents generated by the original committee. My request was denied.

Location of Committee Meetings

Although the NAIC has from time to time considered the possibility of reimbursing independent members of advisory committees for their out-of-pocket expenses, it is my understanding that no such expense reimbursement program has yet been initiated. However, I believe it is the policy of the NAIC to encourage advisory committees to arrange their meetings in such a way as to minimize the travel expenses of independent committee members.

In the case of the advisory committee on manipulation, this NAIC policy is not being followed consistently. One meeting was scheduled in Toronto for the convenience of several independent members who were in that city to attend the annual meeting of the American Risk and Insurance Association. The other four meetings that have been held since the committee was reconstituted to include several independent members, however, have been held in New York, Newark, Washington, and Chicago. The next meeting (in January) is scheduled for Newark. Mr. Moorhead and Professor Skipper have repeatedly requested that a meeting be held at the Atlanta airport for their convenience, but we have yet to meet there. I have repeatedly requested that a meeting be held at the Indianapolis airport for my convenience, but we have yet to meet there. If the committee's objective is to exhaust the financial resources of the independent members, it is well on its way to achieving that objective.

Future Committee Activities

I intend to continue my efforts to persuade the committee to tackle the entire scope of the manipulation problem. If I succeed, the committee may bring some substantive recommendations to the task force at the June 1980 NAIC meeting. If I do not succeed in persuading the committee to tackle these critical matters, I will submit my own recommendations to the task force in the form of a memorandum accompanying the report of the committee majority.

Disposition of this Memorandum

I request that the task force acknowledge receipt of this memorandum, and confirm that it will be treated as an attachment to the interim report of the advisory committee on manipulation dated November 28, 1979.

Disclaimer

I am not being compensated for the preparation of this memorandum. The views expressed in the memorandum are my own and not necessarily those of any institution, organization, or other individual.

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To: Erma Edwards, Chairperson
         Life Insurance (C3) Cost Disclosure Task Force

From: Helen T. Noniewicz, Chairman
         Industry Advisory Committee on Policy Lapsation

Re: Status Report

The Industry Advisory Committee on Policy Lapsation met in late June to discuss procedures to be used in testing the lapse rate disclosure system developed by the committee. Testing of the system was requested by the NAIC Life Insurance (C3) Subcommittee at its June annual meeting. The results of the testing, along with interpretive guidelines will be circulated to all commissioners by the task force for evaluation purposes.

During the summer months, two questionnaires were developed for testing the disclosure system:

1.   A questionnaire concerning company informational items, current persisting efforts, causes and time factors of the proposed system, etc.

2.   The second questionnaire contained reporting forms for the test data. Supplementary information which may be useful in further "normalizing" or explaining lapse variances is requested in addition to the test data needed for the proposed system. Deposit term-type business is requested as a special category for study in the testing period.

The two questionnaires, plus a description of the proposed lapse disclosure system, will be accompanied by a letter from Commissioner J. Richard Barnes, Chairman of the NAIC Life Insurance (C3) Subcommittee. The NAIC Central Office will mail the entire package to all companies selling ordinary life insurance in the United States (approximately 1,100 companies) by the end of September. All companies are requested to respond to the questionnaires requesting the background information by October 31, 1979. Those companies which are currently monitoring their lapse experience are requested to submit data for testing the proposed system by December 28, 1979.

As requested by the NAIC, the Life Insurance Marketing and Research Association (LIMRA) will be the collection analysis center for this testing period. All individual company data submitted during the testing period will be held confidential by the LIMRA staff.

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To: Erma Edwards, CLU, FLMI
         Chairman, Cost Disclosure Task Force
         Supervisor, Life/Health Insurance
         Insurance Division, Department of Commerce
         Carson City, Nevada

From: Charles Greeley, Vice-President and Actuary
         Metropolitan Life Insurance Company
         New York, New York

Date: November 19, 1979

Re: Advisory Committee on Monitoring the Impact of the NAIC Model Life Insurance Solicitation Regulation

Following is a brief status report of the projects being worked on by the above committee in its study of the impact of the NAIC Model.

1. Degree of Company Compliance — LIMRA has conducted a survey to determine the percentage of business now being sold in compliance with the requirements of the NAIC Model. The survey has been completed and analyzed, and published findings will be available shortly.

At the September 25, 1979 meeting of the task force, Tom Kelly inquired about the technical methods used in developing the survey information. I am attaching a letter of October 26, 1979 from Ms. Dorothy Murray, Associate Scientist of the LIMRA Research Information unit, which fully responds to this question.

2. Impact on Companies — A questionnaire (copy of which was furnished to you with my letter of October 2, 1979) has been sent to 17 companies. Results of this pre-test are now being analyzed, and will be reported to the committee at its next meeting on January 23, 1980. Thereafter, we expect to send the questionnaire to a larger group of companies.

3. Impact on Agents — Questions for the joint NALU/LIMRA "Survey of Agency Opinion" are now being developed. Those pertaining to the impact of the NAIC Model will be distributed to committee members for review, to be discussed at our next meeting.

Tom Kelly had asked if these questions could be answered anonymously. As indicated in the attached letter from Ms. Murray, participants in the survey do respond on an anonymous basis.

4. Impact on Consumers — At the committee's last meeting on September 26, 1979, we reviewed consumer responses to questions included in the ACLI study entitled "Monitoring the Attitudes of the Public." Several suggestions were then made for further analyses, which are to be presented at the next committee meeting.

Also at the next meeting, a compilation of responses from committee members to Dr. Formisano's study of recent life insurance purchases in New Jersey will be discussed — looking to a consensus on what can be learned of the model's impact in that state.

The committee continues to anticipate submission of a preliminary report during 1980, based on the results of the completed projects described above.

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To: Mr. Charles Greeley, Vice President and Actuary
          Metropolitan Life Insurance Company
          New York, New York

From: Dorothy F. Murray, Associate Scientist
          Research Information
          Life Insurance Marketing and Research Association
          Hartford, Connecticut

Date: October 26, 1979

Re: LIMRA Survey on the Degree of Company Compliance

Bob Carlson has asked me to respond to your letter of October 2 re the Advisory Committee on Monitoring the Impact of the NAIC Model Life Insurance Solicitation Regulation. I am the LIMRA staff member who is working on the degree of company compliance project as well as the 1980 Survey of Agency Opinion. I hope the following information is responsive to the concerns of your committee.

Technical Methods Used in Degree of Company Compliance Project — The sample of 232 LOMA/LIMRA member companies in the 1977 project, Approaches to Complying with Disclosure Procedures, is the base for the 1979 follow-up study. These 232 companies represent 74 percent of the 1975 new businesses sold in the United States.

A questionnaire to determine whether their practices had changed was sent to the 143 companies that indicated in 1977 that they were not voluntarily providing the information as stipulated in the 1976 NAIC model regulation, beyond the states that had adopted the regulation. An assumption was made by LIMRA that the 89 companies that voluntarily provided the buyer's guides and policy summaries in all states in which they operate had not changed their practices since 1977.

Based on the questionnaire returns, the companies were then divided into two groups: those companies voluntarily providing information in all states in which they operate, and those companies providing information only in those states in which they are required to provide such information.

Using the 1977 new issues data for all legal reserve life insurance companies, a statistical analysis was undertaken of the 1977 new business written in the states that have adopted the 1976 NAIC model, the 1977 new business written in the states that have adopted other cost disclosure regulations, and the 1977 new business written by the 232 companies in the project. Appropriate adjustments of the data were made to assure that blocks of business were counted only once.

The report on this project will cover the percent of 1977 new business classified under:

1.   State regulations – states that have adopted the 1976 NAIC model and states with other regulations

2.   Voluntary procedures in unregulated states

3.   No procedures

4.   Unknown

Data are not available on the proportion of policyowners who are receiving cost information.

Impact on Agents – Participants in the NALU/LIMRA Survey of Agency Opinion do respond on an anonymous basis.

We are planning to draft the questions on the impact of the NAIC model in early December and would like to send the questions to the committee members at that time for their comments. After reviewing the committee's comments, we would then prepare a final draft of the questions for another committee review. Hopefully, this task will be completed before the committee meets on January 23. Will this appraoch present any logistical problems for the committee?

I look forward to hearing from you.

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From: The American Academy of Actuaries Committee on Dividend Principles and Practices

To: (C3) Cost Disclosure Task Force

Re:.   Status Report

This is intended as a status report of the captioned committee on behalf of its chairman, Mr. John H. Harding, based on two recent telephone conversations with him.

As indicated in Mr. Harding's report of September 26, 1979· to the American Academy of Actuaries, the work of his committee has necessarily been dependent on the progress of the Society of Actuaries Committee on Dividend Philosophy. He advised me that the latter committee will request written comments from Society members early in 1980 concerning its report, which was presented at the annual meeting of the Society in October 1979.

He stated further that his committee plans to meet early in January and is currently working on the development of a format and language for the actuary's disclosure of his company's dividend practices. He also advised that his committee is scheduled to submit a complete set of recommendations to the Board of Governors of the Academy of Actuaries and to the NAIC in 1980. In developing these recommendations, the committee is expected to consider disclosure in the annual

statement and separate disclosure in relation to dividend illustrations. If a company chooses to use an investment year method or an investment generation method, the committee plans to recommend that the actuary be responsible for more than a statement that such method is not comparable to a portfolio method. For example, consideration will be given to the requirement of quantitative comparisons, such as, indicating the difference between the new money rate assumed in the dividend illustration and the portfolio interest rate and estimating the effect of the choice of the new money rate on the interest-adjusted indices which may be used for comparison with similar products of other companies whose indices are based on portfolio interest rates.

(signed) Thomas J. Kelly, Member
(C3) Cost Disclosure Task Force

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To: Erma Edwards, Chairperson
        Life Insurance (C3) Cost Disclosure Task Force

From: John H. Harding, Chairman
        American Academy of Actuaries —
        Committee on Dividend Principles and Practices

Re: My Report to Your Committee on September 25 in Detroit

I am enclosing my memorandum to the Board of Governors of the American Academy of Actuaries, dated September 26, 1979. This memorandum summarizes the report made to your committee on September 25. In addition, the first stage of the memorandum identifies the membership as constituted for this year and next year. I would also call your attention to the last paragraph in the memorandum which makes it clear that the Academy Committee must work quickly to make the work of the Society Committee suitable to solve the problems we perceive.

The next meeting of the Academy Committee will be held in New York City on October 18. Also, we expect to be able to hold a short meeting during the Society of Actuaries meeting in Miami on October 22-24.

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To: American Academy of Actuaries

From: John H. Harding, Chairman
        Committee on Dividend Principles and Practices

Date: September 26, 1979

Re: Committee Report

This committee was established late in 1978 in response to a request by the Board of Governors of the Society of Actuaries. This request was that the Academy implement the appropriate standards of practice as called for by the Society of Actuaries on Dividend Philosophy, as those standards of practice emerge from the current and future work of the Society Committee.

The stated purpose of the Academy Committee on Dividend Principles and Practices is "to consider means of implementing appropriate standards of practice in connection with the allocation and illustration of dividends on life insurance policies. The committee shall coordinate its work with the Society of Actuaries Committee on Dividend Philosophy and with any appropriate committee of the Canadian Institute of Actuaries."

Membership of the committee is necessarily broad, representing the interests of virtually all types of companies which allocate and illustrate dividends. Membership of this committee is as follows: John H. Harding, Chairman — National Life Insurance Company; John C. Christopherson — Woodmen of the World; J. Jacques Deschenes — Sun Life Assurance Co. of Canada; James W. Kemble — Towers, Perrin, Forster & Crosby; William K. Krisher — Connecticut Mutual Life Insurance Co.; Walter N. Miller — New York Life Insurance Company; Bartley L. Munson — Aid Association for Lutherans; Paul J.

Overberg — Allstate Life Insurance Company; Michael R. Ristau — Continental Assurance Company; John K. Roberts — Pan-American Life Insurance Company; Richard S. Robertson — The Lincoln National Life Insurance Co.; Richard M. Stenson — The Equitable Life Assurance Society of the U.S.; and Thomas C. Sutton — Pacific Mutual Life Insurance Company.

Messrs. Miller, Munson and Sutton are also members of the Society of Actuaries Committee, and Mr. Deschenes is a member of the Canadian Institute Actuaries Committee. Because of other Academy commitments for next year, both Mr. Munson and Mr. Robertson have withdrawn from membership in this committee. It is not contemplated that they be replaced, since they have both agreed to act in a consulting capacity.

The progress of the work of the Academy Committee has necessarily been dependent on the progress of the Society Committee. Some work has been done concurrently, but the major portion of its remains to be done after the publication by the Society Committee of a draft of Standards of Practice for Dividend Determination and Illustration. The Society Committee has forwarded to the Board of Governors of the Society of Actuaries draft number seven of these standards. It is expected that this draft will be forwarded to the membership of the Society and be considered at its October annual meeting. A concurrent session, with Academy Committee representation, will elicit comments from the membership attending the meeting. Six workshops follow this session. It is probable that only minor modifications will be needed to this draft to put it in shape for adoption by the Society of Actuaries.

This draft necessarily and properly gives actuaries and companies broad scope in the dividend determination process, but, at the same time, it will force consistency between allocation and illustration. While these standards of practice will limit the range or permissible dividend illustrations, there will still exist significant issues which will make dividend illustrations among companies not truly comparable.

The general format of the Society Committee's recommendation is a written report by the responsible actuary stating the framework which supports his dividend recommendation. Deviations from the prescribed acceptable range of practices must be highlighted and defended, including rationale and effect.

The written report will include a description of the dividend determination technique, and both deviation from accepted practice and material change in technique from old scale to new will be highlighted.

Projections of any experience factor will be allowed, but they must be limited to relatively short periods of time and must be made consistent for all classes of policyholders. The actuary must report any such projections.

Investment income allocation standards specifically allow both portfolio method and investment year method allocations. However, investment year allocations must be done on a theoretically and practically sound basis, and any change in approach or any new approach for new policies must be disclosed and defended.

Illustrated dividends must be made on a basis consistent with those currently paid. Further, the actuary must test to see if the scale is continuable if current experience continues indefinitely. If the test indicates that illustrated dividends cannot be continued, the actuary must include a statement to that effect. Further, if the actuary has reason to believe that current experience may soon deteriorate in a way that will lead to a lesser dividend scale, the actuary must disclose that fact or illustrate his dividends on a lower scale than those paid.

If the investment generation method is used to allocate investment income, the actuary must include a statement with regard to the length of time used to determine investment rates for the generation of policies which includes the policies to which dividend illustrations apply.

The Society Committee recognizes that it has at least three tasks yet to accomplish.

1.   There will need to be further detailed interpretations of draft seven, along with illustrative examples.

2.   Participating business for stock life insurance companies is included in these recommendations only if the company limits the amount of earnings from such business which can be distributed to company stockholders. The limits are specified and any business outside of those limits is not covered in these recommendations. A questionnaire has been drafted which will be distributed to the stock life insurance companies to better ascertain this current range of practices. After the results of this questionnaire have been analyzed, the Society will decide how this matter should be further pursued.

3.   Deferred annuities are also excluded from this draft, because the incorporation of deferred annuities was a large enough task that it would have deferred publication of the draft. Further work will be done in this area.

It is now the task of the Academy Committee to begin implementing the substance of this proposed recommendation of the Society Committee. To begin with, the actuarial report contemplated by the Society Committee has no addressee. This form was used deliberately in order to allow the Academy Committee an appropriate range of possibilities.

Discussions within the Academy Committee have suggested that the scope of the actuary's report is far too broad and too technical to be delivered in-toto to a company's board of directors. It is probable that this report will be required to remain on file in the company. However, the board of directors must necessarily be appraised of all of the required exception and disclosure language suggested in the draft and that the board of directors be made aware of their importance and impact.

The Academy has also considered the issue of Schedule M and its utility in the disclosure and regulation process. The only area of real agreement is that it would be appropriate to include the actuarial certification of dividend determination and illustration in Schedule M and that the present variety of disclosure of dividend determination methods in Schedule M is of little use. Drafts have been prepared with regard to what should be included in Schedule M in addition to the certification. It is clear that most of the required disclosures and exceptions in the actuary's report should have recognition in Schedule M. It is possible that there will be no requirement that a dividend formula be included in Schedule M, since most formulas are too complex to be included in a way that is meaningful. A draft has also been made of possible enhancements to numerical exhibits.

An additional Schedule M approach was considered, in which the actuary would describe qualitatively, though not quantitatively, each of the major factor classes used in dividend determination. This exercise was tried by a number of committee members, but the benefits to date have not been commensurate with the effort. At the consumer level, the specified disclosures in Schedule M will require simplified statements at the point of sale with regard to the impact of those disclosed items on the dividend illustration. For example, if tests of dividend scales have been made which demonstrate that they are not necessarily continuable, when current experience continues unchanged, the statement should be made that the illustrated interest adjusted cost will be higher than that shown in the illustrated scales, unless there is improvement in current experience.

However, it is far less clear as to how to make a fair, nonmisleading statement, about an investment year method illustration in comparison with a portfolio average illustration. This will be one of the most difficult and important assignments of the Academy Committee.

With regard to that business of the stock companies which is exempted from the recommendations of the Society Committee, the Academy Committee should develop language which clearly states that such business is not fairly comparable with illustrations which are not exempted.

Deferred annuities also deserve Academy attention, perhaps before the Society has completed its work in this regard. Deferred annuities are being used frequently in replacement situations today, and very often the suggested advantage of such deferred annuities in combination with term insurance is the result of noncomparability of scale, rather than probable result.

The Academy Committee has kept the NAIC Cost Disclosure Committee informed, and it has been represented at each of its meetings this year, with progress reports given. While the reports have been received enthusiastically, and there have been encouraging statements made, it is clearly time that this Academy Committee now take the proposed statement of principles and practices and begin to implement.

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To: (C3) Task Force on Life Insurance Cost Disclosure

From: William M. Snell, Chairman
         Wisconsin Special Task Force

Date: September 25, 1979

Re: Status Report

The Special Task Force appointed by former Commissioner Wilde continues to make good progress. We have met twice since my last report in Chicago, Illinois in June 1979, with our next meeting scheduled for Thursday, September 27, 1979 in Madison, Wisconsin.

Our report has been written in draft form, with second drafts due this month. The chapters of the report will deal with the three proposed uses of Linton Yield, or rate of return:

1.   Compare similar plans.

2.   Compare dissiminar plans.

3.   Compare Whole Life with buy term and invest the difference.

Our bank of data consists of raw data from 290 companies licensed in Wisconsin. We have both Whole Life and economatic plans for four issue ages and five amount groups.

Currently we are comparing the surrender cost index and the rate of return, using several interest rates and different tables of YRT premiums. The rankings are being correlated, to determine if rate of return is a better cost disclosure method.

We have offered our data to the Advisory Committee on Manipulation, in order to avoid extra costs in obtaining such information. Commissioner Mitchell of Wisconsin agrees that this sharing of data is desirable.

Although we are making good progress, the completion of the report before next year appears unlikely. Instead I would anticipate a March, 1980 deadline as being realistic.

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To: The Life Insurance Cost Disclosure (C3) Task Force

From: William M. Snell, Chairman
         Wisconsin Special Task Force

Date: December 2, 1979

Re: Status Report

In November, 1978, former Commissioner Wilde appointed a Special Task Force to study rate of return. In particular the charge was to determine if the Linton Yield Method was a better index of cost than the interest adjusted method.

We have data from 292 companies selling life insurance in Wisconsin. We have correlated the rankings using different assumed interest rates for the surrender cost index, and different term rates for the rate of return.

Based on this data, the task force members have written different chapters of a proposed report.

We are now using both the narrative and the quantitative information to prepare the first draft of our report. After that draft has been approved the final report will be prepared for publication, hopefully in March 1980.

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Model Regulation on
Partial-Endowment-Type ("Deposit-Term-Type") Insurance
(Exposure Draft)

Table of Contents

Section 1. Authority

This regulation is adopted and promulgated by (title of supervisory authority) pursuant to sections (appropriate sections) of the insurance code.

Section 2. Purpose

The purpose of this regulation is to set forth guidelines to deal with those annual premium individual insurance products which require the payment of a premium in the first contract year higher than a level series of premium in the renewal contract years. The excess of the first year premium over the renewal year premiums is sometimes described as a "deposit." "Deposit term insurance," "deposit whole life insurance" and "modified premium whole life insurance" are names which are typically given to these products, but these guidelines apply to all products of the type described irrespective of the name given to the coverage.

Section 3. Scope

This regulation applies to all admitted insurers authorized to transact the business of life insurance in this State.

Section 4. Description of Partial-Endowment-Type Products

Partial endowment insurance generally involves the payment of a relatively higher first year premium as compared to renewal year premiums. The excess of the first year premium over renewal year premiums is often mistakenly characterized as an initial "deposit" which is returned to the policyholder at the end of a selected period of years, usually eight or ten, increased by what is often alleged to be interest.

"Modified premium whole life" is similar at the outset, except that there is an "automatic attained age conversion" to a whole life plan at the end of the initial period. The maturity value that is normally payable at the end of a partial endowment contract may or may not be payable at the time of automatic conversion.

After the conversion, if the maturity value of the "precursory contract" is not payable at the time of automatic conversion, the nonforfeiture values of the whole life policy may or may not be augmented by the value of the maturity values. Some converted policies provide nonforfeiture values which progress so that the maturity value gradually disappears over the life of the whole life policy. Modified premium whole life policies generally offer the policy holder the option to "roll over" the maturity value and start a new modified premium whole life policy instead of continuing of the automatic track. In this case the maturity value from the precursory coverage is used as the "additional first year premium" for the new coverage. Thus, it is possible for a modified premium whole life insurance policy to be rolled over several times so that it in effect becomes a series of renewable partial endowment insurance coverages.

The nature of partial-endowment-type products is such as to enhance the possibilities of misunderstanding unless such products are carefully sold and fully explained. For this reason, these guidelines set forth minimum disclosure requirements for partial-endowment-type products.

Section 5. Minimum Disclosure Requirements for Partial-Endowment-Type Products

a. All advertisements, sales materials and sales presentations of partial-endowment-type products which fail to fully and fairly inform an applicant or prospective insured as to future premium changes, benefits and related options constitute a misrepresentation as to material facts.

b. The use of any statement or illustration in any advertisement, sales material, or sales presentation which makes reference to such terms as "deposit," "accumulation," "interest at x%," and all similar terms associated with fund accumulations and investment contracts where life contingencies are involved constitutes a misrepresentation of material facts.

c. The name given to partial-endowment-type products shall not include any term that implies a "deposit" or any similar term associated with fund accumulations and investment contracts.

d. Any statement or illustration showing a comparison between the endowment value or any specific cash value and the excess of the first year's premium over the renewal premium which implies that such endowment or cash value arises solely from such excess constitutes a misrepresentation as to material facts.

e. If the policy contains a provision permitting the making of voluntary deposits which will accumulate at interest, the nature thereof shall be disclosed, and such disclosure shall distinguish such deposit provision and the insured's rights thereunder from the excess of the first year premium over the renewal premiums.

f. It is a requirement that an "explanation" sheet be given to every applicant or prospective insured with pertinent figures inserted for the specific case showing the following amounts for each of the first twenty policy years of the contract and representative policy years thereafter sufficient to clearly illustrate the premium and benefit patterns:

    i. The amount of the premium payable for the year for the basic policy.

    ii. The amount of the premium payable for the year for each optional rider. Any life insurance, annuity or deposit fund rider will be subject to the requirements for disclosure for life insurance, annuities, or deposit funds.

    iii. Guaranteed amount payable upon death, at the beginning of the policy year regardless of the cause of death other than suicide, or other specifically enumerated exclusions, which is provided by the basic policy and each optional rider, with benefits provided under the basic policy and each rider shown separately.

    iv. Total guaranteed cash surrender values at the end of the year with values shown separately for the basic policy and each rider.

    v. Cash dividends payable at the end of the year with values shown separately for the basic policy and each rider. (Dividends need not be displayed beyond the twentieth policy year.)

    vi. Guaranteed endowment amounts payable under the policy which are not included under guaranteed cash surrender values above.

    vii. In the case of replacement situations, the required replacement disclosure statement must be filled out so that premium changes and/or options at the end of the partial endowment period are fully and fairly disclosed to the applicant. This may be done on the replacement disclosure statement itself, in the "premiums" section, for example, or may be shown on a supplemental section attached to the statement.

    viii. It is the responsibility of the insurance company to see that the public is given a true and complete disclosure of partial-endowment-type plans in clear and unambiguous terms. Each company should examine its own particular products to determine how it can most effectively meet its responsibility.

Section 6. Effective Date

This Regulation shall take effect (insert date).

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(ATTACHMENT TWO)

(C3) Task Force to Evaluate the
Model Life Insurance Solicitation Regulation

At its June, 1979 meeting, the (C3) Subcommittee of the NAIC called for the appointment of a task force to evaluate and determine the necessity of amending the Model Life Insurance Solicitation Regulation adopted by the NAIC in June 1976.

Commissioner Richard A. Hemmings, Michigan, was appointed chairman of the task force which included the states of Arkansas, Massachusetts, New Jersey, Nevada and Wisconsin. In November, the task force was expanded to include Illinois and North Carolina.

The organizational meeting of the task force was held on September 26, 1979, at the NAIC Zone IV meeting in Detroit, Michigan. The task force decided that a public hearing would be the most effective way of receiving information to evaluate the model regulation. This evaluation is appropriate considering the model regulation has been used in some states for two years and there have been numerous comments, both pro and con, on the NAIC model. At this time, twenty-eight states have adopted either the model or a variation of the Life Insurance Solicitation Regulation.

A public hearing was scheduled for November 19 and 20, 1979 at the Host International Hotel, Detroit Metro Airport, Detroit, Michigan. A copy of the attached notice of hearing was sent to interested persons on October 15, 1979. Attached to the notice was a listing of the principal criticisms of the Model Life Insurance Regulations. States that have adopted either the model or a variation of the Life Insurance Solicitation Regulation were requested to give an indication of support for the model or suggestions or comments of its shortcomings. To date, only a few of the states have responded.

In July 1979, the Federal Trade Commission released a staff report on Life Insurance Cost Disclosure. In view of the considerable publicity this report received, and the criticisms of the life insurance industry contained therein, Chairman Michael Pertschuk of the FTC was invited to testify at the hearing.

The public hearing was held on November 19th and 20th and with the exception of Massachusetts, all states comprising the task force were present. Approximately 100 persons were in attendance during the hearing which lasted two full days.

A considerable portion of the hearing was utilized by the task force in asking questions after the presentation of those persons testifying. The Federal Trade Commission's presentation was made by David Fix and by Michael Lynch and together with the questions from the task force, lasted approximately four hours. Several hours were also spent on the presentations by the American Council of Life Insurance and the National Association of Life Underwriters. Other presentations were made by representatives of industry and consumer organizations.

After all of the testimony and information resulting from the hearing has been compiled, it is the intention of the task force to meet as soon as possible to evaluate this material and determine what revisions or amendments should be made to the present regulation. The NAIC Central Office was directed to prepare a summary of the information received and a pro and con analysis of the various amendments offered for consideration by the task force. A transcript of the hearing is being prepared and will be available through the NAIC Central Office. A list of persons in attendance at the hearing is attached.

Richard A. Hemmings, Chairman, Michigan; William H. L. Woodyard, Arkansas; Michael J. Sabbagh, Massachusetts; Donald W. Heath, Nevada; James J. Sheeran, New Jersey; John R. Ingram, North Carolina; Susan Mitchell, Wisconsin.

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<div align="right">ATTACHMENT THREE</div>

To: Life Insurance (C3) Subcommittee

From: George A. Hardy, Legislative Counsel
         Northwestern Mutual Life Insurance Company.

Date: July 20, 1979

Re: Status report on states' adoption of changes in policy loan interest rate laws

49 STATES (INCL. D.C.) WITH NO STATUTORY LIMIT ON LIFE INSURANCE POLICY LOAN INTEREST OR LIMIT OF 8% OR MORE

Alabama (1972)	Maine	Ohio
Arizona (1978)	Maryland (1978)	Oklahoma (1975)
Arkansas (1977)	Massachusetts (1979)	Oregon (1975)
California	Michigan (1976)	Pennsylvania (*)
Colorado	Minnesota	Rhode Island (1975)
Connecticut	Mississippi	South Carolina
Delaware (1975)	Missouri	South Dakota (1974)
District of Columbia	Montana (1979)	Tennessee
Florida (1977)	Nebraska (1978)	Texas
Georgia (1975)	Nevada	Utah (1977)
Idaho (1975)	New Hampshire	Vermont (1977)
Illinois	New Jersey	Virginia (1975)
Indiana	New Mexico (1977)	Washington (1977)
Iowa	New York (1977)	West Virginia (1977)
Kansas (1978)	North Carolina (1976)	Wisconsin
Kentucky	North Dakota	Wyoming
Louisiana (1975)		

Recent legislation indicated in parenthesis
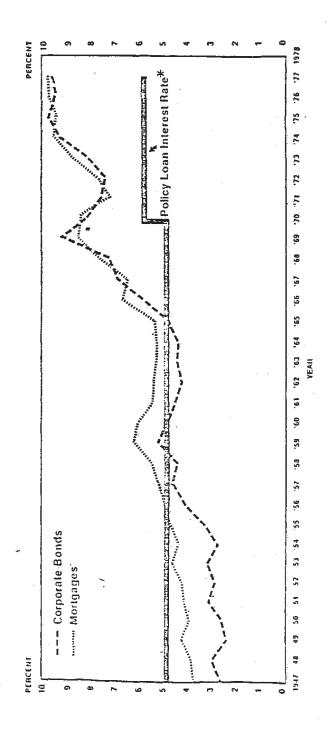
(*) No limit on policy loan interest rates but 6% usury limit

2 STATES WITH 6% STATUTORY LIMIT ON LIFE INSURANCE POLICY LOAN INTEREST

Alaska   Hawaii

INTEREST RATES
1947-1977

Corporate Bonds
Mortgages
Policy Loan Interest Rate*

* RATE USED IN NEW POLICIES BY MOST LIFE INSURANCE COMPANIES

POLICY LOANS AS A PERCENT OF ORDINARY RESERVES

U. S. Life Companies
  Ranked by Assets

Mutual Companies (19)	1964 %	1966 %	1968 %	1970 %	1972 %	1974 %	1976 %	1978 %	Ratio 1978/1964
Prudential	7.43	7.99	8.62	10.40	10.71	11.70	12.19	12.85	1.73
Metropolitan Life	8.47	8.55	8.80	10.10	9.83	10.05	9.78	9.93	1.17
Equitable	10.04	11.92	13.48	18.10	18.12	21.44	22.21	23.58	2.35
New York Life	11.61	13.92	16.27	21.43	22.25	25.90	26.62	27.76	2.39
John Hancock	9.86	10.88	10.38	12.72	12.81	14.63	15.46	16.64	1.69
Northwestern Mutual	9.12	12.17	15.02	22.09	22.17	27.36	27.60	29.19	3.20
Massachusetts Mutual	13.89	18.35	21.96	29.83	29.89	34.35	34.31	35.34	2.54
Mutual of New York	9.79	11.46	13.09	17.67	17.88	20.98	22.04	23.81	2.43
New England Mutual	11.55	14.88	18.00	25.11	25.77	30.64	30.67	31.97	2.77
Connecticut Mutual	12.14	16.06	19.12	26.05	25.90	30.13	30.38	31.62	2.60
Mutual Benefit (NJ)	13.17	17.91	21.20	28.86	29.40	34.06	34.13	35.39	2.69
Penn Mutual	10.74	12.69	14.66	20.47	20.47	24.19	24.83	26.27	2.45
Bankers Life — Iowa	8.20	8.98	10.29	14.23	14.95	18.50	19.35	21.14	2.58
National Life — Vermont	17.32	25.47	30.16	38.02	38.26	44.36	43.27	43.85	2.53
Phoenix Mutual	20.62	24.61	27.14	32.93	33.92	37.87	38.25	39.13	1.90
State Mutual	11.78	14.77	17.55	25.72	26.93	31.92	32.24	33.63	2.85
Provident Mutual	9.83	12.67	16.02	22.76	23.60	28.14	28.58	30.02	3.05
Guardian Life — NY	12.36	15.74	18.08	24.46	25.11	29.54	29.95	30.30	2.45
Home Life — NY	11.83	14.53	17.18	24.33	25.41	30.28	31.41	32.76	2.77
Stock Companies (7)									
Aetna Life	7.80	8.88	10.00	14.33	14.33	17.48	18.06	19.20	2.46
Connecticut General	5.96	7.83	9.67	15.56	15.65	20.16	19.87	20.21	3.33
Travelers	7.76	8.88	10.10	13.86	13.67	16.55	16.82	17.75	2.29
Lincoln National	8.89	10.22	11.38	15.06	14.60	17.36	17.40	18.31	2.06
Occidental of Calif.	12.12	14.01	15.45	18.78	18.44	20.79	20.77	20.94	1.73
Continental Assurance	12.64	15.72	17.54	23.36	22.43	26.03	25.67	26.32	2.08
Northwestern National	10.73	12.14	14.00	18.66	18.62	20.49	20.57	21.09	1.97

GAH: 8/7/79   SOURCE: Annual Statement
    Based on data from   Policy Loans — Assets, page 2, line 5
    Math & Valuation Division   Ordinary Life Reserves — Exhibit 8, Section A
                                                    Column 4 totals (net)

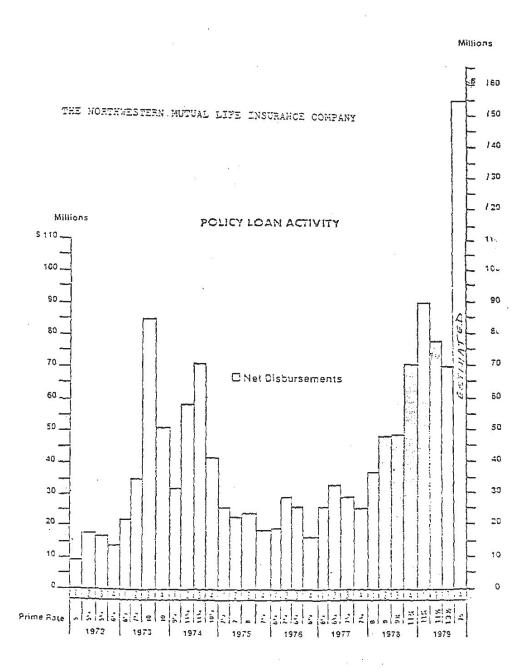## POLICY LOANS AS % OF CASH VALUE (C.V.)
IN RELATION TO SIZE OF POLICY

Policy Size	Loans as % of C.V.	Policy Size	Loans as % of C.V.
Prudential, 1978		**Mutual Benefit, 1976**	
Less than $ 5,000	4.3%	Up to $ 9,999	18%
$ 5,000 to $ 19,999	9.7%	$ 10,000 to $ 24,999	32%
$ 20,000 to $ 49,999	19.4%	$ 25,000 to $ 49,999	50%
$ 50,000 to $ 99,999	34.6%	$ 50,000 to $ 99,999	58%
$100,000 to $199,999	44.6%	$100,000 and over	64%
$200,000 and over	70.7%		
		Metropolitan Life, 1976	
Massachusetts Mutual, 1976			
		Less than $ 5,000	5%
Less than $ 5,000	10%	$ 5,000 to $ 19,999	12%
$ 5,000 to $ 9,999	19%	$ 20,000 to $ 49,999	22%
$ 10,000 to $ 24,999	29%	$ 50,000 to $ 99,999	30%
$ 25,000 to $ 49,999	41%	$100,000 to $199,999	36%
$ 50,000 to $ 99,999	50%	$200,000 and over	44%
$100,000 to $499,999	58%		
$500,000 and over	69%	**New York Life, 1975**	
		Up to $ 1,999	8%
National Life of Vermont, 1976		$ 2,000 to $ 4,999	12%
		$ 5,000 to $ 9,999	18%
Less than $ 5,000	11%	$ 10,000 to $ 24,999	26%
$ 5,000 to $ 9,999	20%	$ 25,000 to $ 49,999	36%
$ 10,000 to $ 24,999	33%	$ 50,000 to $ 99,999	45%
$ 25,000 to $ 49,999	48%	$100,000 and over	57%
$ 50,000 to $ 99,999	58%		
$100,000 and over	66%	**Penn Mutual, 1975**	
		Up to 0 $ 4,999	11%
Northwestern Mutual Life, 1975		$ 5,000 to $ 9,999	17%
		$ 10,000 to $ 24,999	26%
Up to $ 2,500	11%	$ 25,000 to $ 49,999	41%
$ 2,500 to $ 7,500	20%	$ 50,000 to $ 99,999	54%
$ 7,500 to $ 15,000	30%	$100,000 and over	63%
$ 15,000 to $ 30,000	35%		
$ 30,000 to $ 70,000	41%	**Phoenix Mutual, 1975**	
$ 70,000 to $200,000	48%		
Over $200,000	53%	Up to 0 $ 4,999	13%
		$ 5,000 to $ 9,999	17%
New England Mutual, 1974		$ 10,000 to $ 24,000	23%
		$ 25,000 to $ 49,999	55%
Up to 0 $ 4,999	13%	$ 50,000 to $ 99,999	66%
$ 5,000 to $ 9,999	18%	$100,000 to $499,999	74%
$ 10,000 to $ 24,999	31%	$500,000 and over	75%
$ 25,000 to $ 49,999	49%		
$ 50,000 to $ 99,999	56%		
$100,000 to $499,999	62%		
$500,000 and over	69%		

		Policies With Loans	Policies Without Loans
Massachusetts Mutual Life	(12/31/74)	29.2%	70.8%
Northwestern Mutual Life	(12/31/75)	26.7%	73.3%
Provident Mutual Life	(12/1/75)	29.1%	70.9%
Metropolitan Life	(12/31/76)	11%	89%

COMPARISON OF 20-YEAR POLICYHOLDER DIVIDENDS*
FOR $20,000 WHOLE LIFE POLICY ISSUED AT AGE 35

COMPANY	DIVIDENDS* FOR 20 YEARS		INCREASE FOR 8% POLICY OVER 6% POLICY
	with 6% policy loan interest rate	with 8% policy loan interest rate	
American General	$2808	$2962	$154
Berkshire Life	2027	2364	337
Central Life Assurance	3818	4112	294
CNA, Continental Assur.	1138	1453	315
Connecticut Mutual	1385	1651	266
Continental American	2835	3157	322
Equitable Life of Iowa	2693	2792	99
Equitable Life – NY	3124	3330	206
Fidelity Mutual	880	973	93
General American	2505	2785	280
Guardian Life	2466	2674	208
Home Life – NY	3622	3868	246
Indianapolis Life	2341	2588	247
John Hancock	2283	2475	192
Lincoln National	2644	2890	246
Massachusetts Mutual	2981	3134	153
Metropolitan	2653	2797	144
Minnesota Mutual	2572	2799	227
Mutual Benefit	3464	3713	249
Mutual of New York	2230	2583	353
National Life – Vermont	2668	2960	292
New England Mutual	2837	3018	181
New York Life	2360	2560	200
Northwestern Mutual	3432	3692	260
Northwestern Nat'l Life	2588	2743	155
Penn Mutual	2823	3028	205
Phoenix Mutual	2820	3143	323
Provident Mutual	3082	3354	272
Security Mutual	2348	2577	229
Standard of Oregon	3076	3401	325
State Mutual	3048	3317	269
Union Mutual	2820	2948	128

* Based on 1978 dividend scales now in effect, which are not an estimate, projection or guarantee of future results. The purpose of this table is to show the differences resulting from the use of different interest rates. This data should not be used to compare companies since it is inadequate for that purpose.

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THE NORTHWESTERN MUTUAL LIFE INSURANCE COMPANY

POLICY LOAN ACTIVITY

Millions

☐ Net Disbursements

Prime Rate

1972   1973   1974   1975   1976   1977   1978   1979

(ATTACHMENT FOUR)

(C) Committee Technical Task Force on
Valuation and Nonforfeiture Value Regulation

In the special reports mailed to you on November 11, 1979 are two recommendations for adoption by the (C3) Subcommittee at the December 3, 1979, meeting that were proposed.

The first was a proposed revision amending the NAIC Model Variable Annuity Regulation. The revised language is concerned with nonforfeiture benefits for variable annuity contracts.

A number of typographical errors in the text of the actual regulation have been noted. The following is a complete list of those which have been called to the attention of the technical task force.

(1)   On page L-10, Article III, Section 1, fourth line, the word "insurance" is misspelled as "issurance."

(2)   On Page L-11, in the second paragraph of the Drafting Note, under Article III, Section 3, contains a misspelling in the second line. The word should be "statutes," rather than "stuatutes."

(3)   On Page L-19, in the Drafting Note immediately above Article VI, Section IV, second line, the word "delaying" should be corrected to read "dealing."

(4)   On Page L-20, in Article VII, Section 1, fifth line, the word "or" should be deleted between the words "thereof" and "other."

(5)   On Page L-25, in Article VII, Section 5, paragraph (b), the fourth line from the top of the page contains a misspelling. The word should be "thirty" rather than "thrity."

The second recommendation is a revision of a proposed actuarial guideline pertaining to the valuation of individual single premium deferred annuity contracts which had been sent back to the task force at the June 4, 1979, meeting for further consideration. The text of this guideline is:

"THE VALUATION OF INDIVIDUAL SINGLE PREMIUM DEFERRED ANNUITIES"

With respect to those states which have enacted the 1976 Amendments to the Standard Valuation Law, individual single premium deferred annuity reserves shall at least equal the greatest of any of the discounted values of all guaranteed future benefits including cash surrender values available after the date of valuation, such benefits discounted to the valuation date at the maximum permissible statutory interest rate. This method applies to all individual single premium deferred annuities which are subject to the provision of the Standard Valuation Law in those states which have enacted the 1976 amendments. For those states which have not yet enacted the 1976 amendments, this interpretation is a method of valuing individual single premium deferred annuities.

In connection with the regular report of the task force, these are principal features of that report. Other guidelines that are being considered are:

1.   , The definition of an annuity contract so as to distinguish it from life insurance contracts. This is important for nonforfeiture value purposes. (A draft of guidelines are attached to this report) (Attachment D2).

2.   The definition of a group annuity contract so as to distinguish it from an individual annuity contract. No draft guideline has been presented at this time.

3.   Definition of an individual single premium immediate annuity contract so as to distinguish it from other individual single premium annuity contracts. (A copy of this is attached to this report) (Attachment D2).

The NAIC technical task force is investigating the use of a "dynamic" or "floating" maximum interest rate to be used in computing minimum reserves under the Standard Valuation Law and minimum cash values under the Standard Nonforfeiture Law. The purpose of the concept is to avoid the necessity of going to state legislatures very frequently to

secure changes in the maximum interest rates. This is an extremely difficult subject and the task force appreciates the work the American Council of Life Insurance has done. The task force believes that the concept should be exposed to wider discussion and consideration, and therefore it is appointing an advisory committee consisting of some members of the ACLI Task Force, the Society of Actuaries Special Committee on Valuation and Related Problems (The Trowbridge Committee), the Society of Actuaries Special Committee to review Nonforfeiture Value Regulation (The Unruh Committee), and to selected persons from other areas. Also, a member of the NAIC Task Force will be assigned as a resource nonvoting member of that advisory committee to function in liaison. In any event, a dynamic concept cannot be incorporated in the proposal for revisions in 1980.

With respect to the new mortality table recently released by the Society of Actuaries, a series of tables are attached to this report (Attachment G6) which compares the reserves and cash surrender values calculated by the 1958 CSO Table with those calculated by Table K. For female values, using the 1958 CSO Table, a 3 year age setback was used. Tables with a 6 year age setback will be developed. The mortality tables thus prepared by the Society of Actuaries apply only to individual standard ordinary insurance plans. The task force recognizes the possibility of a need for new mortality tables for annuitants, industrial life insurance, guarantee issue, renewable term insurance and substandard lives.

It should be emphasized that mortality experience is undergoing a trend of unprecedented improvement. The crude experience results for the period of 1976-1978 indicated almost as much improvement in the mortality basic experience as that from the basic data underlying the 1958 CSO Table, to the 1970-75 experience underlying K Tables. For this reason it is anticipated that within a few years another request to the Society of Actuaries will be needed for new standard ordinary mortality tables. At the time those tables are adopted would be a good time for dynamic valuation and nonforfeiture value legislation. In considering nonforfeiture legislation not only interest, but mortality and nonforfeiture value expense loadings should be considered.

The last item to be mentioned here concerns companies earning lower interest rates than the rate assumed in calculating their reserves. The task force is considering the nature of additional reserves which should be set aside for this situation.

Ted Becker, Chairman, Texas; John Montgomery, Vice-Chairman, California; James Montgomery, III, District of Columbia; Larry Gorski, Illinois; Erma Edwards, Nevada; William A. White, New Jersey; Thomas Kelly, New York; Thomas Bickerstaff, Pennsylvania; Bradford S. Gile, Wisconsin.

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The title and complete text of this actuarial guideline, as revised and recommended are as follows:

The Valuation of Individual Single Premium Deferred Annuities

With respect to those states which have enacted the 1976 Amendments to the Standard Valuation Law, individual single premium deferred annuity reserves shall at least equal the greatest of any of the discounted values of all guaranteed future benefits including cash surrender values available after the date of valuation, such benefits discounted to the valuation date at the maximum permissible statutory interest rate. For those states which have not yet enacted the 1976 amendments this interpretation is a method of valuing individual single premium deferred annuities.

SPECIAL REPORT

November 1, 1979

Life Insurance

PROPOSED REVISION OF NAIC MODEL
VARIABLE ANNUITY REGULATION

The (C) Committee Technical Task Force on Valuation and Nonforfeiture Value Regulation recommends that the Life Insurance (C3) Subcommittee adopt a revised version of the Model Variable Annuity Regulation, so that the regulation will be consistent with Attachment A to this Special Report.

Attachment A would add a new Article VII entitled "NONFORFEITURE BENEFITS" to the Model Variable Annuity Regulation. This proposed new Article is rather lengthy, and the text has not been underlined. Attachment A makes use of underlining to indicate all other proposed new language, and of brackets to indicate proposed deletions from language in the present model. The underlining and bracketing are used for the purpose of demonstrating the proposed changes to the members of the Life Insurance (C3) Subcommittee and to other interested parties. It is not intended that the Model Variable Annuity Regulation actually include the underlining or the bracketed material, if the proposed revision is adopted.

The main purpose of the proposed revision is to add this new Article relating to nonforfeiture benefits. The new Article VII would require certain specific provisions to appear in variable annuity contracts, and Article VII also defines a specific level of minimum nonforfeiture benefits. The other changes involved in the proposed revision are relatively minor, and they can be summarized in the following complete list:

(1)   Article VI, Paragraph 3, Subparagraph (c), in the present wording would be deleted.

(2)   The Drafting Note which follows Article VI, Paragraph 3, would be reworded so that it no longer refers to nonforfeiture provisions.

(3)   Articles VII, VIII and IX in the present wording would be renumbered upward to accommodate the inclusion of the new Article VII.

Background Material

The Model Variable Annuity Regulation was originally adopted in December 1974. Only one rather short subparagraph pertained to nonforfeiture provisions; please see Article VI, Paragraph 3, Subparagraph (c), in the present wording. The present wording does not define a specific level of minimum nonforfeiture benefits at all.

The legislation which authorizes variable annuity contracts, in most states, does not give any specific details on the subject of nonforfeiture benefits either. There is general agreement that the Model Variable Annuity Regulation should cover the subject much more thoroughly, but there are two major reasons why a rather difficult problem existed in December 1974.

The first reason is that in December 1974 most states did not have any statutes or regulations defining minimum nonforfeiture benefits for traditional fixed benefit annuity contracts. It was felt that an appropriate level of minimum nonforfeiture benefits should be agreed upon for fixed benefit annuity contracts before considering the question of the appropriate level for variable annuity contracts. There is some analogy between these two types of contracts, and it was felt that it might well be useful for the definitions of minimum nonforfeiture benefits to correspond to some extent.

The second reason is that there are certain complexities inherent in the nature of variable annuity contracts. Some of these complexities are as follows:

(1)   Variable annuity contracts do not have a guaranteed interest rate in the same sense as traditional fixed benefit annuity contracts; rather there is a rate of investment return which is related to the performance of a separate account.

(2)   Nonforfeiture benefits for variable annuity contracts can not be calculated prospectively, that is by looking ahead to future annuity benefits which the insurance company expects to provide and to future considerations which the insurance company expects to receive.

(3)   If nonforfeiture benefits for variable annuity contracts are to be calculated retrospectively, that is by looking backward and accumulating amounts corresponding to the considerations which the insurance company has received, then these nonforfeiture benefits must allow the insurance company to operate on a sound basis by permitting reasonable adjustments for expenses.

(4)   A method must be provided for states to test variable annuity contracts for compliance with the level of minimum nonforfeiture benefits which is defined, when such contracts are presented for approval.

(5)   Nonforfeiture benefits must be defined for the type of contract which is partly a fixed benefit annuity and partly a variable annuity.

Subsequent to December 1974, the NAIC adopted a model law entitled the Standard Nonforfeiture Law for Individual Deferred Annuities in 1976. This model law does define certain required nonforfeiture provisions for traditional fixed benefit annuities, including a level of minimum nonforfeiture benefits for such fixed benefit annuities. Thus, the first of the two reasons listed above no longer applies. The second of the two reasons listed above does continue to apply, and this is recognized in the language of the Standard Nonforfeiture Law for Individual Deferred Annuities which specifically excludes variable annuity contracts.

The proposed revision to the Model Variable Annuity Regulation closely parallels the Standard Nonforforfeiture Law for Individual Deferred Annuities, to the extent that this is appropriate and feasible. For example, the definition of net considerations in Article VII, Paragraph 5, in the proposed revision, is rather similar to the definition of net considerations in the Standard Nonforfeiture Law for Individual Deferred Annuities except for two differences which are pointed out below. On the other hand, attention has been given in the proposed revision to the second of the two reasons listed above; and all five of the complexities mentioned have received consideration. For example, the portion of the Standard Nonforfeiture Law for Individual Deferred Annuities which defines minimum cash surrender benefits prospectively has no corresponding provision in the proposed revision; see item (2) in the list of complexities.

The proposed new Article VII in the Model Variable Annuity Regulation is divided into eleven numbered Paragraphs. A brief description and summary of each of these eleven Paragraphs follows:

Paragraph 1 lists the exclusions from Article VII. These exclusions are very similar to those listed in the Standard Nonforfeiture Law for Individual Deferred Annuities, including the partial exclusion for group annuity contracts.

Paragraph 2 describes the treatment of annuity contracts which are partly fixed benefit annuities and partly variable annuities. Such contracts must comply with the Standard Nonforfeiture Law for Individual Deferred Annuities to the extent that fixed benefits are provided. Please note that this is one of the five complexities which are mentioned above; see item (5) in the list.

Paragraph 3 describes provisions which are required to be included in the variable annuity contract. These provisions relate to the paid-up annuity nonforfeiture benefit, the optional cash surrender benefit (if included in the contract), and the death benefit (if included in the contract). These provisions are similar to the provisions required by the Standard Nonforfeiture Law for Individual Deferred Annuities, except that Paragraph 3 contains a different provision for deferment by the insurance company of the cash surrender benefit.

Paragraph 4 describes the formulas which are to be used in computing minimum paid-up annuity, cash surrender or death benefits from the net considerations which are defined in Paragraph 5. The formulas in Paragraph 4 define minimum nonforfeiture benefits retrospectively. These formulas in Paragraph 4 make use of a "net investment return" which is to be determined monthly or oftener. Paragraph 4 also permits insurance companies to make an annual contract charge, and it permits an additional transaction charge for each transfer to another separate account or to another investment division within the same separate account. The annual contract charge and the transaction charge are intended to allow insurance companies to make reasonable provision for expenses; and the amounts of these charges are adjusted annually in accordance with changes in the Consumer Price Index, as described in detail in Paragraph 6. This Paragraph 4 does not

correspond closely to any portion of the Standard Nonforfeiture Law for Individual Deferred Annuities, but rather Paragraph 4 is required on account of items (1) and (3) in the list of complexities mentioned above. It might be appropriate to point out that the retrospective definition of minimum nonforfeiture benefits in the Standard Nonforfeiture Law for Individual Deferred Annuities makes some allowance for possible increases in the level of future expenses by prescribing a rather low rate of guaranteed interest, and this method is not suited to variable annuity contracts.

Paragraph 5 describes how the net considerations for the variable annuity contract are obtained from gross considerations. It has already been pointed out that the definition of net considerations is rather similar to that contained in the Standard Nonforfeiture Law for Individual Deferred Annuities, with two differences. The wording of Paragraph 5 permits the insurance company to make additional deductions for premium taxes. Paragraph 5 also permits certain other deductions which are expressed in dollar amounts to be adjusted annually in accordance with changes in the Consumer Price Index, as described in detail in Paragraph 6.

Paragraph 6 describes how variable annuity contracts can be tested for compliance with Article VII. Paragraph 6 also gives details on how certain charges which are described in Paragraphs 4 and 5 are subject to annual adjustments in accordance with the Consumer Price Index. Paragraph 6 is concerned with items (3) and (4) in the list of complexities, and it does not correspond to any portion of the Standard Nonforfeiture Law for Individual Deferred Annuities.

Paragraph 7 describes how paid up annuity benefit amounts are related to minimum nonforfeiture benefits. Paragraph 7 corresponds closely to language included in the Standard Nonforfeiture Law for Individual Deferred Annuities.

Paragraph 8 pertains to variable annuity contracts with cash surrender benefits, and it describes how cash surrender benefits and death benefits are related to minimum nonforfeiture benefits. Paragraph 8 corresponds closely to language included in the Standard Nonforfeiture Law for Individual Deferred Annuities.

Paragraph 9 relates to variable annuity contracts which do not provide cash surrender benefits or which do not provide death benefits, and requires that such contracts provide notice to the contractholder that such benefits are not included. Paragraph 9 corresponds closely to language included in the Standard Nonforfeiture Law for Individual Deferred Annuities.

Paragraph 10 describes the conditions under which the insurance company may at its option make a lump sum payment in lieu of making annuity payments of rather small amounts on a periodic basis. Paragraph 10 corresponds to some extent to language included in the Standard Nonforfeiture Law for Individual Deferred Annuities, but one difference is that Paragraph 10 permits the exercise of this option in some cases where the contractholder has paid considerations during the immediately preceding two year period.

Paragraph 11 discusses variable annuity contracts which contain both annuity benefits and life insurance benefits. Paragraph 11 corresponds closely to language included in the Standard Nonforfeiture Law for Individual Deferred Annuities.

Technical Advisory Committee for Variable Products

This would be an appropriate time for the (C) Committee Technical Task Force to thank the members of its Technical Advisory Committee for Variable Products for its diligent efforts in assisting with the preparation of this proposed revision in the Model Variable Annuity Regulation.

The members of this Technical Advisory Committee are as follows: Jerome (Jerry) Golden, Chairman; Jack Marshall; Robert Nichols; Bruce Nickerson; Terrence Towry; Jack Wood.

The (C) Committee Technical Task Force voted on October 21, 1979, to recommend this proposed revision to the (C3) Life Insurance Subcommittee for adoption at its meeting on December 3, 1979. This Special Report has been prepared by the Chairman of the (C) Committee Technical Task Force after the October 21, 1979, meeting. While he believes the Special Report to be accurate and correct, it should be pointed out that neither the members of the Technical Advisory Committee nor the other members of the (C) Committee Technical Task Force have had any opportunity to review it before dissemination.

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(ATTACHMENT A)

MODEL VARIABLE ANNUITY REGULATION

Table of Contents

ARTICLE I: AUTHORITY.

Pursuant to authority given by Section (insert applicable section) of the Insurance Laws of (insert state), the Insurance (Commissioner, Director or Superintendent), after due notice and publication and after affording interested persons opportunity to present written data, views and arguments, does hereby make and promulgate the following rules and regulations to be applicable to insurance companies delivering or issuing for delivery in this state variable annuities as defined in Paragraph 1, of Article II, pursuant to Section (insert applicable section) of the Insurance Laws of this State.

These regulations shall become effective (insert date).

Drafting Note: *This Article will obviously depend on the existing provisions under a given state's insurance code with respect to the method for adopting rules and regulations.*

ARTICLE II: DEFINITIONS.

1. The term "variable annuity" when used in this Regulation, shall mean any policy or contract which provides for annuity benefits which vary according to the investment experience of any separate account or accounts maintained by the insurer as to such policy or contract, as provided for in Section (insert applicable section) of the laws of this State.

Drafting Note: *The objective here is to define the contracts covered by the regulations to include all forms of annuity contracts the benefits of which vary according to the investment experience of a separate account authorized by the enabling statute, including group and individual, variable accumulation and variable benefit, etc. Exclusion of particular kinds of contracts from sections of the regulation which may be inapplicable is handled in those sections.*

2. "Agent" when used in the Regulation, shall mean any person, corporation, partnership, or other legal entity which under the laws of this State is licensed as a life insurance agent, or solicitor, general agent, or life insurance broker.

Drafting Note: *States should make the necessary changes in terminology to conform with statutory language describing those persons eligible to be licensed to sell life insurance.*

ARTICLE III: QUALIFICATION OF INSURANCE COMPANIES TO ISSUE VARIABLE ANNUITIES.

1. No company shall deliver or issue for delivery variable annuities within this State unless (a) it is licensed or organized to do a life insurance or annuity business in this State, and (b) the Commissioner is satisfied that its condition or method of operation in connection with the issuance of such contracts will not render

its operation hazardous to the public or its policyholders in this State. In this connection, the Commissioner shall consider among other things:

(i)   The history and financial condition of the company;

(ii)   The character, responsibility and fitness of the officers and directors of the company; and

(iii) The law and regulation under which the company is authorized in the state of domicile to issue variable annuities.

2. If the company is a subsidiary of an admitted life insurance company, or affiliated with such company by common management or ownership, it may be deemed by the Commissioner to have satisfied the provisions of clause (b) of Paragraph 1 hereof if either it or such admitted life company satisfies the aforementioned provisions; provided, further, that companies licensed and having a satisfactory record of doing business in this State for a period of at least three years may be deemed to have satisfied the Commissioner with respect to clause (b) of Paragraph 1 above.

3. Before any company shall deliver or issue for delivery variable annuities within this State it shall submit to the Commissioner (a) a general description of the kinds of variable annuities it intends to issue, (b) if requested by the Commissioner, a copy of the statutes and regulations of its state of domicile under which it is authorized to issue variable annuities, and (c) if requested by the Commissioner, biographical data with respect to officers and directors of the company on the NAIC uniform biographical data forms.

Drafting Note: *Paragraph 3 suggests the type of submission which might be appropriate to afford a basis for determining that a company meets the test in clause (b) of Paragraph 1. The NAIC biographical data regulation and forms appear in the 1967 NAIC Proceedings II 382-385 and 1974 NAIC Proceedings I 120-123.*

Some state Statutes provide seasoning requirements for the licensing of foreign life insurance companies; these statutes presumably will also apply to companies seeking to be licensed to sell variable annuities. The Committee does not believe that there is a need for seasoning requirements for companies writing variable annuities beyond those required for life companies generally. If, however, an additional seasoning requirement for companies writing variable annuities is considered desirable, the Committee feels that such a requirement should be specifically provided by statute and recommends that the statute expressly require consideration of the experience of a parent or affiliated company. See Paragraph 2 above.

The Committee recommends that if there are specific capital and surplus requirements for companies writing variable annuities these should be the same as those for life insurance companies generally. If stricter capital and surplus requirements should be considered necessary, these should be specifically provided by statute and it is strongly recommended that the statute permit waiver of such requirements pursuant to rules and regulations duly adopted by the Commissioner. A regulation to accomplish this purpose might read as follows:

> *"The Commissioner may waive any or all the requirements set forth in Section (insert applicable section) if by reason of a company's capital structure, surplus, amount of business in force and plan of operations, it substantially conforms to such requirements, or, in the opinion of the Commissioner, otherwise affords adequate protection to contract holders."*

ARTICLE IV: SEPARATE ACCOUNT.

A domestic company issuing variable annuities shall establish one or more separate accounts pursuant to Section (insert applicable section) of the Insurance Laws of this State, subject to the following provisions of this Article:

1(a). Except as may be provided with respect to reserves for guaranteed benefits and funds referred to in Paragraph 1(b), (i) amounts allocated to any separate account and accumulations thereon may be invested and reinvested without regard to any requirements or limitations prescribed by the laws of this State governing the investments of life insurance companies, and (ii) the investments in such separate account or accounts shall not be taken into account in applying the investment limitations otherwise applicable to the investments of the company.

1(b). Reserves for (i) benefits guaranteed as to dollar amount and duration, and (ii) funds guaranteed as to principal amount or stated rate of interest may be maintained in a separate account if a portion of the assets of such separate account at least equal to such reserve liability is invested in accordance with the laws and regulations of this State governing the investments of life insurance companies. Such portion of the assets also shall not be taken into account in applying the investment limitations otherwise applicable to the investments of the company.

1(c). With respect to 75% of the market value of the total assets in a separate account no company shall purchase or otherwise acquire the securities of any issuer, other than securities issued or guaranteed as to principal or interest by the United States, if immediately after such purchase or acquisition the market value of such investment, together with prior investments of such separate account in such security taken at market, would exceed 10% of the market value of the assets of said separate account; provided, however, that the Commissioner may waive such limitation if, in his opinion, such waiver will not render the operation of such separate account hazardous to the public or policyholders in this State.

1(d). Unless otherwise permitted by law or approved by the Commissioner, no company shall purchase or otherwise acquire for its separate accounts the voting securities of any issuer if as a result of such acquisition the insurance company and its separate accounts, in the aggregate, will own more than 10% of the total issued and outstanding voting securities of such issuer; provided, that the foregoing shall not apply with respect to securities held in separate accounts, the voting rights in which are exercisable only in accordance with instructions from persons having interest in such account.

1(e). The limitations provided in Paragraphs 1(c) and 1(d) above shall not apply to the investment with respect to a separate account in the securities of an investment company registered under the Investment Company Act of 1940, provided that the investments of such investment company comply in substance with Paragraphs 1(c) and 1(d) hereof.

Drafting Note: *Virtually all statutes contain the broad language in Paragraph 1(a) permitting investments without regard to investment limitations with respect to life insurance companies. Paragraph 1(c) would impose a quantitative limitation to promote diversification and limit investment risk. It should be noted that while separate accounts registered under the 1940 Act will be subject to the 5% rule under that Act, there would appear to be sound reasons for permitting greater flexibility, up to 10%, with respect to those separate accounts not so subject. It is further provided that the Commissioner may waive this limitation where such would not render the operation of the account hazardous.*

Paragraph 1(d) would prohibit the acquisition by the separate account of the securities of an issuer if the acquisition would result in the ownership of more than 10% of the voting securities of such issuer, with the holdings by the company and all of its separate accounts aggregated, except when there is a pass-through of voting rights to contractholders.

Paragraph 1(f) is intended primarily to permit the operation of a separate account as a unit investment trust under the 1940 Act, with all of its assets being invested in the securities of a registered investment company. It should be noted, however, that the Commissioner would retain indirect control since the exception from the application of Paragraphs 1(c) and 1(d) would not apply if the investments of the investment company did not comply with such Paragraphs.

Basic authority for exemption from investment limitations, as well as the quantitative limitations in Paragraphs 1(c) and 1(d) and the exemption from these limitations in Paragraph 1(f), should probably be covered by statute.

2. Unless otherwise approved by the Commissioner, assets allocated to a separate account shall be valued at their market value on the date of valuation, or if there is no readily available market, then as provided under the terms of the contract or the rules or other written agreement applicable to such separate account; provided, that unless otherwise approved by the Commissioner, the portion, if any, of the assets of such separate account equal to the company's reserve liability with regard to the benefits and funds referred to in clauses (i) and (ii) of Paragraph 1(b) shall be valued in accordance with the rules otherwise applicable to the company's assets.

Drafting Note: *In the case of variable annuities involving a 1940 Act registered account and in many group contracts the procedure for valuing assets will be stated in rules of the separate accounts or in a separate applicable written agreement, and the regulation is drafted to permit this.*

3. If and to the extent so provided under the applicable contracts, that portion of the assets of any such separate account equal to the reserves and other contract liabilities with respect to such account shall not be chargeable with liabilities arising out of any other business the company may conduct.

Drafting Note: *To achieve effective insulation of certain assets held in separate accounts from claims of general creditors it is probably necessary, as a matter of general corporate law, that such insulation be specifically authorized by statute.*

4. Notwithstanding any other provisions of law a company may

(a)   with respect to any separate account registered with the Securities and Exchange Commission, as a unit investment trust exercise voting rights in connection with any securities of a regulated investment company registered under the Investment Company Act of 1940 and held in such separate accounts in accordance with instructions from persons having interests in such accounts ratably as determined by the company, or

(b)   with respect to any separate account registered with the Securities and Exchange Commission as a management investment company, establish for such account a committee, board, or other body, the members of which may or may not be otherwise affiliated with such company and may be elected to such membership by the vote of persons having interests in such account ratably as determined by the company. Such committee, board or other body may have the power, exercisable alone or in conjunction with others to manage such separate account and the investment of its assets.

A company, committee, board or other body may make such other provisions in respect to any such separate account as may be deemed appropriate to facilitate compliance with requirements of any federal or state law now or hereafter in effect; provided that the Commissioner approves such provisions as not hazardous to the public or the company's policyholders in this State.

Drafting Note: *Certain separate accounts are registered with the Securities and Exchange Commission under the Investment Company Act of 1940, and contractholders in such separate accounts must be given voting rights, principally in connection with the management of the assets of the account. Subparagraph 4(a) is intended to provide for a separate account registered with the SEC as a unit investment trust, under which all of the assets of the account are invested in a separate mutual fund. In this connection, see also Paragraph 1(f). Subparagraph 4(a) would permit a pass-through of voting rights in the shares of the underlying mutual fund to the contractholders.*

Where a separate account is registered under the 1940 Act as a management investment company the contractholders have the right to elect a committee with power to manage the account and invest its assets. Subparagraph 4(b).

As with the insulation provision in Paragraph 3 of Article IV above, it would probably be wise in most states to provide authority for the above regulation by statute, since many states require that the assets of an insurer may be managed by its board of directors.

5. No sale, exchange or other transfer of assets may be made by a company between any of its separate accounts or between any other investment account and one or more of its separate accounts unless, in case of a transfer into a separate account, such transfer is made solely to establish the account or to support the operation of the contracts with respect to the separate account to which the transfer is made, and unless such transfer, whether into or from a separate account, is made (a) by a transfer of cash, or (b) by a transfer of securities having a valuation which could be readily determined in the marketplace, provided that such transfer of securities is approved by the Commissioner. The Commissioner may authorize other transfers among such accounts, if, in his opinion, such transfers would not be inequitable.

Drafting Note: *This provision, common to many existing statutes and regulations, is intended to prevent unfair or discriminatory transfer among accounts. Regular cash flow should permit those transfers to and from the general account necessary to the operation of the variable annuity business to be made in cash.*

6. The company shall maintain in each such separate account assets with a value at least equal to the reserves and othe contract liabilities with respect to such account, except as may otherwise be approved by the Commissioner.

Drafting Note: *This section varies from a number of existing regulations which provide that assets shall be equal to reserves. The Committee agrees that a deficit should not be permitted, but that build-up of surplus within the separate account should not be prohibited as it would apparently be under the existing regulations referred to.*

7. Rules under any provision of the Insurance Laws of this State or any regulation applicable to the officers and directors of insurance companies with respect to conflicts of interest shall also apply to members of any separate accounts committee, board or other similar body. No officer or director of such company nor any member of the committee, board or body of a separate account shall receive directly or indirectly any commission or any other compensation with respect to the purchase or sale of assets of such separate account.

ARTICLE V: FILING OF CONTRACTS.

The filing requirements applicable to variable annuities shall be those filing requirements otherwise applicable under existing statutes and regulations of this State with respect to individual and group life insurance and annuity contract form filings, to the extent appropriate.

ARTICLE VI: VARIABLE ANNUITY CONTRACTS.

1. Any variable annuity providing benefits payable in variable amounts delivered or issued for delivery in this State shall contain a statement of the essential features of the procedures to be followed by the insurance company in determining the dollar amount of such variable benefits. Any such contract, including a group contract and any certificate in evidence of variable benefits issued thereunder, shall state that such dollar amount will vary to reflect investment experience and shall contain on its first page a clear statement to the effect that the benefits thereunder are on a variable basis.

2. Illustrations of benefits payable under any variable annuity shall not include projections of past investment experience into the future or attempted predictions of future investment experience; provided that nothing contained herein is intended to prohibit use of hypothetical assumed rates of return to illustrate possible levels of benefits.

3. No individual variable annuity contract calling for the payment of periodic stipulated payments shall be delivered or issued for delivery in this State unless it contains in substance the following provision or provisions which in the opinion of the Commissioner are more favorable to the holders of such contracts:

(a)   A provision that there shall be a period of grace of 30 days or of one month, within which any stipulated payment to the insurer falling due after the first may be made, during which period of grace the contract shall continue in force. The contract may include a statement of the basis for determining the date as of which any such payment received during the period of grace shall be applied to produce the values under the contract arising therefrom;

(b)   A provision that, at any time within (insert number) year(s) from the date of default, in making periodic stipulated payments to the insurer during the life of the annuitant and unless the cash surrender value has been paid, the contract may be reinstated upon payment to the insurer of such overdue payments as required by contract, and of all indebtedness to the insurer on the contract, including interest.

The contract may include a statement of the basis for determining the date as of which the amount to cover such overdue payments and indebtedness shall be applied to produce the values under the contract arising therefrom;

[(c)   A provision specifying the options available in the event of default in a periodic stipulated payment. Such options may include an option to surrender the contract for a cash value as determined by the contract, and shall include an option to receive a paid-up annuity if the contract is not surrendered for cash, the amount of such paid-up annuity being determined by applying the value of the contract at the annuity commencement date in accordance with the terms of the contract.]

Drafting Note: *The Committee would recommend inclusion of provisions dealing   with grace [,] and reinstatement [and nonforfeiture] only if the law of a particular state requires these in individual fixed dollar deferred annuities. Several companies issuing variable annuity contracts do not require contractholders to make periodic stipulated payments. If a contractholder ceases making payments he may resume doing so thereafter at any time. It is assumed that Paragraph 3(a) would be inapplicable to such contracts since the provisions described above would be regarded as more favorable to the contractholders than a 30 day grace period.*

4. Any variable annuity contract delivered or issued for delivery in this State shall stipulate the investment increment factors to be used in computing the dollar amount of variable benefits or other variable contractual payments or values thereunder, and may guarantee that expense and/or mortality results shall not adversely affect such dollar amounts. In the case of an individual variable annuity contract under which the expense and mortality results may adversely affect the dollar amount of benefits, the expense and mortality factors shall be stipulated in the contract.

In computing the dollar amount of variable benefits or other contractual payments or values under an individual variable annuity contract:

(a)   The annual net investment increment assumption shall not exceed 5% except with the approval of the Commissioner.

(b)   To the extent that the level of benefits may be affected by future mortality results, the mortality factor shall be determined from the Annuity Mortality Table for 1949, Ultimate, or any modification of that table not having a lower life expectancy at any age, or, if approved by the Commissioner, from another table.

"Expense" as used in this Paragraph, may exclude some or all taxes, as stipulated in the contract.

5.   The reserve liability for variable annuities shall be established pursuant to the requirements of the Standard Valuation Law in accordance with actuarial procedures that recognize the variable nature of the benefits provided and any mortality guarantees.

ARTICLE VII: NONFORFEITURE BENEFITS

Drafting Note: *This section should be included only if the Standard Nonforfeiture Law for Individual Deferred Annuities has been adopted in this State.*

1. This Article shall not apply to any (i) reinsurance, (ii) group annuity contract purchased in connection with one or more retirement plans or plans of deferred compensation established or maintained by or for one or more employers (including partnerships or sole proprietorships), employee organizations, or any combination thereof, or other than plans providing individual retirement accounts or individual retirement annuities under Section 408 of the Internal Revenue Code, as now or hereafter amended, (iii) premium deposit fund, (iv) investment annuity, (v) immediate annuity, (vi) deferred annuity contract after annuity payments have commenced, (vii) reversionary annuity, or to any (viii) contract which is to be delivered outside this state through an agent or other representative of the company issuing the contract.

2. To the extent that any variable annuity contract provides benefits which do not vary in accordance with the investment performance of a separate account before the annuity commencement date, such contract shall contain provisions which satisfy the requirements of (the Standard Nonforfeiture Law for Deferred Annuities — Insert appropriate statutory citation for this law) and shall not otherwise be subject to this Article.

Drafting Note: *For the purpose of demonstrating that the minimum nonforfeiture amounts under the fixed portion of the contract comply with Standard Nonforfeiture Law for Deferred Annuities, the company should assume that 100% of the considerations are allocated to the fixed account. If the contract provides for transfers between the fixed and variable accounts, the transaction charge may not exceed the charge for transfers to another separate account or to another investment division within the same separate account, as determined in Paragraph 4 of this Article.*

3. In the case of contract issued on or after (Insert operative date of this Article, which should be at least 18 months after adoption) no variable annuity contract, except as stated in Paragraphs 1 and 2, shall be delivered or issued for delivery in this state unless it contains in substance the following provisions, or corresponding provisions which in the opinion of the Commissioner are at least as favorable to the contract-holder, upon cessation of payment of considerations under the contract:

(a)   That upon cessation of payment of considerations under a contract, the company will grant a paid-up annuity benefit on a plan described in the contract that complies with Paragraph 7. Such description will include a statement of the mortality table, if any, and guaranteed or assumed interest rates used in calculating annuity payments.

(b)   If a contract provides for a lump sum settlement at maturity, or at any other time, that upon surrender of the contract at or prior to the commencement of any annuity payments, the company will pay in lieu of any paid-up annuity benefit a cash surrender benefit as described in the contract that complies with Paragraph 8. The contract may provide that the company reserves the right, at its option, to defer the determination and payment of any cash surrender benefit for any period during which the New York Stock Exchange is closed for trading (except for normal holiday closing) or when the Securities and Exchange Commission has determined that a state of emergency exists which may make such determination and payment impractical.

(c)   A statement that any paid-up annuity, cash surrender or death benefits that may be available under the contract are not less than the minimum benefits required by any statute of the state in which the contract is delivered and an explanation of the manner in which such benefits are altered by the existence of any additional amounts credited by the company to the contract, any indebtedness to the company on the contract or any prior withdrawals from or partial surrenders of the contract.

4. The minimum values as specified in this Article of any paid-up annuity, cash surrender or death benefits available under a variable annuity contract shall be based upon nonforfeiture amounts meeting the requirements of this paragraph.

The minimum nonforfeiture amount on any date prior to the annuity commencement date shall be an amount equal to the percentages of net considerations (as specified in Paragraph 5) increased (or decreased) by the net investment return allocated to the percentages of net considerations, which amount shall be reduced to reflect the effect of:

(i)   any partial withdrawals from or partial surrenders of the contract;

(ii)   the amount of any indebtedness on the contract, including interest due and accrued;

(iii)   an annual contract charge not less than zero and equal to (a) the lesser of thirty dollars ($30.00) and 2% of the end of year contract value less (b) the amount of any annual contract charge deducted from any gross considerations credited to the contract during such contract year; and

(iv)   a transaction charge of ten dollars ($10.00) for each transfer to another separate account or to another investment division within the same separate account.

"Net investment return" means that the rate of investment return to be credited to the variable annuity contract in accordance with the terms of the contract after deductions for tax charges, if any, and for asset charges either at a rate not in excess of that stated in the contract, or in the case of a contract issued by a non-profit corporation under which the contractholder participates fully in the investment, mortality and expense experience of the account, in an amount not in excess of the actual expense not offset by other deductions. The net investment return to be credited to a contract shall be determined at least monthly.

The annual contract charge of thirty dollars ($30.00) and the transaction charge of ten dollars ($10.00) referred to above will be adjusted to reflect changes in the Consumer Price Index in accordance with Paragraph 6.

5. The percentages of net considerations used to define the minimum nonforfeiture amount in Paragraph 4 shall meet the requirements of this paragraph.

(a)   With respect to contracts providing for periodic considerations, the net considerations for a given contract year used to define the minimum nonforfeiture amount shall be an amount not less than zero and shall be equal to the corresponding gross considerations credited to the contract during that contract year less an annual contract charge of thirty dollars ($30.00) and less a collection charge of one dollar and twenty-five cents ($1.25) per consideration credited to the contract during that contract year less any charges for premium taxes. The percentages of net considerations shall be sixty-five percent (65%) for the first contract year and eighty-seven and one-half percent (87½%) for the second and later contract years. Notwithstanding the provisions of the preceding sentence, the percentage shall be sixty-five percent (65%) of the portion of the total net consideration for any renewal contract year which exceeds by not more than two times the sum of those portions of the net considerations in all prior contract years for which the percentage was sixty-five percent (65%).

(b)   With respect to contracts providing for a single consideration, the net consideration used to define the minimum nonforfeiture amount shall be the gross consideration less a contract charge of seventy-five dollars ($75.00) and less any charge for premium taxes. The percentage of the net consideration shall be ninety percent (90%).

The annual contract charge of thirty dollars ($30.00), the collection charge of one dollar and twenty-five cents ($1.25) per collection, and the single consideration contract charge of seventy-five dollars ($75.00) referred to above, will be adjusted to reflect changes in the Consumer Price Index in accordance with Paragraph 6.

6. Demonstration that a contract's nonforfeiture amounts comply with this Article shall be based on the following assumptions:

(a)   Values should be tested at the ends of each of the first twenty (20) contract years ;

(b)   A net investment return of 7% per year should be used ;

(c)   If the contract provides for transfers to another separate account or to another investment division within the same separate account, one transfer per contract year should be assumed ;

(d)   In determining the state premium tax applicable to the contract, the state of residence should be assumed to equal the state of delivery ;

(e)   With respect to contracts providing for periodic considerations, monthly considerations of $100 should be assumed for each of the first 240 months ;

(f)   With respect to contracts providing for a single consideration, a $10,000 single consideration should be assumed ;and

(g)   The following contract charges should be used:

1.   For contracts filed in 1980 or earlier, the annual contract charge of thirty dollars ($30.00) referred to in paragraphs 4 and 5, the charge of ten dollars ($10.00) per transfer referred to in paragraph 4, the collection charge of one dollar and twenty-five cents ($1.25) per consideration referred to in paragraph 5, and the contract charge of seventy-five dollars ($75.00) referred to in paragraph 5(b).

2.   For contracts filed in 1981 or later, the above contract charges multiplied by the ratio of (i) the Consumer Price Index for June of the calendar year preceding the date of filing, to (ii) the Consumer Price Index for June, 1979.

(h)   If the contract provides for allocation of considerations to both fixed and variable accounts, 100% of the considerations should be assumed to be allocated to the variable account.

As used herein, the Consumer Price Index means such Index for all urban consumers for all items as published by the Bureau of Labor Statistics of the United States Department of Labor or its successor.

If publication of the Consumer Price Index ceases, or if such Index otherwise becomes unavailable or is altered in such a way as to be unusable, the Commissioner will substitute an index he deems to be suitable.

7.   Any paid-up annuity benefit available under a variable annuity contract shall be such that its present value on the annuity commencement date is at least equal to the minimum nonforfeiture amount on that date. Such present value shall be computed using the mortality table, if any, and the guaranteed or assumed interest rates used in calculating the annuity payments.

8.   For variable annuity contracts which provide cash surrender benefits, the cash surrender benefit at any time prior to the annuity commencement date shall not be less than the minimum nonforfeiture amount next computed after the request for surrender is received by the company. The death benefit under such contracts shall be at least equal to the cash surrender benefit.

9.   Any variable annuity contract which does not provide cash surrender benefits or does not provide death benefits at least equal to the minimum nonforfeiture amount prior to the annuity commencement date shall include a statement in a prominent place in the contract that such benefits are not provided.

10.   Notwithstanding the requirements of this Article, a variable annuity contract may provide under the situations specified in (a) or (b) below that the company, at its option, may cancel the annuity and pay the contractholder its accumulated value and by such payment be released of any further obligation under such contract ;

(a)   if at the time the annuity becomes payable the accumulated value is less than $2,000, or would provide an income the initial amount of which is less than $20 per month; or

(b)   if prior to the time the annuity becomes payable under a periodic payment variable annuity contract no considerations have been received under the contract for a period of two (2) full years and both (i) the total considerations paid prior to such period, reduced to reflect any partial withdrawals from or partial surrenders of the contract, and (ii) the accumulated value, amount to less than $2,000.

11.   For any variable annuity contract which provides, within the same contract by rider or supplemental contract provision, both annuity benefits and life insurance benefits that are in excess of the greater of cash surrender benefits or a return of the gross considerations with interest, the minimum nonforfeiture

benefits shall be equal to the sum of the minimum nonforfeiture benefits for the annuity portion and the minimum nonforfeiture benefits, if any, for the life insurance portion computed as if each portion were a separate contract. Notwithstanding the provisions of Paragraph 4, additional benefits payable (a) in the event of total and permanent disability, (b) as reversionary annuity or deferred reversionary annuity benefits, or (c) as other policy benefits additional to life insurance, endowment, and annuity benefits, and considerations for all such additional benefits, shall be disregarded in ascertaining the minimum nonforfeiture amounts, paid-up annuity, cash surrender and death benefits that may be required by this Article. The inclusion of such additional benefits shall not be required in any paid-up benefits, unless such additional benefits separately would require minimum nonforfeiture amounts, paid-up annuity, cash surrender and death benefits.

ARTICLE VIII: REQUIRED REPORTS

1. Any company issuing individual variable annuities shall mail to the contractholder at least once in each contract year after the first at his last address known to the company, a statement or statements reporting the investments held in the separate account. The company shall submit annually to the Insurance Commissioner a statement of business of its separate account or accounts in such form as may be prescribed by the National Association of Insurance Commissioners.

Drafting Note: *The Committee intended to leave this language sufficiently flexible to apply in the event that the separate account statement is combined with the regular life blank.*

2. Any company issuing individual variable annuities shall mail to the contractholder at least once in each contract year after the first at his last address known to the company a statement reporting as of a date not more than four months previous to the date of mailing. In the case of an annuity contract under which payments have not yet commenced, (a) the number of accumulation units credited to such contract and the dollar value of a unit, or (b) the value of the contractholder's account.

ARTICLE IX: FOREIGN COMPANIES

If the law or regulation in the place of domicile of a foreign company provides a degree of protection to the policyholders and the public which is substantially equal to that provided by these regulations, the Commissioner, to the extent deemed appropriate by him in his discretion, may consider compliance with such law or regulation as compliance with these regulations.

Drafting Note: *This blanket provision would permit a Commissioner to waive any or all of these requirements applicable to foreign companies in cases where the quality of regulation in the state of domicile is such that he would have every reason to expect that the company would be adequately regulated.*

ARTICLE X: QUALIFICATIONS OF AGENTS FOR THE SALE OF VARIABLE ANNUITIES

1(a). No person may sell or offer for sale in this state any variable annuity contract unless such person is an agent and has filed with the Commissioner, in a form satisfactory to the Commissioner, evidence that such person holds any license or authorization which may be required for the solicitation or sale or variable annuity contracts by any federal or state securities law.

1(b). Any examination administered by the Department for the purpose of determining the eligibility of any person for licensing as an agent shall, after the effective date of this regulation, include such questions concerning the history, purpose, regulation, and sale of variable annuity contracts as the Commissioner deems appropriate.

2. Any person qualified in this state under this Article to sell or offer to sell variable annuity contracts shall immediately report to the Commissioner:

2(a). any suspension or revocation of his agent's license in any other state or territory of the United States:

2(b).   the imposition of any disciplinary sanction, including suspension or expulsion from membership, suspension, or revocation of or denial of registration, imposed upon him by any national securities exchange, or national securities association, or any federal, state, or territorial agency with jurisdiction over securities or variable annuity contracts;

2(c).   any judgment or injunction entered against him on the basis of conduct deemed to have involved fraud, deceit, misrepresentation, or violation of any insurance or securities law or regulation.

3.   The Commissioner may reject any application or suspend or revoke or refuse to renew any agent's qualification under this Article to sell or offer to sell variable annuity contracts upon any ground that would bar such applicant or such agent from being licensed to sell other life insurance contracts in this state. The rules governing any proceeding relating to the suspension or revocation of an agent's license shall also govern any proceeding for suspension or revocation of an agent's qualification to sell or offer to sell variable annuity contracts.

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SPECIAL REPORT

November 2, 1979

Life Insurance

By the (C) Committee Technical Task Force
on Valuation and Nonforfeiture Value Regulation

REVISED ACTUARIAL GUIDELINE ENTITLED
"THE VALUATION OF INDIVIDUAL SINGLE
PREMIUM DEFERRED ANNUITIES"

At its meeting in June 1979 the (C3) Life Insurance Subcommittee asked the (C) Committee Technical Task Force on Valuation and Nonforfeiture Value Regulation to reconsider an actuarial guideline which it had recommended. This actuarial guideline was identified as Actuarial Guideline D "Interpretation Regarding Reserves for Single Premium Deferred Annuities," and it was described in some detail in a Special Report dated May 2, 1979, to the Life Insurance (C3) Subcommittee by the Technical Task Force. [Editor's Note — See 1979 Proceedings of the NAIC, Vol. II, p. 492.]

The Technical Task Force did reconsider this actuarial guideline at its meeting in October 1979. The wording and the title of the actuarial guideline were revised at that meeting.

The Technical Task Force now recommends that the Life Insurance (C3) Subcommittee adopt the revised actuarial guideline, and that this revised actuarial guideline be recommended to the Financial Condition Examination (A5) Subcommittee for inclusion in the actuarial section of the Financial Condition Examiners Handbook.

TEXT

The title and complete text of this actuarial guideline, as revised and recommended are as follows:

The Valuation of Individual Single Premium Deferred Annuities

With respect to those states which have enacted the 1976 Amendments to the Standard Valuation Law, individual single premium deferred annuity reserves shall at least equal the greatest of any of the discounted values of all guaranteed future benefits including cash surrender values available after the date of valuation, such benefits discounted to the valuation date at the maximum permissible statutory interest rate. This method applies to all individual single premium deferred annuities which are subject to the provisions of the Standard Valuation Law in those states which have enacted the 1976 amendments. For those states which have not yet enacted the 1976 amendments this interpretation is a method of valuing individual single premium deferred annuities.

Explanatory Material — General

The explanatory material which follows is not a part of the actuarial guideline which is now being recommended. It has been included for the purpose of aiding the Life Insurance (C3) Subcommittee in its evaluation.

This actuarial guideline, like the others which have been developed by the Technical Task Force, is intended to be available for use by any commissioner who wishes to do so. Such actuarial guidelines are not to be construed as mandatory upon commissioners, but a commissioner may wish to apply them when he or she encounters situations where he or she feels that the underlying statutes are ambiguous or unclear.

The original wording of the actuarial guideline, prior to revision, was as follows:

> Interpretation Regarding Reserves for Single Premium Deferred Annuities Text
>
> Individual single premium deferred annuity reserves shall at least equal the greatest of any of the discounted values of cash surrender values available after the date of valuation, such cash values discounted to the valuation date at the maximum permissible statutory interest rate.

The revised wording of the actuarial guideline obviously differs from the original wording in that it distinguishes between those states which have enacted the 1976 Amendments to the Standard Valuation Law and those states which have not yet done so. The balance of this special report will discuss two separate cases, corresponding to these two groups of states.

Explanatory Material — States with 1976 Amendments

This is a continuation of the explanatory material which is not a part of the actuarial guideline.

The 1976 Amendments to the Standard Valuation Law reflect the most recent version of this model law. The applicable portion of the 1976 Amendments contains a paragraph which reads as follows:

> Reserves according the commissioners annuity reserve valuation method for benefits under annuity and pure endowment contracts, excluding any disability and accidental death benefits in such contracts, shall be the greatest of the respective excesses of the present values, at the date of valuation, of the future guaranteed benefits, including guaranteed nonforfeiture benefits, provided by such contracts at the end of each respective contract year, over the present value, at the date of valuation, of any future valuation considerations derived from future gross considerations, required by the terms of such contract, that become payable prior to the end of such respective contract year. The future guaranteed benefits shall be determined by using the mortality table, if any, and the interest rate or rates specified in such contracts for determining guaranteed benefits. The valuation considerations are the portions of the respective gross considerations applied under the terms of such contracts to determine nonforfeiture values.

The revised wording of the actuarial guideline does not differ materially from the original wording, insofar as it applies to states which have enacted these 1976 Amendments. In these states, the Standard Valuation Law identifies one method as the proper method for computing reserves for individual single premium deferred annuities subject to that law. The actuarial guideline identifies that same method.

Explanatory Material — States without 1976 Amendments

This is a continuation of the explanatory material which is not a part of the actuarial guideline.

In most of the states which have not yet enacted the 1976 Amendments, the applicable portion of the Standard Valuation Law reads as follows:

> Reserves according to the commissioners reserve valuation method for - - - - (2) annuity and pure endowment contracts - - - - shall be calculated by a method consistent with the principles of the preceding paragraph - - - -.

The revised wording of this actuarial guideline has quite a different effect than the original wording, insofar as it applies to states which have not enacted the 1976 Amendments. The original wording implied that the method identified was the only proper method for calculating reserves for individual single premium deferred annuities subject to the Standard Valuation Law in such a state, if the commissioner did decide to use this actuarial guideline. The revised wording, however, identified this method as one method which will be acceptable in such states; but it allows for the possibility that other methods for calculating reserves can be found which will also comply with the Standard Valuation Law.

The discussion of the original wording of this actuarial guideline at the Life Insurance (C3) Subcommittee meeting in July 1979 was specifically concerned with these states which had not enacted the 1976 Amendments. There was some feeling that the reserve method defined in the actuarial guideline should not be applied retroactively, so as to require increased reserves in annuities which were already in force. This was considered especially onerous because some states had apparently given insurance companies reason to believe that other methods which produce lower reserves would be acceptable.

However, if the commissioner of a state which has not enacted the 1976 Amendments does make use of this actuarial guideline, as revised and recommended, he or she would not be requiring insurance companies to use this particular method for computing reserves. An insurance company using the method could rely upon the acceptability of the reserves which the method generates. On the other hand, an insurance company using some other method would be free to demonstrate that this other method did meet the requirements of the Standard Valuation Law in that state. Such an alternate reserve method would not be considered inadequate solely because it produced lower reserves than the method specifically described in the actuarial guideline.

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(C) Committee Technical Task Force to Review
Valuation and Nonforfeiture Value Regulation

Life Insurance

December 1979

CONTENTS

NAIC Proceedings – 1980 Vol. I

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A. Proceedings of the NAIC Technical Task Force

This report concerns only the proceedings of the NAIC Technical Task Force to Review Valuation and Nonforfeiture
Value Regulation since the June 1979 meeting.

Recommendation for approval of a proposed revision of the NAIC Model Variable Annuity Regulation, which is concerned
with nonforfeiture benefits for variable annuity contracts, was made in a Special Report dated November 1, 1979, sent to
all members of the NAIC.

Recommendation for approval of an actuarial guideline on Valuation of Individual Single Premium Deferred Annuities, which is intended to be sent on to the Financial Condition Examination (A5) Subcommittee for inclusion in the Financial Condition Examiners Handbook, was made in a Special Report dated November 2, 1979, sent to all members of the NAIC. This actuarial guideline is a revision of a previous actuarial guideline, which the Life Insurance (C3) Subcommittee had asked the NAIC Technical Task Force to reconsider in June 1979.

A. Proceedings of the NAIC Technical Task Force

This report includes a letter from William A. White of the NAIC Technical Task Force dated October 12, 1979, pertaining to several life insurance topics which have been on the agenda of the NAIC Technical Task Force (Attachment C-1); a letter from Paul E. Sarnoff, of Prudential Life Insurance Company of America, dated October 31, 1979, pertaining to several life insurance topics which have been considered by the NAIC Technical Task Force and including a memorandum entitled "The Valuation of Policies under the 1976 Amendments" (Attachment C-2); a memorandum from Bradford S. Gile of the NAIC Technical Task Force containing a draft of a proposed actuarial guideline for distinguishing an annuity contract from life insurance contracts for minimum nonforfeiture value purposes (Attachment D-1). Also included is a discussion draft prepared by Ted Becker of the NAIC Technical Task Force of a proposed actuarial guideline for distinguishing individual single premium immediate annuity contracts from other individual single premium annuity contracts (Attachment D-2); a panel presentation at a Society of Actuaries Concurrent Session by Yuan Chang of Travelers Insurance Company, dated October 24, 1979, pertaining to dynamic valuation interest rates for proposed use in a future revision of the Standard Valuation Law (Attachment E-1); a discussion prepared in response to the same Society of Actuaries Concurrent Session by John O. Montgomery of the NAIC Technical Task Force, pertaining to the same subject (Attachment E-2); a memorandum from Bradford S. Gile of the NAIC Technical Task Force dated October 17, 1979, pertaining to nonforfeiture values for varying premium life insurance plans (Attachment F); a memorandum from the Society of Actuaries Special Committee to Recommend New Mortality Tables for Valuation to the Members of the Society dated July 1979, pertaining to proposed new mortality tables for individual life insurance and including supplementary sheets defining four new tables (Attachment G-1). Also included is a discussion prepared by John O. Montgomery of the NAIC Technical Task Force in connection with a Society of Actuaries Discussion Forum on the proposed new mortality tables (Attachment G-2); a letter from Harold B. Leff, of Metropolitan Life Insurance Company, to John O. Montgomery dated July 10, 1979, concerning special questions related to using the proposed new mortality tables for joint life insurance (Attachment G-3); a letter from Wilbur Bolton, of Occidental Life Insurance Company of California to John Montgomery dated August 27, 1979, on the same subject (Attachment G-4); a letter from Paul E. Sarnoff, of Prudential Life Insurance Company of America, to Harold Leff dated August 20, 1979, containing illustrative calculations of adjusted premiums and minimum cash values under the current 1958 C.S.O. Mortality Table and the proposed new mortality tables (Attachment G-5); and a special supplement prepared by John Montgomery containing rather extensive illustrative calculations based on the proposed new mortality tables (Attachment G-6).

William A. White has recently rejoined the staff of the New Jersey Department of Insurance as Chief Actuary, and he now has been readmitted as a member of the NAIC Technical Task Force. Steps are now in progress which may result in two additional members being added to the NAIC Technical Task Force, as described in the minutes for the October 20 and 21, 1979, meeting under "Executive Session" (Attachment B).

Items 1 through 6 below relate to topics which have been listed on the agenda of the NAIC Technical Task Force.

1.   Actuarial Guideline

      a.   One actuarial guideline is being recommended at this time. (See the Special Report dated November 2, 1979.)

      b.   The NAIC Technical Task Force recognizes that it would be desirable for the Actuarial Section of the NAIC Financial Examiners Handbook, which is the complete collection of duly adopted actuarial guidelines, to include a preamble and an appropriate numbering system. Larry Gorski of the NAIC Technical Task Force has been working on this project, and a definite proposal is expected at its December 1979 meeting.

      c.   The NAIC Technical Task Force is continuing to work on three proposed actuarial guidelines relating to definitions involving annuities. Some decision on the underlying questions involved in these definitions is needed in order to answer critical questions about determining minimum reserves under the Standard Valuation Law and minimum nonforfeiture benefits under the Standard Nonforfeiture Law.

The first of these proposed actuarial guidelines would define an annuity contract, so as to distinguish it from a life insurance contract. This is particularly important for minimum nonforfeiture value purposes. Bradford S. Gile, of the NAIC Technical Task Force had prepared a memorandum containing a draft guideline on this subject (Attachment D-1).

The second of these proposed actuarial guidelines would define a group annuity contract, so as to distinguish it from an individual annuity contract. No draft guideline or discussion draft has been presented to the NAIC Technical Task Force up to this time.

The third of these proposed actuarial guidelines would define an individual single premium immediate annuity contract, so as to distinguish it from other individual single premium annuity contracts. Ted Becker of the NAIC Technical Task Force had prepared a discussion draft for such a guideline (Attachment D-2).

The NAIC Technical Task Force discussed these definitions, but did not reach any conclusions. The American Council of Life Insurance has a task force working on annuities, and this task force may have comments to present for consideration by the NAIC Technical Task Force at its December 1979 meeting. Representatives of the American Council of Life Insurance were supplied with copies of the draft guidelines prepared by the NAIC Technical Task Force members (Attachments D-1 and D-2) for possible use in preparing a proposal.

d.   For some time the NAIC Technical Task Force has been reviewing a list of interpretations of the California Insurance Department. [Editors Note: See the 1978 Proceedings of the NAIC -- Vol. II, pages 452-453 for the original list of these interpretations.] The actuarial guideline now being recommended was developed from Interpretation 11 in the list of twelve interpretations. Interpretations 4, 7 and 9 in this list have previously been developed into actuarial guidelines, which were adopted by the Life Insurance (C3) Subcommittee in June 1979. The NAIC Technical Task Force has agreed that it is not necessary or desirable to have an actuarial guideline corresponding to Interpretation 10, which reads as follows: "For the calculation of premium deficiency reserves or reserves for interest guarantees in excess of the maximum permissible valuation interest rate, reserve sufficiencies may not be offset against prior deficiencies." The NAIC Technical Task Force needs to consider Interpretations 1, 2, 3, 5, 6, 8 and 12 further in order to decide whether or not actuarial guidelines should be developed on these subjects.

e.   There are still other actuarial questions which the NAIC Technical Task Force is now studying, and which may be appropriate subjects for actuarial guidelines. Each of these three questions was discussed for the first time by the NAIC Technical Task Force at its October 1979 meeting.

The first question relates to minimum nonforfeiture values for annuity contracts under the Standard Nonforfeiture Law for Individual Deferred Annuities. The question is concerned with the proper treatment of "Additional Amounts Credited by the Company" on the prospective definition of these minimum nonforfeiture values, and whether or not such additional amounts can be accumulated to the maturity date at the guaranteed rate of interest and then discounted back at a rate of interest 1% higher than the guaranteed rate. These additional amounts would typically result from dividends or excess interest credits under the annuity contract. If discounting at a higher interest rate is permissible, the end result would be to allow some erosion in the current accumulated value of the additional amounts under the prospective definition of minimum nonforfeiture values. (However, the annuity contract would also be subject to a retrospective definition of minimum nonforfeiture values. Any erosion of the accumulated value of the additional amounts could occur only in a case where the annuity contract met the requirements of that retrospective definition.)

The second question relates to an actuarial guideline which has already been adopted and made a part of the NAIC Financial Condition Examiners Handbook. This actuarial guideline pertains to group annuities and is entitled "Reserve Requirements with Respect to Interest Rate Guarantees on Active Life Funds Held Relative to Group Annuity Contracts." The question is concerned with the meaning of "transfer value," in the requirement stated in the guideline that the reserve shall not be less than the transfer value of the fund.

The third question relates to nonforfeiture values for life insurance policies under the 1976 Amendments to the Standard Valuation Law and the Standard Nonforfeiture Law. The question is whether it is proper to calculate the reserve for reduced paid up life insurance and extended term insurance which has gone into force under the nonforfeiture provisions of the policy at 5½% interest rather than 4½%. Paul E. Sarnoff's letter of October 31, 1979, addresses this question in the fourth paragraph of page 2 and also in the memorandum included with that letter (Attachment C-2).

The NAIC Technical Task Force has not yet come to any conclusions on these three questions. They will be considered further at the December 1979 meeting.

A proposed actuarial guideline on nonforfeiture values for varying gross premium life insurance plans is discussed below under the topic heading "Varying Gross Premium Plans."

2. Variable Annuity Nonforfeiture Regulation

An amendment to the NAIC Model Variable Annuity Regulation, pertaining to minimum nonforfeiture benefits, is being recommended at this time. (See the Special Report dated November 1, 1979.)

3. Revision of Standard Nonforfeiture Law and Standard Valuation Law

The NAIC Technical Task Force is investigating the use of a "dynamic" or "floating" maximum interest rate to be used in computing minimum reserves under the Standard Valuation Law and possibly also for minimum cash values under the Standard Nonforfeiture Law. The interest rate would remain constant for any specific life insurance contract or annuity contract, as long as the contract remains in force. However, the maximum interest rate which companies could use for all contracts issued on a specific date would depend in some fashion on economic conditions prevailing just before that particular date. The purpose of the concept is to avoid the necessity of going to state legislatures very frequently to secure charges in the maximum interest rates.

This is a very complex subject, and work is in the embryo stage. One major difficulty is the problem of finding economic indices which can be relied upon to define appropriate maximum interest rates. Obviously, all the interest rates which are determined must be suitable and reasonable in the light of what insurance companies can be expected to earn on their investments. Another major difficulty is determining whether or not all insurance companies should be subject to the same maximum interest rates, or whether lower maximum interest rates should apply to some small and medium-sized companies.

The American Council of Life Insurance is in the process of making an in-depth study of this topic, and perhaps will submit an exposure draft in advance of the December 1979 meeting of the NAIC Technical Task Force.

The panel presentation by Yuan Chang (Attachment E-1) and the discussion by John O. Montgomery of the NAIC Technical Task Force (Attachment E-2) give additional comments on dynamic valuation interest rates. William A. White of the NAIC Technical Task Force also comments on this topic on the first page of his letter of October 12, 1979 (Attachment C-1).

New mortality tables and new expense allowances for computing adjusted premiums would require changes in the Standard Valuation Law and the Standard Nonforfeiture Law, but they are discussed under the topic heading "New Mortality Tables." Certain material under the topic heading "Varying Gross Premium Plans" also relates to possible changes in these laws.

4. Varying Gross Premium Plans

This topic refers to life insurance contracts under which the premium varies by policy duration. In some of these plans, the contract terms permit possible variation in premiums; but it may or may not actually materialize depending on what action the policyowner and/or the company may take after the policy is sold. There are two major questions before the NAIC Technical Task Force.

One major question is concerned with the relationship of the policy nonforfeiture benefits to asset shares. The Standard Nonforfeiture Law does define minimum nonforfeiture benefits at every duration, but the present wording of this law does not undertake to require a specific relationship between the cash values actually provided by a policy for successive policy years. For example, a varying premium life insurance policy might have negative minimum cash values for the first nine policy years and this policy might actually provide zero cash value at the end of these nine policy years. There is apparently no violation of the present wording of the Standard Nonforfeiture Law if such policy contains a 10th year cash value substantially in excess of the 10th year gross annual premium, even though there is no obvious source for this rather high 10th year cash value. Most states do, however, have authority to disapprove a policy if it is inequitable; and such a policy does seem to be inequitable since the cash values actually provided do not follow the expected pattern of asset shares.

Bradford S. Gile, of the NAIC Technical Task Force, has written a memorandum pertaining to this question which contains a suggested actuarial guideline for consideration under the present wording of the Standard Nonforfeiture Law as well as some suggestions concerning possible future revision of the Standard Nonforfeiture Law (Attachment F). Paul E. Sarnoff's letter of October 31, 1979, also speaks to this question in his letter (Attachment C-2). The NAIC Technical Task Force expects to work on this question in more detail at its December 1979 meeting.

A second major question is concerned with relatively new designs for plans of varying premium life insurance, which may present special problems in determining minimum reserves and minimum nonforfeiture values. One of these plans is sometimes called an "adjustable life insurance policy." The "adjustable life insurance policy" is a plan with great flexibility for the policyholder, where premiums and benefits can be changed in numerous different ways, depending on the terms of the contract and/or options selected by the policyowner. Another of these plans is sometimes called an "indeterminate premium life insurance policy." An "indeterminate premium life insurance policy" does not fully define premiums beyond a certain policy anniversary. Typically, such plans will provide nonparticipating whole life insurance, and the premium rate will be guaranteed for two or three years after the issue date. Later premiums will be as determined by the insurance company, but not to exceed a numerical maximum specified in the contract. Under both of these two plans, there is a potential for variation in gross premium rates; but it is very possible that the actual premiums for a specific policy will remain level throughout the course of the contract.

William A. White of the NAIC Technical Task Force refers to "indeterminate premium life insurance policies" and to a type of "adjustable life insurance policy" in his letter of October 12, 1979, although his letter does not use these expressions to identify the plans (Attachment C-1). A paper by Spencer Koppel entitled "Nonparticipating Adjustable Individual Life Policies" is also of interest. [This paper is not attached because of its length; but it is soon to be published in Volume XXXI of the *Transactions* of the Society of Actuaries.]

Several states have had questions about how to apply the Standard Valuation Law and the Standard Nonforfeiture Law to these plans, but the NAIC Technical Task Force did not have the plans on its agenda prior to its October 1979 meeting. The NAIC Technical Task Force discussed these plans at the October 1979 meeting, and expects to consider them further at the December 1979 meeting.

5. New Mortality Table

The Society of Actuaries Special Committee to Recommend New Mortality Tables for Valuation has been working on new mortality tables for the valuation of individual life insurance for some time, and this Society Committee has prepared four mortality tables which are intended for eventual use in calculating reserves under a revision of the Standard Valuation Law. There are two separate mortality tables for male and female insureds for policies which are in full force, or in force as reduced paid up insurance under a nonforfeiture option. These two tables have been temporarily identified as Table K(M) and Table K(F). There are two additional separate tables for male and female insureds for policies which are in force as extended insurance. These two tables have been identified as Table KET(M) and Table KET(F).

Charles A. Ormsby, of John Hancock Mutual Life Insurance Company, is Chairman of this Society of Actuaries Committee. This Society Committee certainly seems to have worked diligently, and to have done an excellent job.

The memorandum from this Society of Actuaries Committee to the members of the Society dated July 1979 gives considerable information and background about the four proposed tables. This memorandum includes three supplementary sheets which define the mortality rates under the four proposed mortality tables: K(M), K(F), KET(M) and KET(F) (Attachment G-1).

The NAIC Technical Task Force expects to have a definite recommendation with respect to new mortality tables for individual life insurance contracts for action by the Life Insurance (C3) Subcommittee at its June 1980 meeting. There are still some important questions with respect to the proposed tables which remain to be answered. John O. Montgomery of the NAIC Technical Task Force has prepared a discussion which outlines a number of these questions related to individual life insurance contracts, and which also gives suggestions for future action in areas like annuities and group life insurance contracts (Attachment G-2).

The following comments pertain to questions involving valuation of individual life insurance contracts, and which the NAIC Technical Task Force must consider in preparing its recommendations for June 1980.

First, how can the proposed new mortality tables be adapted for joint life insurance? The use of separate tables for male and female insureds means that even a two-life joint case could have three separate combinations: two male lives, two female lives, or one male and one female life. Also, the K(M) and K(F) Tables are not Makehamized, and it remains to be demonstrated whether the principle of uniform seniority can be extended to joint life calculations based on these proposed tables. Thus, if two insureds are not the same age, it may or may not be possible to determine an appropriate table of factors for the K(M) and K(F) Tables, based on the difference of age between the two insureds, for the purpose of adding this factor to the age of the younger of the two insureds to obtain a joint equal age and thereafter assuming that both insureds have attained this joint equal age. Harold B. Leff's letter of July 10, 1979, (Attachment G-3) and Wilbur M. Bolton's letter of August 27, 1979 (Attachment G-4) discuss matters involving joint life insurance in some detail. William A. White, of the NAIC Technical Task Force, also discusses this subject on page 2 of his letter of October 12, 1979 (Attachment C-1).

Second, are the new mortality tables suitable for renewable term insurance plans? There is some concern that these plans would have higher mortality than other plans, particularly in cases where the insured has attained a relatively high attained age or in cases where there are factors operating which may encourage the healthy insureds under these plans to try to qualify for lower gross premium rates on the basis of evidence of current insurability.

Third, what is the proper way to handle the special cases of industrial life insurance, guaranteed issue life insurance, and substandard life insurance? Special mortality tables are necessary for industrial life insurance and guaranteed issue life insurance, and it is unlikely that these plans can be covered in the recommendations to the Life Insurance (C3) Subcommittee for June 1980. Special mortality tables may or may not also be needed for substandard life insurance.

In addition to questions involving valuation of individual life insurance contracts, there is the critical question of adapting the proposed new mortality tables to nonforfeiture values under a revision of the Standard Nonforfeiture Law. This will require a decision as to the proper expense allowance to be used in computing the adjusted premiums, which determine minimum nonforfeiture values under the Standard Nonforfeiture Law. John O. Montgomery's discussion, which has been mentioned elsewhere under this topic heading, describes three different methods which the NAIC Technical Task Force is considering (Attachment G-2).

Paul E. Sarnoff's letter to Harold Leff dated August 20, 1979, contains attachments with illustrative adjusted premium and minimum cash value calculations on the 1958 CSO Table, which is currently used under the Standard Valuation Law and the Standard Nonforfeiture Law, and the proposed new K(M) and K(F) Tables (Attachment G-5).

John O. Montgomery has prepared a special supplement containing rather extensive illustrative calculations based on the K(M) and K(F) Tables (Attachment G-6). Where the same assumptions are illustrated, Mr. Montgomery's calculations appear to be consistent with Mr. Sarnoff's.

These illustrative calculations appear to show that the proposed new tables are suitable for use in computing nonforfeiture values, at least for several traditional plans of life insurance. These calculations should be useful in demonstrating how the new tables would operate in a wide range of circumstances, and using several different trial expense allowance assumptions for nonforfeiture values. They also should be useful in showing the differences in reserves, cash values and other actuarial functions between males and females under the proposed new tables.

6. Companies Earning Lower Interest Rates Than the Rate Assumed in Their Reserves

This is a joint topic which involves accident and health insurance and credit insurance in addition to life insurance. Two aspects of the topic have been noted. The first aspect would be identification of such insurance companies, possibly by recommending changes in the Annual Statement blank. The other aspect would be in establishing a remedy after a problem had been identified.

Paul E. Sarnoff comments on requiring reserve strengthening on a mandatory basis in his letter of October 12, 1979 (Attachment C-2). Mandatory reserve strengthening has been suggested in the past as one possible remedy for the problem, but such reserve strengthening has neither been endorsed or rejected by the NAIC Technical Task Force.

In future meetings, the NAIC Technical Task Force plans to review the work of the Society of Actuaries Committee on Valuation and Related Problems. This Society Committee was appointed in 1977. The purpose of this Society Committee has been defined as follows in the Yearbook of the Society of Actuaries:

> The purpose of this Committee is (1) to study in depth the underlying actuarial principles and practical problems in connection with the valuation of assets and liabilities, the determination of adequate surplus levels, and other related solvency questions, and (2) to develop a report on its findings.

It is believed that the work of this Society Committee is very pertinent to this topic, and it may aid the NAIC Technical Task Force in reaching conclusions and making definite recommendations.

B. Recommendations

See the Special Reports dated November 1, 1979, and November 2, 1979, for recommendations to the Life Insurance (C3) Subcommittee. (Attachment)

Ted Becker, Chairman, Texas; John O. Montgomery, Vice Chairman, California; James Montgomery III, District of Columbia; Larry Gorski, Illinois; Erma Edwards, Nevada; William A. White, New Jersey; Thomas J. Kelly, New York; Thomas J. Bickerstaff, Pennsylvania; Bradford S. Gile, Wisconsin.

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(ATTACHMENT C-1)

To: Mr. Ted Becker, Chairman
         NAIC (C) Committee Technical Task Force on Valuation and Nonforfeiture Value Regulation

From: William A. White, Chief Actuary
         State of New Jersey Dept. of Insurance

Date: October 12, 1979

Re: Various agenda items

It is a pleasure to be back in "regulation" and to have been asked to serve again on the Technical Task Force. These are unusually active times in the evolution of life and health insurance products, and I look forward to the opportunity to participate in that evolution. Unfortunately, I will not be able to attend the Bal Harbour meetings of the task force and the Society; I will offer my views, in writing, on several major topics, with the expectation of further developing these ideas in future correspondence and meetings.

I have been out of touch with the ACLI's proposals, for dynamic interest valuation and nonforfeiture assumptions, during the last four months, and hence I am reluctant to comment on the presentation ACLI will make to the task force; changes in the proposal which was under consideration in June may have overcome my objections. The June proposal, approved by the Council's Actuarial Committee, would define the minimum valuation and nonforfeiture standards in terms of an interest rate which is a weighted average of recent bold yields and an "inflation free" base interest rate of 3%, with weights varying for different kinds of life insurance and annuity products. For the annuity products, I had no quarrel with the concept or the specific figures involved; on the life insurance side, I felt that the theoretical treatment was superficial, that important and potentially more satisfactory alternatives were ignored, and that the proposal did not address the legitimate regulatory concerns for assuring the ability of life companies to meet their obligations to policyholders. I expect to have quite a bit more to say on this topic after I have had a chance to study the proposal as it is finally presented. ACLI is generally aware of the nature of my objections.

It is difficult for me to be objective about the new mortality tables, since I served on the Society's Committee to Recommend New Mortality Tables for Valuation. Charlie Ormsby and the Committee members who did most of the work can be justifiably proud of their outstanding accompishments. I would be disappointed if a single figure in Table K were changed.

Objections I have seen about the iandequacy of Table K for resolving deficiency reserve problems can better be treated by addressing the interest component of the Standard Valuation and Nonforfeiture Laws or the Actuarial Interpretation Regarding Minimum Reserves. Harold Leff's concern with joint life nonforfeiture values is a valid one, but I don't believe Harold is suggesting that Table K itself be changed; I have no objection to the creation of "substantially equivalent" multiple-life tables which could accompany the proposed single-life table and which would be Makehamized. However, it would be a serious mistake, in my opinion, to modify Table K directly in order to accomplish this result.

Proposals for varying gross premium plans are well-founded, and our regulatory posture should be constructively positive, rather than arbitrarily negative. I am personally bothered by the quasi-participating nature of some of these plans, since the customary constraints (review of surplus allocation decisions, statutory limitations on the profits that may accrue to stockholders from participating business) are lacking. I am sure that most states have been wrestling with these problems — which obviously go beyond the valuation and nonforfeiture features of the product — and I hope that the Technical Task Force can address itself to all aspects of the regulation and approval of varying gross premium plans. An additional kind of policy which falls into this category is a derivative of the Universal Life Policy first described by James C. H. Anderson several years ago; these policies are now on the market in several jurisdictions, and they pose interesting regulatory challenges. The ACLI representatives can give you additional background at your October 21 meeting, if you feel it is worthwhile.

A relatively new topic, which has been occupying much of our time in New Jersey, is the proposal to change the valuation and nonforfeiture bases for older individual policies, issued on unrealistic (in today's terms) mortality and interest assumptions, to the assumptions permitted for current issues. The proposals, so far, have come from mutual companies and have entailed higher benefits (corresponding to the lower unit reserves and cash values) by means of voluntary policy amendment or by unilateral company action; the motivations have been more equitable treatment of policyholders and the avoidance of onerous Federal Income Taxes. I think we can look for stock companies to take similar action with respect to nonparticipating ordinary policies — in order to treat their policyholders more fairly and to avoid large-scale replacements of older in-force business. New Jersey is working, with industry, to establish guidelines for regulating this sort of transaction and is also exploring possible legislation to clarify the legal status of such changes. Obviously both of these developments impinge directly on the responsibilities of the task force, and we would welcome technical assistance.

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(ATTACHMENT C-2)

To: Mr. Ted Becker, Chairman,
        NAIC (C) Committee Technical Task Force on Valuation and Nonforfeiture Value Regulation

From: Paul E. Sarnoff, F.S.A., A.C.A.S.
        Vice President and Associate Actuary
        The Prudential Insurance Company of America
        Corporate Office
        Newark, New Jersey

Date: October 31, 1979

I would like to comment on some points that came up during the recent meeting of the Technical Task Force on Valuation and Nonforfeiture Regulation.

The proposed Guideline D. indicates the application of the Commissioners Annuity Reserve Valuation Method (CARVM) for s.p. deferred annuities. As I understand what transpired at the meeting, this application would be prospective in those states which have not yet enacted the 1976 model law; it would also have application retroactively in all states, whether they have enacted the 1976 model or not.

It is my opinion that from an actuarial standpoint the application of CARVM is necessary and desirable to assure adequate reserves under this kind of contract. It is also my opinion that this is the method that would be required to value individual deferred annuities in the absence of the 1976 model legislation. I cannot visualize any method producing lower reserves than CARVM that could be regarded as "consistent" with the method prescribed for level premium, level benefit insurance under the pre-1976 CARVM. This opinion as to the appropriateness of CARVM is reflected in the manner in which the 1976 amendments were adopted in the State of New Jersey. In our law, there is no distinction, for contracts issued after the operative date of the Guertin legislation, between those issued before and after the enactment of the CARVM. In other words, my understanding of the New Jersey law is that the law produces no essential difference in result by issue date, although, of course, the enactment of this provision produces a substantial improvement in the clarity and meaningfulness of the law.

If a state has been employing a valuation method producing reserves for this business that are less than those prescribed under CARVM, I agreed with the task force's position that CARVM principles should be employed. However, that state should recognize the part that it played in the past use of other reserving methods, and that it therefore ought to consider the impact on the company of an abrupt adoption of the new method.

I do not consider such an application of the proposed Guideline D. as a retroactive change in the Valuation Law, since a reasonable case can be made that such a sound actuarial approach is called for by the pre-1976 law.

However, on the general subject of retroactive tightening of reserve standards, I have a serious concern about some of the opinions expressed at the task force meeting. It has long been traditional for valuation laws to prescribe minimum reserve standards and methods applicable to policies "issued" during specific time periods, and to retain these standards in effect for each policy series during the entire existence of such policy series. This is necessary both to enable the company to have reasonable assurance and certainty of the continued application to each policy series, so that it can price the insurance to give the policyholder the most fair and equitable cost of insurance, and also because the guaranteed nonforfeiture benefits must be included in the policy at issue. The only exception to this principle of which I am aware is the proposal to permit destrengthening certain classes of group annuity reserves to a 5% interest basis. This feature of the 1976 proposals was not adopted by the NAIC, although a number of individual states have provided for this change.

The possibility of requiring reserve strenghtening on a mandatory basis at some future date, perhaps by reducing the valuation interest rate permitted for life insurance reserves, was mentioned at the meeting. If such an action were feasible it would be a matter of great concern to us and I am sure to other members of the industry. If interest rates were to decline to the level which such a proposal contemplates, companies would face serious financial problems. Requiring reserve strengthening at such a time would add to those problems and could force some companies into technical insolvency. In any event, when interest rates decline, the fundamental problem that the company faces is not how <u>reserves</u> are calculated but rather the level of <u>assets</u> it has on hand. It is the assets that must be strengthened, and only after that is achieved should consideration be given to strengthening of reserves, and then only on an optional basis. In any event, I think that it would not be feasible to introduce mandatory reserve strengthening requirements at such a time.

The problem of the new reserve/nonforfeiture interest rates was discussed. One company found that it was subject to a reserve strain at the time a reduced paid-up policy is set up. I believe this strange result is caused by the use of inappropriate actuarial techniques in this case, and I have prepared the accompanying separate memorandum on this subject.

Finally, I come to the matter of reserves and nonforfeiture values on deposit term and deposit whole life type contracts. Instances of unusual and inappropriate patterns of reserves and cash values have been noted. Because of this, consideration is being given to new regulation and statutory language in order to produce more acceptable results. I would like to repeat here the point I made at the meeting that the existence of strange results suggests that inappropriate actuarial techniques may have been used to produce those results and that actuarial procedures and methods that are applicable to standard straightforward plans are not necessarily applicable to these special plans without an examination of the implications and assumptions of the usual actuarial methods.

In particular, I believe that many of the strange results produced arise because of the unusual premium payment pattern. That may produce, at some policy durations, a present value of future benefits <u>less than the present value of that portion of the adjusted premium which was to pay for those benefits</u>. In such a case, it is improper actuarial practice to take into account those excess premiums.

The law as it stands talks about taking present values. These excess premiums are being counted in these actuarial calculations as though the insured owes the money to the company. This is a preposterous assumption. The law does not require an actuary to make a preposterous assumption in determining nonforfeiture values.

I am hopeful that the application of proper actuarial techniques to this special plan of insurance can be accomplished within the framework of the law as it now exists and as it is proposed to be amended to cover the general case. It is of course desirable that the relevant actuarial principles be recognized and observed, rather than to complicate the laws and regulations. As I am sure we all recognize, the more complicated and specific the rules become, the more rigidity is introduced into the system, and the easier it becomes to find new ways to avoid the intent of the rules. I therefore strongly favor the observance of sound actuarial principles, which I believe are called for under present statutes.

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The Valuation of Policies Under the 1976 Amendments

The 1976 amendments to the Standard Valuation and Nonforfeiture Laws prescribe a maximum reserve interest rate of 4½% for annual premium life insurance and a maximum nonforfeiture value interest rate of 5½% for these policies. Common nonforfeiture options include extended insurance and reduced paid-up insurance. Under these options, the cash value promised under the policy, after suitable adjustment for policy loans and dividend credits, is applied to purchase the nonforfeiture death benefit in accordance with the mortality table and interest rate specified for the purpose in the policy.

Instances have been observed where the reserve required for the nonforfeiture benefit under the minimum standards exceeds the reserve carried on the policy in a premium payment status as of the time of conversion to the nonforfeiture option, if that premium paying reserve is computed without reference to the existence of the nonforfeiture option. The accompanying table illustrates the relevant figures for a policy issued to a man age 25 on a whole life plan. The illustration assumes conversion at the end of the 10th and the end of the 20th policy year. The calculations are made using the new Table K which is now being considered for adoption and the new Richardson = cash value formula, also being considered.

This illustration indicates that for extended insurance, as one would expect, in the absence of loan and dividend, the required reserve for the nonforfeiture benefit does not exceed the premium paying reserve under the policy computed without reference to any nonforfeiture benefits. This is true under the illustration even though the cash value is computed without any nonforfeiture allowances at all and the term extension period is determined using the same mortality table as the premium paying reserve.

For reduced paid-up, the situation is different. At the durations selected, in the absence of loans and dividends and in the absence of a nonforfeiture allowance, the reduced paid-up reserve would be greater than the premium paying reserve computed without reference to any nonforfeiture benefits. However, there is a net reserve released if the nonforfeiture allowance according to the Richardson formula is used.

These two conditions represent in a sense the extremes that would be encountered over the entire range of a company's portfolio. The illustration using the allowance represents the situation that would apply at most ages and durations under coterminous life and endowment plans. The illustration without using any allowance represents the limiting case that might occur on limited payment life and endowment plans, where termination occurs in the last premium paying year, or where a company provides surrender values that are greater than the minimum according to the Standard Nonforfeiture Law by means of grading the expense allowance down to zero before the end of the premium paying period.

When a company designs a scale of nonforfeiture values, it should take care to see that situations where the reserve on the paid-up benefit exceeds the reserve on the premium paying policy computed without regard to nonforfeiture benefits are accounted for properly. Hopefully, such instances can be eliminated by an appropriate choice of actuarial assumptions. If such instances cannot be eliminated, then it is necessary to consider the proper method for computing the reserves for those policies where these instances are observed.

In determining the premium paying reserve required where the reserve on the available reduced paid-up benefit would exceed the premium paying reserve computed without reference to the availability of that benefit, the Commissioner and the actuary should take into account what the premium paying reserve to be held on the policy represents. Let us suppose that one such situation occurs in the 18th year on the 20 payment life policy. The 18th year reserve is computed on the assumption that the insured has paid 18 annual premiums but no more. At the next policy anniversary, there are three possible results. The first is that the insured pays another annual premium. The second is that an extended insurance

option becomes effective, and as noted before this will likely cause no problem. The third is that the reduced paid-up option becomes effective, and the corresponding reserve is called for. In this particular instance, that reduced paid-up reserve is more than the premium paying reserve computed without reference to this benefit. Therefore, under the tradition of conservatism* which has long been applied in these matters, the statutory reserve required in this instance, and in all other instances like it, is the reserve for the reduced paid-up benefit, valued using the 4½% net single premium. While it is troublesome to have to identify these situations and substitute the correct reserves for those otherwise calculated, the check can be made fairly readily using modern computer equipment.

The suggestion has been made that the election of the nonforfeiture option should be regarded as equivalent to the issue of a new single payment life insurance policy. In those states that adopted the 1976 model without the ACLI modification, that would entitle the company to use 5½% reserves and 6½% nonforfeiture values. There is a certain amount of merit in regarding such a change in benefits as tantamount to a "new issue" of a policy.

However, the exercise of a nonforfeiture option under a policy does not really result in any change in the terms of that policy, so it is difficult to see how such a change could legally be regarded as the issue of a new policy. My company has recently had extensive discussions with the New Jersey Insurance Department concerning the matter of what constitutes the issue of a new contract, and I know that at least the New Jersey Department would have strong objections to such an interpretation.

Even if the law permitted, there would still be the undesirable and inequitable conflict between the more liberal benefit accorded to the policyholder taking the nonforfeiture reduced paid-up option and the treatment afforded to a policyholder who completed all the premium payments called for under a limited payment life or endowment policy. It would be discriminatory to treat the two classes differently; and the idea of using 5½% reserve rates at the end of a limited payment life policy's premium payment period, after having used 4½% reserves up until that point, seems equally preposterous.

The answer seems to be, therefore, to use the appropriate premium paying reserve increased, where necessary, to the level called for by the available reduced paid-up nonforfeiture benefit at each policy duration where such increase is called for.

Examples of reserves released (set up) by discontinuance of premium payment for $1,000 Whole Life policy issued to a male, age 25. Valued on the basis of Table K, age nearest birthday and curtate functions. Amounts in dollars and cents per $1,000.

		Lapse Occuring End of Policy Year	
		t=10	t=20
1.	Premium paying reserve computed without reference to nonforfeiture benefits	75.19	181.92
2.	Premium paying cash value (assuming zero expense allowance) (5½%)	60.93	153.98
3.	Extended term period	23.88 yrs.	27.06 yrs.
4.	Corresponding 4½% Table K reserve	69.45	178.37
5.	Net reserve released	5.74	3.55
6.	Reduced paid-up amount	381.79	634.00
7.	Corresponding 4½% Table K reserve	81.04	192.22
8.	Net reserve released	−5.85	−10.30
9.	Minimum premium paying cash value (with Richardson allowance) (5½%)	44.36	139.05

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* This tradition is reflected in the long-standing NAIC Blank requirement to report as a liability any excess of surrender value over the "reserve as legally computed"; this requirement can be reasonably considered applicable to the currently discussed situation.

10.	Corresponding reduced paid-up amount	277.96	572.53
11.	Corresponding 4½% Table K reserve	59.00	173.59
12.	Net reserve released	16.19	8.33

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(ATTACHMENT D-1)

To: NAIC (C) Committee Technical Task Force to Review Valuation and Nonforfeiture Value Regulation

From: Bradford S. Gile, A.S.A., Life Actuary .
        State of Wisconsin Dept. of Insurance

Re: Classification of a Policy Form as a Deferred Annuity for Minimum Nonforfeiture Value Purposes

At the June meeting in Chicago, I was given the task of developing an exposure draft of guidelines which regulatory authorities could use to determine which of the two nonforfeiture laws should apply to a given form regardless of the label attached to it by the insurer. The problem arises because (a) the two laws (nor any others that I am aware of) do not provide statutory definitions of the terms "life insurance" and "deferred annuities" and (b) the provisions of the two laws, when applied to the same contract, produce vastly different minimum surrender values.

There are, of course, traditional products whose characteristics admit of immediate classification such as the traditional endowment policy having a level face amount with endowment benefit equal to the face amount at one pole (life insurance) and the simple deferred annuity under which (1) portions of gross considerations accumulate with interest to a specified amount, (2) cash surrender values are such accumulations at any intermediate point, and (3) death benefits are the larger of cash value or sum of considerations paid at the other pole (deferred annuity). There are also variations of these products which are easily classified and present no problems, such as most retirement income contracts and terminally loaded deferred annuities. There are, however, hybrid forms which are not so easy to classify.

One type of hybrid is handled by the two nonforfeiture laws. Subsection 11 of the model annuity law handles contracts which specifically combine annuity benefits and life insurance benefits "by rider or supplemental contract provision" by separating the life insurance and annuity benefits and treating the whole contract as a sum of two separate life insurance and annuity contracts for nonforfeiture value purposes. Some may be tempted to view this section as a solution to the entire problem. If, however, both benefits and gross premiums or considerations are not clearly set forth in the contract, application of this subsection would be impossible without arbitrary separations which could lead to anomalous results. A greater danger is that some might wish to make arbitrary separations of traditional life insurance products into "annuity" and "pure life insurance" components.

Such separations would be neither wise nor intended by this subsection. Thus, guidelines are needed to handle other contract types. I have constructed two sets of suggested guidelines. The first set is qualitative and sets down basic characteristics of contracts which should really be considered as "annuities" rather than "life insurance" because they are designed primarily for the accumulation of funds and only "incidentally," if at all, to provide protection against economic loss due to untimely death.

The second set is a quantitative test for annual premium plans which defines "incidental" in the above context. This test, like any other mathematical test, is susceptible to manipulation and should probably be used only as a supplement to the qualitative criteria when such criteria do not by themselves clearly classify the form. The quantitative test also is not applicable to limited payment or flexible premium plans.

The quantitative test is very simple. Simplicity is a virtue whose practical value is difficult to overstate, but this was not my overriding concern. I tried several approaches which might be considered more "actuarial" or aesthetically pleasing. Such approaches, however, suffer from complexity of application and seem to be more susceptible to anomalous results (or manipulation) than this simple test.

Conceptually, this quantitative test is easy to explain. Any contract which provides coverage for N years with specified endowment at the end of N years can be described graphically in terms of death benefits per $1 endowment benefit over the N year period. With the exception of plans having death benefits which decrease by policy duration, all such graphs fall between a theoretical pure endowment providing no death benefit prior to maturity and a traditional level death

benefit endowment policy. Half way between these two extremes is a contract whose death benefits increase lineally to the endowment value. The graphic representation of death benefits and maturity value for an annuity will generally fall below this line, and a contract having death benefits along the line differs only trivially from the traditional deferred annuity. Thus, such a line represents a somewhat "natural" boundary between annuity and life insurance arrangements. Along this line, the ratio of (a) the sum of all death benefits over the N year period to (b) maturity value at the end of N years is exactly one half X (N + 1). Contracts having death benefits which are consistently above this line have a higher ratio and those consistently below the line have a lower ratio and may be considered as life insurance and annuity, respectively. Some arrangements, of course, will have some death benefits above the line and some below; in this case, the ratio would determine the appropriate classification.

It is my hope that this first attempt will be expanded upon by interested parties through addition (or qualification, perhaps) to the qualitative criteria and testing of the quantitative one. It would also be helpful if a quantitative test could be developed for limited payment (including single premium) and flexible payment plans. I would be the first to admit that these guidelines are not perfect by any means. However, I do not think perfection is attainable due to the inherent discontinuity between the two nonforfeiture laws. Serious consideration should be given by the task force to a restructuring of the Standard Nonforfeiture Law for Life Insurance in such a way that the two laws will not conflict seriously in borderline situations. In fact, the best of all possible worlds would be to have one standard valuation law and one standard nonforfeiture law to deal with both life insurance and annuity contracts simultaneously.

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DRAFT GUIDELINES FOR FORM CLASSIFICATION FOR APPLICATION OF THE NONFORFEITURE LAWS

A. Qualitative Test

If an annual premium form has all of the following characteristics, the quantitative test may be ignored and the form classified as a deferred annuity. For forms other than annual premium, if the form has all but one of the following characteristics it should be classified as a deferred annuity. If the form has one or more, but not all, of these characteristics, the quantitative test should be applied for further guidance. If the form has none of these characteristics, it should not be classified as a deferred annuity:

1. The primary purpose, indicated either in the form or related advertising thereof, of the form is to accumulate funds in order to provide one or more payments in the future.

2. Cash surrender values or fund accumulations are defined as accumulations of portions of premiums or considerations paid, for most policy durations.

3. Death benefits are a function of cash values or fund accumulations.

4. Individuals of different ages may purchase identical benefits with identical premium or consideration payments.

5. Benefits will not commence until at least one year from issue date.

B. Quantitative Test (Annual Premium Products)

For the purposes of this test, the following definitions apply. "Maturity" means the earlier of (a) the date at which benefit guarantees cease or (b) attainment of age 65 or policy year 10 if later. N is the number of years from issue date to maturity. The "Maturity Value" is the largest sum available (on a guaranteed basis) to the contractholder at maturity either in cash or applied to purchase other insurance or annuity benefits. "Death Benefits" are guaranteed benefits payable on death.

1. Calculate the sum S of death benefits for year 1-N.

2. Determine the maturity value MV and calculate the ratio of S to MV, denoted by R.

3. If R is less than or equal to ½ X (N + 1), the form should be classified as an annuity.

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To: (C) Committee Technical Task Force

From: Ted Becker, Chairman
           NAIC (C) Committee Technical Task Force to Review Valuation and Nonforfeiture Value Regulation

Re: Distinguishing Individual Single Premium Immediate Annuities from Other Individual Single Premium Annuities

An individual single premium immediate annuity can be distinguished from other types of individual single premium annuities in that the individual single premium immediate annuity must possess all of the following characteristics:

First, the initial payment under the annuity must be due and payable on a specific date not more than one year after the annuity is first contracted for.

Second, succeeding payments under the annuity after the initial premium must be due and payable at regular intervals, so that payments are made annually or more frequently than annually.

Third, in the case of a fixed benefit annuity, no payment under the annuity can be in a guaranteed amount larger than twice the initial payment or any other payment which has previously become due and payable. In the case of a variable annuity, the same characteristic would be required for the underlying pattern for the payments, before adjustments which are made solely because of the performance of separate accounts associated with the annuity. (In the case of either a fixed benefit annuity or a variable annuity, this characteristic is not intended to prevent or reduce any lawful nonguaranteed payments under the annuity which are in the nature of dividends or excess interest credits.)

NOTE: The word "individual" is used in contrast to the word "group," and not in contrast to the word "joint." This is
           consistent with the wording of the Standard Valuation Law, as it relates to annuities.

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To: Members of the Society of Actuaries

From: Yuan Chang, Vice President
           Travelers Insurance Company

Date: October 19, 1979

Re: Proposed A "Dynamic" Valuation Interest Rate

I am Yuan Chang. I am serving as Chairman of an ACLI (American Council of Life Insurance) subcommittee that has been working on a proposal to modify the Standard Valuation Law. The proposed modifications involve a revolutionary change in the approach to the prescription of the statutory maximum valuation interest rates.

A brief word on history. Since the inception of the Standard Valuation Law, specific interest rates have always been prescribed on which minimum statutory reserves are based. In 1976, because of the persistent and significant rise in long term interest rates, the ACLI, representing the industry, successfully persuaded NAIC to adopt a set of amendments raising specific valuation interest rates. Most of the states have adopted these amendments. But these rates will revert back in 1986 if no new legislation is promulgated.

In the meantime, new product development in the pension field created certain unique problems. Large fund deposits with interest guarantees at 8% (how sweet it was!) were being valued at 3½%. The surplus drain threatened an early demise of these products. This problem was particularly acute in New York. An ad hoc group was formed to discuss this problem with the New York Insurance Dept. and certain temporary solutions were adopted. As it stands, that temporary regulation is still in effect.

There was a certain amount of urgency to do something about this chaotic state of affairs. The subcommittee came into being at the end of 1977 for the purpose of formulating a proposal for NAIC adoption by the end of 1980.

In the very first few meetings of the subcommittee, we quickly reached certain agreements:

1.   In order to comply with the 1980 schedule, our proposal must be completed by mid year 1979, which we did.

2.   To complete the substantive part of our work in a year and a half, we do not have the luxury to indulge in theoretical pursuits. This conclusion is also consistent with the fact that the Society had a committee looking into the theoretical foundation for a much more sophisticated set of valuation procedures.

3.   Our porposal must be practical, but at the same time not inconsistent with known theory.

4.   We must keep changes to a minimum while accomplishing the basic purpose.

Following these guidelines, we developed a single, but perhaps revolutionary, concept — that of automating the future prescription of statutory maximum valuation interest rates by making such rates a function of the trends in the financial market. The idea is to avoid having to go through the legislative processes in 50 different states every time a change is warranted as interest rate trends develop in the marketplace.

To do this, we propose that the Moody's Average of Yields on Seasoned Aa Utility Bonds be adopted as our basic reference. The reference interest rate is defined as the average of such monthly indices for a period ending on June 30 of any year. The period is 12 months; but for certain product groups, such as ordinary life, 36 months if the resulting rate is lower.

This reference interest rate is basically a conservative measure of the investment yield of what may be appropriately invested for the particular product groups.

The valuation interest rate automatically prescribed is somewhere between this reference rate and what might be considered a basic cost of capital under ideal economic conditions, which we assume to be 3%. The formula is simply the weighted average of the two. For each product group, a different weight is applicable.

For example, a weight of .35 may be proposed for ordinary life insurance. Let's say that the reference rate on June 30, 1979 was 9% (probably not very far from the realistic number), then 35% of 9% plus 65% of 3% is 5.1%. Prescribed rounding rules would take it to 5%. Were the proposal law, the maximum valuation interest rate for ordinary life issued in 1980 would be 5%.

Another way of looking at the .35 weight is that it really represents the degree of credibility placed on future inflationary expectations. Assuming that the 8% of the 9% reference rate represents an inflation premium, then .35 of 6% plus the 3% basic cost of capital will get you back to the same 5.1%. Given a specific outlook on interest rates and a specific pattern of expected cash flow for a particular product, we can determine the appropriate level of valuation interest rates. Conservatism for valuation purposes can be introduced in the interest rate outlook or in any other assumptions. The result is a credibility factor for the particular product group. You will hear more about the methodology of testing these various weights a little later on.

Now the product groups: Basically, we propose to divide the full spectrum of insurance and pension products into four major categories: Life Insurance, Deferred Annuities, Immediate Annuities, and Guaranteed Interest Contracts — without specific reference to the distinction between Group and Individual. For Life Insurance, special rules are necessary for nonforfeiture interest rate, which will be discussed later. Deferred annuities are to be split into three or four age groups. This is to recognize that different issue age groups may be predominant in different markets for which different contract features are specifically designed, in addition to the recognition that the length of the contract terms has a definite impact on future cash flows. Guaranteed Interest Contracts have even more subdivisions. First, distinction is made between contracts promising book payouts and those promising market payouts. In addition, the period of interest guarantees is of course relevant.

That's a very sketchy description of our proposal. The proposal is obviously more complicated than what some of you may like. Yet is is the considered opinion of many that equicy is still lacking. Realizing that there can be no perfect justice and irreducible simplicity at the same time, we believe that we have arrived at a good balance. Some think that company earning rate would be a better starting point than a single reference index — others prefer the objectivity of the latter. Most of you may not yet have seen the set of weights currently under consideration. Those who have, you guessed it, are divided on what they think. Some think these weights are too high, others think they are too low. But I think there are people who think it's just right; and I don't mean just the members of the subcommittee.

We know we are not going to please everybody. But we do want you to reflect on the problems we have now and we do want you to agree with us that the dynamic interest rate concept is worthwhile pursuing.

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(ATTACHMENT E-2)

To: Members of the Society of Actuaries

From: John O. Montgomery

Date: October 24, 1979

Re: Proposed – A "Dynamic" Valuation Interest Rate

The proposal for a "dynamic" valuation interest rate results from discussions by the NAIC (C) Technical Task Force to Review Valuation and Nonforfeiture Value Regulation for Life and Health Insurance Companies. Frequent updating of the interest standards in the model legislation presents a problem in asking the various state legislatures every two or three years to revise such laws. Many of the legislatures are under pressure to reduce the volume of legislation whenever possible.

One solution proposed in the NAIC Task Force discussions was some form of "indexed" in. .est standards. The problems associated with developing an "indexed" interest rate are really the same as those associated with the selection of appropriate interest rate assumptions in past revisions of the model legislation except that an "indexed" interest rate system intensifies such problems and adds another problem, that of defining the reference interest rate from which the "indexed" interest rates for various insurance and annuity products are to be determined.

The proposal by the American Council of Life Insurance task force appears to be examining with a fair degree of credibility the relative interest rates for various life insurance and annuity product minimum reserve and nonforfeiture value assumptions just as they have in determining assumptions for past revisions of the model legislation. However there are some considerations which need further study before formulas for interest assumptions indexed to some reference system can be developed:

1.   Should the expected life of the policy be considered assuming only withdrawals on account of death or should lapses and surrenders also be assumed? Use of mortality only would appear to be more conservative for valuation purposes but might not be so for nonforfeiture values.

2.   Should the nature of asset requirements for each particular product be considered separately for that product, or should only the relation of the aggregate reserves for all products combined to the aggregate asset structure be considered? Use of aggregate relationships could be misleading if a new and rapidly developing product needs an asset structure to support its reserves and values which is radically different from the aggregate reserve/asset relationship of the company when the product was first introduced.

3.   Companies writing health insurance must consider the reserve/asset relationship of such products as well as those companies writing life insurance and annuity products.

4.   Because of the valuation of the reserve/surrender value/asset relationship among the various insurance and annuity products it may not be possible to devise a single "reference" interest rate.

5.   How are those companies who are unable to earn the "indexed" minimum reserve valuation interest rate to value their policies? Are they to be denied the competitive advantage available under the higher interest rate assumptions? What will this do for competition and in certain situations the availability of certain insurance and annuity products?

6.   Should each company be required to set its own minimum reserve and nonforfeiture value assumptions based on its own yield experience on new investments if it has a "sufficient" portfolio of investments to justify such treatment? What is "sufficient"?

7.   To what extent should income tax consequences be considered?

Reference Interest Rates

In setting reference interest rates, the use of reference rates unrelated to the actual distribution of yields on new investments by insurance companies may result in the trend of the index going one way while the actual trend in new investment experience of companies may point in another direction. Certainly before a particular method of determining reference interest rates is adopted conclusive evidence must be furnished as to the appropriateness of such interest rates.

Conclusion

The work of the special task force of the American Council of Life Insurance is to be commended as a significant start in the undertaking of a most difficult task. It appears that much more consideration needs to be given and that because of time constraints on the presentation of model legislation concerning the new mortality table to the NAIC it may not be possible to include indexed valuation interest assumptions in such legislation at this time. However, the rapid changes in mortality currently in progress will probably necessitate the construction of new tables again within the next five or ten years. For this reason work should proceed as fast as possible for the drafting of new legislation with respect to some form of indexing valuation and nonforfeiture value interest assumptions and which will completely overhaul the present valuation and nonforfeiture value regulatory system to prepare it for the advent of the twenty-first century.

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(ATTACHMENT F)

To: NAIC (C) Committee Technical Task Force

From: Bradford S. Gile, A.S.A., M.A.A.A., Life and Health Actuary
          State of Wisconsin Dept. of Insurance

Date: October 17, 1979

Re: Nonforfeiture Values for Life Insurance Contracts Having Premiums which Vary by Policy Duration

At the June 1979 task force meeting, I was asked to prepare a report on this subject for our October meeting. This subject is actually divided into 2 parts:

1.   Guidelines under existing law, including but not limited to the Standard Nonforfeiture Law for Life Insurance.

2.   Possible Amendment of the Standard Nonforfeiture Law as it currently exists.

The basic problem to be dealt with is that illogical results can arise from the uniform percentage of gross premium test in the Standard Nonforfeiture Law. Historically, the minimum values were developed from asset share tests on level premium plans. A natural extension to nonlevel premium plans is the application of the uniform percentage of gross premium rule. Under the assumption that profit is a uniform percentage of gross premiums, the resulting minimum values become akin to asset shares without profit ("natural reserves") which are the same whether calculated prospectively or retrospectively. This assumption is, in fact, critical to the rationale employed by the Unruh Committee in its support of the continued use of a prospective formula to determine minimum cash surrender values.

Critical to this approach is the assumption that companies will price their product in a rational manner. Unfortunately, not only is illogical pricing an academic possibility, it has become reality for some companies and products. An excellent example is a "Modified Premium Whole Life" type plan under which ultimate premiums purport to be "whole life" premiums but which actually are set simply to be sufficiently high relative to premiums in prior years that minimum values will be as low as desired and deferred as long as desired.

The Standard Nonforfeiture Law was never intended as a vehicle to regulate life insurance premiums, so that the mere nonexistence of values in certain policy years would not in itself be of primary concern. What is of primary concern is that equity among policyholders in different policy durations be preserved. The current Standard Nonforfeiture Law deals with this only by providing a set of minimum values and places no constraint upon the progression of actual values provided so long as such values equal or exceed minima.

An inherent assumption made by regulators and companies who wish to (and do) rely on the Standard Nonforfeiture Law as the sole test of equity is that all cash value scales actually used by companies which meet or exceed minima will follow an equitable pattern.

The term "equity" is not defined. Indeed, the Standard Nonforfeiture Law does not even mention this term. However, the Guertin Committee drew heavily on the asset share concept when it determined minimum values in the first Standard Nonforfeiture Law. Similarly, the actuarial literature on this subject (as it would apply to nonforfeiture values) relies heavily on the concept of an asset share or a natural reserve. Indeed, the asset share concept has been and is (correctly, I believe) used to discredit and replace the notion that surrender values should be linked to reserves. The Unruh Committee also continued heavy use of the concept.

Unfortunately, some cash value scales in actual use do not even remotely resemble any reasonable kind of asset share pattern. Typical is the "Modified Premium Whole Life" case for which minimum values are zero for at least ten years but actual values are zero for nine years and arbitrarily set equal to a desired value for year ten well in excess of the tenth year premium. In such a case one must well question whether those who surrender in year nine (for whatever reason) are treated fairly in relation to those who surrender in year ten.

The Standard Nonforfeiture Law, as it currently exists, does not address this problem. However, whether due to extreme wisdom of its drafters or pure chance, the Standard Nonforfeiture Law sets forth a set of necessary but not sufficient standards for a policy to be issued. Specifically, subsection 1 reads "No policy of life insurance, except as stated in subsection (8), shall be issued or delivered in this state unless . . ." It does not say "If a policy meets the following requirements, it may be issued or delivered in this state." To fill the void between necessity and sufficiency, Wisconsin and many (if not all) states have other statutes which set forth specific grounds for policy form disapproval. Among these grounds is that the form "contains inequitable provisions." Any provision which gives inequitable values must, it would seem, itself be an inequitable provision.

Accordingly, as a test of inequity (as opposed to equity), states having such grounds for disapproval might make use of the asset share concept under the presumption that a cash value scale which produces an irrational pattern of values in relation to expected policy cash flows is inequitable. This, of course, is quite general and vague in itself, and is capable of misuse. I would, therefore, suggest translation of this general concept to a far more concrete and less restrictive criterion in the following guideline:

> A scale of cash values is inequitable if either (a) the cash value in any year t exceeds the accumulation of the prior cash value plus the t'th year gross premium at 6½% interest and survivorship under the 1958 CSO mortality table or (b) the cash value in any year t is less than the accumulation of the prior cash value at 6½% and survivorship under the 1958 CSO mortality table less the cost of that years death benefit at 6½% interest in 1958 CSO mortality table.

The above guideline is really a stop-gap measure. In the best of possible worlds, the Standard Nonforfeiture Law would provide both necessary and sufficient conditions for equity in surrender values in all cases. Because the world is not perfect, such a goal is impossible. However, some attempt to improve on the existing world is clearly desirable. The state of Georgia has enacted a unique version of the Standard Nonforfeiture Law which provides at least an important first step in dealing with irregularities which arise from the uniform percentage gross premium rule. It is my understanding that the American Council of Life Insurance has studied and indicated support for this statute. Accordingly, I recommend that this task force request the American Council of Life Insurance to provide this task force with the results of its study of the Georgia statute and its recommendation as to the feasibility of the incorporation of the Georgia approach into a revised model Standard Nonforfeiture Law for life insurance.

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(ATTACHMENT G-1)

To: The Members of the Society of Actuaries

From: Charles A. Ormsby, Senior Vice President
        John Hancock Mutual Life Insurance Company
        Boston, Massachusetts

Re: Recommendation to the Board of Governors for a New Minimum Mortality Standard
        for the Valuation of Standard Individual Ordinary Life Insurance

The attached Report by the Special Committee to Recommend New Mortality Tables for Valuation was sent to the Board of Governors as our recommendation for Tables to replace the 1958 CSO Tables as a minimum mortality standard for new issues. [The report, which will be published by the Society in the future, is not reprinted here.]

Several members of the committee appeared before the Board at its meeting on May 23 in Kansas City to present the highlights of the report and to participate in a discussion of its contents.

It is now felt that the report should be made available to the members of the Society so that it can be discussed at our Annual Meeting in Bal Harbour in October of this year. The committee will be pleased to receive written comments in advance (to be sent to the Chairman at John Hancock, Post Office Box 111, Boston, Ma. 02117).

In reading the enclosed report, it should be kept in mind that no recommended minimum mortality standard for valuation is intended to replace the judgment of the actuary responsible for the adequacy of reserves and overall financial soundness.

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(ATTACHMENT G-2)

To: Members of the Society of Actuaries

From: John O. Montgomery

Date: October 23, 1979

Re: New Valuation Mortality Tables for Individual Life Insurance

The NAIC (C) Technical Task Force on Valuation and Nonforfeiture Value Regulation for Life and Health Insurance Companies complements the Special Committee of the Society of Actuaries to Recommend New Mortality Tables for Valuation, on the splendid, professional and comparatively rapid manner in which mortality tables have been developed for use in updating the standard valuation and nonforfeiture value laws. The NAIC Task Force has set a target date of June 1980 for the submission to the NAIC of proposed amendments which will include the new mortality table and a revision of the formula for computing nonforfeiture values. It is hoped that the NAIC will give its approval at the December 1980 meeting of the NAIC so that most states can enact such legislation by 1983.

The NAIC Technical Task Force is currently considering revision of the formula in the Standard Nonforfeiture Law for the calculation of minimum cash surrender values. Three formulas to date have been considered.

Method D — From Appendix D of the Report of the Society of Actuaries Special Committee on Nonforfeiture Values where the adjusted premium to be used in the formula is derived from:

$$p^{a}a''_{x\overline{n}|} = 1000A_{x\overline{m}|} + .5[P:50] + .5[P:OL:50] + 10$$

Method R — From C.F.B. Richardson, [Editors note — See *Transactions* of the Society of Actuaries, Volume XXIX, Page 22] where the adjusted premium to be used in the formula is derived from:

$$p^{a}a''_{x\overline{n}|} = 1000A_{x\overline{m}|} + 1.25[P] + 10$$

Method A — Age Adjusted Method

Where the adjusted premium to be used in the formula is derived from:

$$p^a a''_{\overline{xn}|} = 1000A_{\overline{xm}|} + 1.2[P] + 8 + .15X$$

Where: p^a = adjusted premium per $1000 face amount

$a''_{\overline{xn}|}$ is an annuity due of $1 per annum starting at age x and payable until the end of the premium paying period.

$A_{\overline{xm}|}$ is a $1 face amount m year endowment starting at age x (This could also be an m year term insurance plan or a whole life plan)

P   = net level annual premium for plan per $1000

OL = net level annual premium per $1000 face amount for an ordinary life plan issued at age x

x   = age at issue

[P:50] symbolizes the lesser of either the net level annual premium per $1000 face amount for the plan or $50.

[P:OL:50] symbolizes the lesser of either the net level annual premium per $1000 face amount for the plan, or the net level annual premium per $1000 face amount for an ordinary whole life plan issued at the same age, or $50.

The values by these three methods do not appear to differ significantly enough to justify using more than the simplest method (the Richardson method). However, a limitation in initial expense to be amortized, such as $50, may be needed, and this is to be explored.

The new standard ordinary mortality tables will greatly facilitate the presentation of life insurance policies more in line with current facts of life but still leaves some problem areas needing further attention. Here is a list of some of areas of further activity apparent at this time:

1.   Joint life tables

Hopefully tables of joint equal ages can be developed to apply either to the male or female tables or to some unisex table in the case of Male/Female joint life contracts.

2.   Renewable Term Insurance

There may be differences in mortality significant enough for these plans to require separate valuation tables.

3.   Industrial and Guaranteed Issue Insurance

These require construction of separate mortality tables. Whether or not industrial and guaranteed issue experience can be combined for the purpose of preparing a mortality table must be studied before such tables can be developed.

4.   Substandard Insurance

Separate tables for substandard lives may be needed. The results of the study of the Society of Actuaries Special Committee on Substandard Lives Mortality Tables should be reviewed to see if tables for substandard lives can be developed to accompany the tables for standard lives.

5.   Group Life Insurance Mortality Tables

Obviously, with the great improvement in ordinary life insurance mortality, it seems that there should be a corresponding improvement for lives insured under group insurance contracts.

6.   Annuitant Mortality Experience

The rapid improvement in mortality currently experienced demands immediate attention to the development of new mortality tables for both individual and group annuitants.

7.   Frequency of Preparation of Mortality Tables

The rapidity with which mortality rates are changing at the present time may require new tables within the next five or ten years. This will have to be considered regardless of the expense of issuing new policy forms. If warning of this potential problem is given far enough in advance, the life insurance industry and its regulators should have time to study and implement ways of reducing such conversion costs rather than restricting the development of more current mortality statistics as they become available.

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(ATTACHMENT G-3)

To: Mr. John O. Montgomery, F.S.A.
         Chief Actuary and Deputy Insurance Commissioner
         State of California Insurance Department

From: Harold Leff, Assistant Actuary
         Metropolitan Life Insurance Company
         New York, New York

Date: July 10, 1979

Re: Joint Life Values Based on Proposed Valuation Tables for Ordinary Insurance

I have reviewed Wilbur Bolton's May 24th letter to you on this subject, wherein he concludes that no significant investigation into Makehamizing the proposed sex-distinct mortality tables, to facilitate their use with joint life plans, would be justified. His conclusion appears to stem from (a) the difficulty in getting a good "fit" based on his testing, and (b) the lack of problems in connection with directly calculating joint values for the non-Makehamized 1971 IAM Table. I am still very much concerned about the effect not providing for simplified calculations would have on joint life insurance plans.

In my opinion, the problem is much more severe from the point of view of nonforfeiture value calculations than it is for valuation reserves. While reserves can be calculated on a seriatim basis for joint life plans, such a requirements would certainly be expensive and possibly burdensome as well, especially for smaller companies. With respect to nonforfeiture values, the lack of an approximation technique (such as a Table of Uniform Seniority) would greatly complicate individual life insurance pricing, rate book presentation, the sales process, and compliance with disclosure regulations. For example, the currently permitted approximation technique permits all needed joint life values (premiums, cash values and dividends) to be displayed simply in a rate book to enable a sales representative to give adequate disclosure when discussing a joint life plan with a prospect. "Seriatim" pricing, as implied by Mr. Bolton's suggested approach, would be much more complicated, probably requiring an electronically produced sales illustration, thereby requiring an additional visit from the salesman. Such a complication would likely result in many salesmen tending to ignore Joint Life plans in their prospecting. Since Metropolitan's recent experience indicates that approximately 4-5% of our current issue (both policies and amount of insurance) are joint life policies, and nearly 60% of these policies are permanent insurance, the pricing complications that I envision could have a significant impact on our sales volume and ability to sell products which are appropriate for particular policyholder needs. In addition to the joint policies we currently issue, there is considerable Field pressure to develop additional joint life plans — introduction of such policies would merely aggravate the situation further.

Mr. Bolton points to the lack of problems in calculating joint values based on the 1971 IAM as justification for not making accomodation for joint life plans. However, the lack of approximation techniques for the 1971 IAM Table only required resolution in connection with reserves, which difficulties are not insurmountable – i.e., joint life annuities are issued only as immediate annuities as far as I am aware, and such annuities have no nonforfeiture values. Thus, the serious concerns I have with respect to nonforfeiture values on joint life insurance would not have affected joint immediate annuities.

I therefore request that some committee (for example, the Ormsby Committee or a specially appointed group) be appointed to investigate the unique problems to be encountered on joint life insurance plans. I would, of course, be willing to serve on any group investigating this problem. While I do not have any specific proposals to put forth at this time, I would like to stress that "perfect fit" should not necessarily be the dominant consideration. Rather, the concepts of overall adequacy for reserves and broad equity for nonforfenture values would seem to be appropriate principles to follow.

I would be pleased to discuss this question further with you, Mr. Bolton or anyone else who is concerned about this question.

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(ATTACHMENT G-4)

To: Mr. John O. Montgomery, F.S.A.
         Chief Actuary and Deputy Insurance Commissioner
         State of California Insurance Department

From: Wilbur M. Bolton, Associate Actuary
         Occidental Life Insurance Company of California
         Los Angeles, California

Date: August 27, 1979

Re: New Valuation Tables for Ordinary Insurance: the Joint Life problem

Since receiving Harold Leff's letter of July 10, 1979, I have given some more thought to the matter of reserves and nonforfeiture values on Joint Life plans under the proposed valuation mortality tables. As you may recall, the 1958 CSO table was not Makehamized; nevertheless, a table of uniform seniority was developed by the Society's General Committee on Publication of Monetary Values. Attached is a copy of pages 1049-1059 and 1070 from the 1959 volume of TSA.

In sequence, it appears that the NAIC approved the 1958 CSO mortality table, with the three year age setback for females, and left the development of an approach to solving the matter of reserves and cash values for joint life plans to a later Society committee. From a logic standpoint, it makes sense to obtain approval of the NAIC for the Single Life table before proceeding on to joint lives. If the Technical Task Force on Valuation and Nonforfeiture Value Regulation, or the parent NAIC (C) Committee, or the full NAIC should have disapproved the single life valuation table for any reason, then work done towards determining or evaluating joint life functions would have been wasted. Note that the Committee on Monetary Tables apparently made exhaustive tests of different approximation approaches to the joint life values, treating the single life 1958 CSO valuation table as a "given."

The Committee on Monetary values probably had informal discussions with the corresponding NAIC technical people about both the uniform seniority matter and the female extension to 1958 CSO, which they also developed after NAIC approval. It would make sense for an equivalent committee, when appointed on the currently proposed tables, to include a member of the NAIC Technical Task Force.

Here are some ideas which may lead to an acceptable system of determining joint whole life net premiums, reserves and cash values. This is not the "only approach" of course, but it would seem to meet the need expressed in Mr. Leff's letter of having a set of cash value tables, one table for each joint age, that the insurance agent can use without a great deal of complexity in various situations in which a joint life plan seems best suited to insurance needs.

This system assumes that "most" joint life policies are on husband-wife combinations, with a relatively smaller number on business partners, who may be of the same sex. I have no statistics supporting this assumption; perhaps others have data on this.

Here's my outline of steps on this work:

(1)   Adopt tentatively a joint life table based on one male and one female, equal age. The idea is that this table would subsequently be published, along with Net Single Premiums and Annuities, at commonly used interest rates (3½%, 4%, 4½%, 5%, 5½%), and would become the "official" table. If the single life Tables K are acceptable to the NAIC, the joint life death rate at any age would be the sum of the Tables K single life rates, less the product. Since the single life rates are loaded rates, the joint life death rates have a double portion of loading in them; but this is traditional, and has been acceptable in the past.

(2)   Calculate for a variety of two lives, both different sexes and same sex, for a matrix of different issue ages, the net premiums, terminal reserves and joint life annuity values, on an "exact" basis, using the single life Table K values. This will be similar to the pattern of ages and age differences shown in the various tables of the report attached, but would require about 3 times as many combinations (because of the lack of an "age setback feature" in Tables K) as were used in testing the 1958 CSO joint life recommendation.

(3)   Determine a "best fit," by means of comparing the exact values from step 2) above to corresponding values for the joint life table at equal age from step 1), for a three column table of uniform seniority. As an almost-pure guess, but based on comparisons only of joint death rates from the 30's to the 70's, the table of uniform seniority might look something like:

Difference of Age	one male, one female	Addition to Younger Age two males	two females
0	0.0	+2.2	−2.3
1	.5	2.7	−1.8
2	1.0	3.2	−1.3
3	1.6	3.8	−0.7
4	2.2	4.4	−0.1
5	2.8	5.0	0.5
etc.	etc.	etc.	etc.

This table of uniform seniority would correspond to the one on page 1051 of 1959 TSA, which was also published in the Basic Values volumes at each interest rate for 1958 CSO.

(4)   Review the material covered to this point with appropriate members of the NAIC Technical Task Force. At this point, if reserves developed by an approximation are too low, the Addition to Younger Age for that difference in ages can be increased. Other adjustments could be considered at this point; all values are exact for an equal age male and female; and a "best fit" does exist for the other combinations, with each of the three columns subject to separate adjustment.

(5)   A life company in practice determines which joint equal age to use for a specific policy from a simplified table representing the table of uniform seniority. Under 1958 CSO, for example, it might look like:

Difference of Ages	Deduct from Older Age
0 and 1 year	0 year
2 and 3 years	1 year
4 and 5 years	2 years
6 to 8 years	3 years
9 to 12 years, inclusive	4 years
etc.	etc.

Perhaps a company dealing with joint life plans would want to use three such tables, for each combination of joint insureds. Another alternative would be narrative adjustments, i.e., publish just such a table as above, and include footnotes: "The table without adjustment is used when the proposed joint insureds are one male and one female. If the proposed joint insureds are two males, add four years to older age before entering the table. If the proposed joint insureds are two females, subtract five years from the younger age before entering the table."

I am sure that better wording than above may be used to describe this scheme, and obviously all numbers, constants I have used are guesses. Actual values will vary. It does seem that some variation of the ideas outlined above should produce a joint life mortality table (and associated uniform seniority constants) consistent with Tables K, with minimized distortion of joint life net premiums and reserves compared to an exact calculation.

Please let me know of any comments you or others may have on the feasibility of the approach outlined above.

****

(ATTACHMENT G-5)

To: Mr. Harold Leff, Assistant Actuary
Metropolitan Life Insurance Company
New York, New York

From: Paul E. Sarnoff, C.L.U.
Vice President and Associate Actuary
The Prudential Insurance Company of America
Corporate Office
Newark, New Jersey

Date: August 20, 1979

Re: Minimum Cash Surrender Values

Enclosed are two sets of tables prepared in response to your June 13 letter, in which you request tables based on the modern CSO mortality to illustrate current and proposed minimum cash surrender values.

The first set of tables is in the format of Appendices D and F from the Society of Actuaries report. These tables compare the proposed minimum cash surrender values, using the Richardson Allowance and the new mortality tables, with

* the current allowance provided by the law, and using 1958 CSO.

* the Richard Allowance, using 1958 CSO.

The female values under the 1958 CSO table were computed using the 1958 CSO table for males, with ages reduced 6 years. No such adjustment was made under the proposed CSO table since that table is sex-distinct.

The handwritten tables show an update of Table II of Ardian Gill's October 4, 1976 letter to John Montgomery.

After having examined the various comparisons shown by these tables, I concluded that they are about in line with expectations. The biggest surprise to me is the very powerful effect of the 5½% interest assumption in decreasing the size of the actuarial functions used in these calculations.

Male   ☒   Whole Life   ☒

Female   ☐   20 Payment Life   ☐

                                                 20 Year Endowment   ☐

COMPARISON OF ADJUSTED PREMIUMS AND
MINIMUM CASH VALUES

(Basis: $1,000 – Age Nearest Birthday – Curtate Functions – 5½ Per Cent)

		Richardson Allowance ☐ 1958 CSO Current Allowance ☒ 1958 CSO		Richardson Allowance Proposed CSO	
Issue Age	Policy Year	Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	6.95793	−20.36	5.93634	−12.81
	2		−16.00		−9.18
	3		−11.42		−5.33
	4		−6.61		−1.22
	5		−1.54		3.16
	10		27.99		29.63
	15		65.62		63.90
	20		112.44		106.23
	@65		464.93		441.44
35	1	12.90264	−18.89	11.28796	−13.84
	2		−8.98		−4.94
	3		1.34		4.31
	4		12.05		13.91
	5		23.15		23.86
	10		84.40		78.94
	15		155.30		143.51
	20		234.76		217.92
	@65		411.10		389.97
50	1	27.79031	−19.32	24.68305	−20.25
	2		−.17		−2.65
	3		19.37		15.41
	4		39.29		33.88
	5		59.58		52.73
	10		165.64		152.68
	15		276.29		261.12
	20		385.62		373.15
65	1	63.38280	−13.85	59.60507	−42.52
	2		18.15		−10.10
	3		49.87		22.47
	4		81.19		55.23
	5		112.02		88.17
	10		260.25		250.00
	15		400.93		395.60
	20		521.40		525.76

Male ☑	Whole Life ☑
Female ☐	20 Payment Life ☐
	20 Year Endowment ☐

COMPARISON OF ADJUSTED PREMIUMS AND MINIMUM CASH VALUES

(Basis: $1,000--Age Nearest Birthday--Curtate Functions--5½ Per Cent)

| | | Richardson Allowance ☑ 1958 CSO | | Richardson Allowance | |
		Current Allowance ☐ 1958 CSO		Proposed CSO	
Issue Age	Policy Year	Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	6.51998	-12.79	5.93634	-12.81
	2		-8.47		-9.18
	3		-3.92		-5.33
	4		.85		-1.22
	5		5.88		3.16
	10		35.20		29.63
	15		72.54		63.90
	20		119.02		106.23
	@65		468.90		441.44
35	1	12.61791	-14.43	11.28796	-13.84
	2		-4.57		-4.94
	3		5.71		4.31
	4		16.38		13.91
	5		27.43		23.86
	10		88.40		78.94
	15		159.00		143.51
	20		238.11		217.92
	@65		413.68		389.97
50	1	28.02212	-22.28	24.68305	-20.25
	2		-3.08		-2.65
	3		16.52		15.41
	4		36.50		33.88
	5		56.85		52.73
	10		163.22		152.68
	15		274.19		261.12
	20		383.84		373.15
65	1	67.45549	-49.60	59.60507	-42.52
	2		-16.47		-10.10
	3		16.37		22.47
	4		48.79		55.23
	5		80.71		88.17
	10		234.17		250.00
	15		379.80		395.60
	20		504.53		525.76

Male	☑			Whole Life	☐
Female	☐			20 Payment Life	☑
				20 Year Endowment	☐

COMPARISON OF ADJUSTED PREMIUMS AND
MINIMUM CASH VALUES

(Basis: $1,000--Age Nearest Birthday--Curtate Functions--5½ Per Cent)

Issue Age	Policy Year	Richardson Allowance 1958 CSO ☑ Current Allowance 1958 CSO		Richardson Allowance Proposed CSO	
		Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	9.32606	-12.73	8.56381	-12.74
	2		-5.43		-6.32
	3		2.25		.47
	4		10.34		7.69
	5		18.88		15.35
	10		68.98		61.25
	15		133.83		121.18
	20		216.95		197.60
	@65		527.94		498.54
35	1	16.64911	-14.47	15.12534	-13.86
	2		-.35		-.91
	3		14.44		12.63
	4		29.88		26.77
	5		45.99		41.52
	10		137.24		125.30
	15		249.16		228.75
	20		386.58		357.12
	@65		527.94		498.54
50	1	32.50777	-22.32	29.26803	-20.32
	2		1.75		2.16
	3		26.54		25.40
	4		52.06		49.39
	5		78.35		74.14
	10		222.01		210.62
	15		390.42		373.45
	20		599.25		574.57
65	1	69.81765	-49.50	62.08834	-42.45
	2		-13.78		-7.33
	3		21.91		28.19
	4		57.49		64.18
	5		92.94		100.69
	10		272.81		283.21
	15		478.06		489.46
	20		784.01		778.74

Male ☑				Whole Life ☐
Female ☐				20 Payment Life ☐
				20 Year Endowment ☑

COMPARISON OF ADJUSTED PREMIUMS AND
MINIMUM CASH VALUES

(Basis: $1,000--Age Nearest Birthday--Curtate Functions--5½ Per Cent)

Issue Age	Policy Year	Richardson Allowance ☐ 1958 CSO / Current Allowance ☑ 1958 CSO		Richardson Allowance Proposed CSO	
		Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	31.16403	-5.01	31.97297	-16.10
	2		25.81		14.87
	3		58.36		47.62
	4		92.73		82.26
	5		129.05		118.91
	10		343.81		336.34
	15		626.62		622.70
	20		matured		matured
	@65		--		--
35	1	32.60961	-6.39	33.05153	-16.41
	2		25.09		15.35
	3		58.24		48.78
	4		93.11		83.97
	5		129.81		121.00
	10		344.40		337.86
	15		624.75		621.51
	20		matured		matured
	@65		--		--
50	1	40.10702	-11.41	39.05918	-21.65
	2		21.36		11.15
	3		55.44		45.37
	4		90.90		81.07
	5		127.83		118.31
	10		338.58		332.21
	15		610.88		610.23
	20		matured		matured
65	1	66.98477	-9.93	64.29451	-42.69
	2		26.37		-5.20
	3		62.84		32.91
	4		99.43		71.74
	5		136.17		111.37
	10		328.92		321.42
	15		570.79		571.42
	20		matured		matured

Male	☑
Female	☐

Whole Life	☐
20 Payment Life	☐
20 Year Endowment	☑

COMPARISON OF ADJUSTED PREMIUMS AND MINIMUM CASH VALUES

(Basis: $1,000--Age Nearest Birthday--Curtate Functions--5½ Per Cent)

		Richardson Allowance ☑ 1958 CSO — Current Allowance ☐ 1958 CSO		Richardson Allowance — Proposed CSO	
Issue Age	Policy Year	Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	32.07466	-15.99	31.97297	-16.10
	2		15.16		14.87
	3		48.06		47.62
	4		82.81		82.26
	5		119.53		118.91
	10		336.64		336.34
	15		622.53		622.70
	20		matured		matured
	@65		--		--
35	1	33.49158	-16.86	33.05153	-16.41
	2		14.94		15.35
	3		48.44		48.78
	4		83.68		83.97
	5		120.75		121.00
	10		337.58		337.86
	15		620.85		621.51
	20		matured		matured
	@65		--		--
50	1	41.20708	-23.47	39.05918	-21.65
	2		9.69		11.15
	3		44.17		45.37
	4		80.06		81.07
	5		117.43		118.31
	10		330.69		332.21
	15		606.24		610.23
	20		matured		matured
65	1	71.67465	-49.69	64.29451	-42.69
	2		-11.96		-5.20
	3		25.95		32.91
	4		63.98		71.74
	5		102.16		111.37
	10		302.50		321.42
	15		553.89		571.42
	20		matured		matured

Male ☐	Whole Life ☑
Female ☑	20 Payment Life ☐
	20 Year Endowment ☐

COMPARISON OF ADJUSTED PREMIUMS AND
MINIMUM CASH VALUES

(Basis: $1,000--Age Nearest Birthday--Curtate Functions--5½ Per Cent)

Issue Age	Policy Year	Richardson Allowance ☐ 1958 CSO / Current Allowance ☑ 1958 CSO		Richardson Allowance Proposed CSO	
		Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	5.67625	-20.42	4.72824	-11.76
	2		-17.04		-8.50
	3		-13.55		-5.07
	4		-9.95		-1.48
	5		-6.20		2.29
	10		15.23		24.12
	15		42.72		51.59
	20		77.81		85.44
	@65		380.79		370.45
35	1	9.85030	-19.58	9.00706	-13.03
	2		-12.43		-6.02
	3		-4.92		1.27
	4		2.96		8.82
	5		11.22		16.62
	10		58.42		59.55
	15		114.95		110.31
	20		180.73		170.03
	@65		336.08		323.08
50	1	20.22162	-18.64	18.69990	-17.74
	2		-3.71		-4.33
	3		11.66		9.52
	4		27.45		23.77
	5		43.65		38.45
	10		130.27		119.70
	15		224.99		215.76
	20		324.66		322.63
65	1	45.52101	-19.46	43.40204	-30.15
	2		7.31		-2.05
	3		34.25		26.66
	4		61.34		56.13
	5		88.52		86.41
	10		223.26		244.99
	15		349.96		400.04
	20		470.88		543.74

Male	☐		Whole Life	☑
Female	☑		20 Payment Life	☐
			20 Year Endowment	☐

COMPARISON OF ADJUSTED PREMIUMS AND
MINIMUM CASH VALUES

(Basis: $1,000--Age Nearest Birthday--Curtate Functions--5½ Per Cent)

| | | Richardson Allowance ☑ 1958 CSO Current Allowance ☐ 1958 CSO | | Richardson Allowance Proposed CSO | |
Issue Age	Policy Year	Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	5.20943	-12.18	4.72824	-11.76
	2		-8.83		-8.50
	3		-5.37		-5.07
	4		-1.79		-1.48
	5		1.92		2.29
	10		23.18		24.12
	15		50.45		51.59
	20		85.26		85.44
	@65		385.79		370.45
35	1	9.48297	-13.54	9.00706	-13.03
	2		-6.43		-6.02
	3		1.04		1.27
	4		8.87		8.82
	5		17.08		16.62
	10		64.00		59.55
	15		120.19		110.31
	20		185.59		170.03
	@65		340.01		323.08
50	1	20.16780	-17.89	18.69990	-17.74
	2		-2.96		-4.33
	3		12.40		9.52
	4		28.17		23.77
	5		44.36		38.45
	10		130.92		119.70
	15		225.57		215.76
	20		325.17		322.63
65	1	46.97117	-34.60	43.40204	-30.15
	2		-7.44		-2.05
	3		19.91		26.66
	4		47.41		56.13
	5		74.99		86.41
	10		211.72		244.99
	15		340.31		400.04
	20		463.02		543.74

Male	☐
Female	☑

Whole Life	☐
20 Payment Life	☑
20 Year Endowment	☐

COMPARISON OF ADJUSTED PREMIUMS AND
MINIMUM CASH VALUES

(Basis: $1,000--Age Nearest Birthday--Curtate Functions--5½ Per Cent)

Issue Age	Policy Year	Richardson Allowance ☐ 1958 CSO / Current Allowance ☑ 1958 CSO		Richardson Allowance Proposed CSO	
		Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	8.15805	-18.85	6.92368	-11.65
	2		-12.76		-6.06
	3		-6.40		-.18
	4		.23		6.01
	5		7.17		12.52
	10		47.57		50.54
	15		100.11		99.37
	20		168.36		161.49
	@65		441.59		422.80
35	1	13.32100	-17.38	12.43653	-13.03
	2		-6.43		-2.39
	3		5.09		8.73
	4		17.22		20.33
	5		29.97		32.42
	10		103.86		100.89
	15		196.19		185.91
	20		310.93		292.30
	@65		441.59		422.80
50	1	24.58618	-15.87	23.24748	-17.81
	2		3.87		.42
	3		24.33		19.38
	4		45.54		39.07
	5		67.50		59.53
	10		189.40		175.86
	15		335.01		321.18
	20		513.41		501.46
65	1	48.66367	-16.08	46.42894	-30.13
	2		14.33		1.21
	3		45.22		33.41
	4		76.60		66.65
	5		108.47		100.99
	10		275.24		286.46
	15		462.06		490.58
	20		717.53		751.02

Male	☐		Whole Life	☐
Female	☑		20 Payment Life	☑
			20 Year Endowment	☐

COMPARISON OF ADJUSTED PREMIUM
MINIMUM CASH VALUES

(Basis: $1,000—Age Nearest Birthday—Curtate Functions—5½ Per Cent)

		Richardson Allowance ☑ 1958 CSO Current Allowance ☐ 1958 CSO		Richardson Allowance Proposed CSO	
Issue Age	Policy Year	Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	7.59834	-12.08	6.92368	-11.65
	2		-6.20		-6.06
	3		-.07		-.18
	4		6.34		6.01
	5		13.03		12.52
	10		51.98		50.54
	15		102.62		99.37
	20		168.36		161.49
	@65		441.59		422.30
35	1	13.00092	-13.54	12.43653	-13.03
	2		-2.71		-2.39
	3		8.69		8.73
	4		20.68		20.33
	5		33.29		32.42
	10		106.36		100.89
	15		197.62		185.91
	20		310.93		292.30
	@65		441.59		422.80
50	1	24.76828	-17.96	23.24748	-17.81
	2		1.85		.42
	3		22.38		19.38
	4		43.66		39.07
	5		65.70		59.53
	10		188.04		175.86
	15		334.22		321.18
	20		513.41		501.46
65	1	50.56902	-34.55	46.42894	-30.13
	2		-3.51		1.21
	3		28.03		33.41
	4		60.07		66.65
	5		92.61		100.99
	10		263.10		286.46
	15		454.59		490.58
	20		717.53		751.02

Male	☐		Whole Life	☐
Female	☑		20 Payment Life	☐
			20 Year Endowment	☑

COMPARISON OF ADJUSTED PREMIUMS /
MINIMUM CASH VALUES

(Basis: $1,000--Age Nearest Birthday--Curtate Functions--5½ Per Cent)

		Richardson Allowance ☑ 1958 CSO Current Allowance ☐ 1958 CSO		Richardson Allowance Proposed CSO	
Issue Age	Policy Year	Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	31.87564	-15.57	31.52451	-15.19
	2		15.77		16.18
	3		48.80		49.29
	4		83.63		84.25
	5		120.37		121.14
	10		337.32		338.79
	15		623.05		624.37
	20		matured		matured
	@65		--		--
35	1	32.57373	-16.34	32.52927	-15.90
	2		15.03		15.82
	3		48.14		49.21
	4		83.09		84.37
	5		119.98		121.37
	10		337.43		338.25
	15		622.24		622.41
	20		matured		matured
	@65		--		--
50	1	36.78960	-19.62	36.06308	-19.60
	2		12.83		12.13
	3		46.80		45.40
	4		82.35		80.29
	5		119.57		116.91
	10		334.73		331.39
	15		614.52		614.48
	20		matured		matured
65	1	54.61716	-35.04	50.11212	-30.59
	2		.32		4.67
	3		36.53		41.08
	4		73.65		78.85
	5		111.72		118.10
	10		319.78		335.97
	15		581.21		599.15
	20		matured		matured

Male	☐
Female	☑

Whole Life	☐
20 Payment Life	☐
20 Year Endowment	☑

COMPARISON OF ADJUSTED PREMIUMS /
MINIMUM CASH VALUES

(Basis: $1,000--Age Nearest Birthday--Curtate Functions--5½ Per Cent)

		Richardson Allowance ☐ 1958 CSO / Current Allowance ☑ 1958 CSO		Richardson Allowance Proposed CSO	
Issue Age	Policy Year	Adjusted Premium	Minimum Cash Value	Adjusted Premium	Minimum Cash Value
20	1	30.95185	-4.40	31.52451	-15.19
	2		26.59		16.18
	3		59.26		49.29
	4		93.70		84.25
	5		130.04		121.14
	10		344.61		338.79
	15		627.20		624.37
	20		matured		matured
	@65		---		--
35	1	31.68971	-5.73	32.52927	-15.90
	2		25.31		15.82
	3		58.07		49.21
	4		92.66		84.37
	5		129.17		121.37
	10		344.35		338.25
	15		626.18		622.41
	20		matured		matured
	@65		---		--
50	1	35.83830	-8.71	36.06308	-19.60
	2		23.39		12.13
	3		56.99		45.40
	4		92.16		80.29
	5		128.99		116.91
	10		341.85		331.39
	15		618.64		614.48
	20		matured		matured
65	1	52.26280	-12.21	50.11212	-30.59
	2		22.37		4.67
	3		57.78		41.08
	4		94.08		78.85
	5		131.31		118.10
	10		334.78		335.97
	15		590.45		599.15
	20		matured		matured

TESTS OF EXPENSE FORMULA

4 ½ %

PREMIUMS BASED ON 1979 CSO MALE CURTATE FUNCTIONS

	AGE	0	20	35	50
	PAR - WHOLE LIFE				
1.	AVERAGE POLICY (000's)	5	12.5	20	15
2.	% OF MEDICAL BY No.	0	10%	40%	100%
3.	UND. AND ISSUE PER POLICY	15	4.6	6.4	100
4.	UND. AND ISSUE PER M	5.00	3.68	3.20	6.67
5.	EXCESS 1ST YEAR COST % PREMIUM	110%	110%	110%	110%
6.	AVERAGE PREMIUM	8.42	11.83	17.76	31.48
7.	5 x 6	9.26	13.01	19.54	34.63
8.	7 + 4 = TOTAL COST	14.26	16.69	22.74	41.30
9.	125% NET + $10	13.89	17.76	24.50	40.69
	PAR - LIFE TO 65				
10.	EXCESS 1ST YEAR COST % PREMIUM		110%	110%	102%
11.	AVERAGE PREMIUM		12.99	21.01	46.43
12.	10 X 11		14.29	23.11	47.36
13.	12 + 4 = TOTAL COST		17.97	23.31	54.03
14.	125% NET + $10		18.19	26.40	52.45
	PAR - ENDOWMENT AT 65				
15.	AVERAGE SIZE (000's)		10	15	12.5
16.	% OF MEDICAL BY No.		5%	25%	100%
17.	UND. AND ISSUE PER POLICY		43	55	100
18.	UND. AND ISSUE PER M		4.30	3.67	8.00
19.	EXCESS 1ST YEAR COST % PREMIUM		110%	105%	95%
20.	AVERAGE PREMIUM		17.01	25.01	34.85
21.	19 X 20		18.71	29.41	61.61
22.	21 + 18 = TOTAL COST		23.01	33.08	69.61
23.	125% NET + $10		21.15	33.45	74.56
	PAR - TERM TO 65				
24.	AVERAGE SIZE (000's)		30	50	
25.	% OF MEDICAL BY No.		50%	75%	
26.	UND. AND ISSUE PER POLICY		70	85	
27.	UND. AND ISSUE PER M		2.33	1.70	
28.	EXCESS 1ST YEAR COST % PREMIUM		100%	100%	
29.	AVERAGE PREMIUM		7.37	10.56	
30.	28 X 29		7.37	10.56	
31.	30 + 27 = TOTAL COST		9.75	12.36	
32.	125% NET + $10		14.44	17.51	

TESTS OF EXPENSE FORMULA

5 1/2 %

PREMIUMS BASED ON 1979 CSO MALE CURTATE FUNCTIONS

	AGE	0	20	35	50
	PAR - WHOLE LIFE				
1.	Average Policy (000's)	5.	12.5	30.	15.
2.	% of Medical by No.	0	10%	40%	100%
3.	Und. and Issue per Policy	.25	46.	.67	.00
4.	Und. and Issue per M	5.00	3.68	3.20	6.67
5.	Excess 1st Year Cost % Premium	110%	110%	110%	110%
6.	Average Premium	7.66	10.51	15.89	23.10
7.	5 x 6	8.43	11.56	17.45	32.01
8.	7 + 4 = Total Cost	13.43	15.24	20.65	38.55
9.	125% Net + $10	13.09	16.26	22.38	37.39
	PAR - LIFE TO 65				
10.	Excess 1st Year Cost % Premium		110%	110%	102%
11.	Average Premium		11.34	15.81	41.17
12.	10 x 11		12.47	20.14	41.99
13.	12 + 4 = Total Cost		13.15	23.34	48.33
14.	125% Net + $10		18.50	23.64	54.06
	PAR - ENDOWMENT AT 65				
15.	Average Size (000's)		10.	15	12.5
16.	% of Medical by No.		5%	25%	100%
17.	Und. and Issue per Policy		43	55	1.00
18.	Und. and Issue per M		4.30	3.67	8.00
19.	Excess 1st Year Cost % Premium		110%	105%	95%
20.	Average Premium		15.08	25.17	62.80
21.	19 x 20		16.59	26.43	57.76
22.	21 + 18 = Total Cost		20.89	30.10	65.76
23.	125% Net + $10		12.01	30.25	70.05

PARTICIPATING EXPENSE ALLOWANCES

PREMIUMS BASED ON 1979 C50 MALE CURTATE FUNCTIONS, ANI

		0	20		
WHOLE LIFE					
A.	4 1/2 % – DERIVED	14.26	16.69	22.74	41.30
	125% + $10	13.89	17.76	24.50	40.09
B.	5 1/2 % – DERIVED	13.43	15.24	20.68	38.68
	125% + $10	13.03	16.26	22.38	37.39
LIFE AT 65					
A.	4 1/2 % – DERIVED		17.97	26.31	54.03
	125% + $10		18.19	26.40	52.45
B.	5 1/2 % – DERIVED		16.15	23.34	48.66
	125% + $10		16.50	23.64	47.06
ENDOWMENT AT 65					
A.	4 1/2 % – DERIVED		23.01	33.08	69.61
	125% + $10		21.18	33.45	74.56
B.	5 1/2 % – DERIVED		20.89	36.10	65.76
	125% + $10		19.01	30.28	70.05
TERM 65					
A.	4 1/2 % – DERIVED		9.70	12.26	
	125% + $10		14.44	17.51	

GROSS PREMIUM FORMULA   GAP = $ NAP + g   PER 1000

	f	g
O L	1.10	9.
L 65	1.22	5.
E 65	1.12	7.
T 65	1.30	2.75

(ATTACHMENT G-6)

To: Life Insurance (C3) Subcommittee

From: (C) Committee Technical Task Force on Valuation & Nonforfeiture Value Regulation

Date: December 1979

Re: Reserve and Cash Surrender Value Comparisons Using the New Mortality Tables

A special committee of the Society of Actuaries has constructed new mortality tables for use in the calculation of minimum policy reserves. Details of the construction of the tables, designated at this time as the "K Tables" are to be published soon by the Society of Actuaries. The tables are separate by sex removing the need to use age setbacks to the male table to derive the female table. Table A shows the mortality rates for the K(m) and K(F) mortality tables.

Table 1 attached shows the minimum terminal reserves calculated by the Commissioners' Reserve Valuation Method at 4.5% comparing reserves by sex and by 1958 CSO versus Table K. Thirty years of reserves are shown for Ordinary Life, ages 0, 20, 35, 50, 65 and by ages 20, 35 and 50 for the 20 pay Life, Life Paid Up at Age 65, Endowment at age 65 and Term to Age 65 plans.

Table 2 attached shows the minimum cash surrender values calculated at 5.5%, for the same comparisons and plans as for Table 1. The values by the 1958 CSO Mortality Table are calculated by the nonforfeiture value formula according to the present law (Method P in Table 2). The values by Table K are calculated by a formula suggested by C.F.B. Richardson in his paper published by the Society of Actuaries (T.S.A. XXIX, pp 220-221) (Method R in Table 2).

The cash surrender value is calculated as the excess of the present value of future guaranteed benefits over the present value of future adjusted premiums using assumptions of interest and mortality only. The adjusted premium per $1000 of face amount of insurance by Method P, the present method, is given for an m year endowment with premium payable for n years by:

$$P^a \ddot{a}_{x\overline{n}|} = 1000 A_{x\overline{m}|} + 20 + .40\,[40{:}P^a] + .25\,[40{:}P^a_x{:}P^a]$$

The adjusted premium per $1000 face amount of insurance by Method R, the Richardson method is given by:

$$P^a \ddot{a}_{x\overline{n}|} = 1000 A_{x\overline{m}|} + 1.25\,[P] + 10$$

Definitions applicable to these equations are:

P^a = The adjusted premium

P = The net level annual premium for the plan

P^a_x = The adjusted premium for an ordinary whole life insurance plan issued at the same age as the plan for which values are to be calculated

$\ddot{a}_{x\overline{n}|}$ = An annuity due payable until the end of the premium paying period

$A_{x\overline{m}|}$ = A single premium m year endowment

$[40{:}P^a]$ = The lesser of $40 or the adjusted premium

$[40{:}P^a_x{:}P^a]$ = The lesser of $40, the adjusted premium for an ordinary life plan issued at the same age, or the adjusted premium for the plan for which values are to be determined.

For ordinary whole life the ratios of values by Table K to values by the 1958 CSO Table are illustrated by:

For CRVM Terminal Reserves (4.5%)

	Issue Age	Renewal Premium	At End of Year		
			10	20	30
Male	20	.910	.901	.916	.923
	35	.801	.914	.928	.951
	50	.890	.942	.976	1.001
Female	20	.821	.889	.874	.856
	35	.834	.830	.836	.880
	50	.801	.847	.924	1.008
Ratio Female to Male	20	.902	.986	.954	.928
	35	.925	.909	.901	.925
	50	.900	.899	.946	1.007

For Minimum Cash Surrender Values (5.5%)

	Issue Age	Adjusted Premium	At End of Year		
			10	20	30
Male	20	.853	1.059	.945	.928
	35	.875	.935	.928	.949
	50	.888	.922	.968	.998
Female	20	.753	1.159	.911	.854
	35	.802	.839	.821	.865
	50	.790	.811	.907	1.005
Ratio Female to Male	20	.882	1.094	.964	.921
	35	.916	.897	.884	.912
	50	.890	.880	.938	1.006

The use of the new mortality table will undoubtedly bring about a change in gross premiums with resulting change in interest adjusted net costs and yields on policy funds such as represented by yields calculated by the Linton Yield Method. The relative effect of a reduction in premiums on such net costs and yields is being studied and at a later time it is hoped that the results will be presented.

TABLE   A
NEW MORTALITY TABLES
Mortality Rates per Thousand

AGE	TABLE K(M)	TABLE K(F)	AGE	TABLE K(M)	TABLE K(F)
0	4.18	2.89	50	6.71	4.96
1	1.07	.87	51	7.30	5.31
2	.99	.81	52	7.96	5.70
3	.98	.79	53	8.71	6.15
4	.95	.77	54	9.56	6.61
5	.90	.76	55	10.47	7.09
6	.86	.73	56	11.46	7.57
7	.80	.72	57	12.49	8.03
8	.76	.70	58	13.59	8.47
9	.74	.69	59	14.77	8.94
10	.73	.68	60	16.08	9.47
11	.77	.69	61	17.54	10.13
12	.85	.72	62	19.19	10.96
13	.99	.75	63	21.06	12.02
14	1.15	.80	64	23.14	13.25
15	1.33	.85	65	25.42	14.59
16	1.51	.90	66	27.85	16.00
17	1.67	.95	67	30.44	17.43
18	1.78	.98	68	33.19	18.84
19	1.86	1.02	69	36.17	20.36
20	1.90	1.05	70	39.51	22.11
21	1.91	1.07	71	43.30	24.23
22	1.89	1.09	72	47.65	26.87
23	1.86	1.11	73	52.64	30.11
24	1.82	1.14	74	58.19	33.93
25	1.77	1.16	75	64.19	38.24
26	1.73	1.19	76	70.53	42.97
27	1.71	1.22	77	77.12	48.04
28	1.70	1.26	78	83.90	53.45
29	1.71	1.30	79	91.05	59.35
30	1.73	1.35	80	98.84	65.99
31	1.78	1.40	81	107.48	73.60
32	1.83	1.45	82	117.25	82.40
33	1.91	1.50	83	128.26	92.53
34	2.00	1.58	84	140.25	103.81
35	2.11	1.65	85	152.95	116.10
36	2.24	1.76	86	166.09	129.29
37	2.40	1.89	87	179.55	143.32
38	2.58	2.04	88	193.27	158.18
39	2.79	2.22	89	207.29	173.94
40	3.02	2.42	90	221.77	190.75
41	3.29	2.64	91	236.98	208.87
42	3.56	2.87	92	253.45	228.81
43	3.87	3.09	93	272.11	251.51
44	4.19	3.32	94	295.90	279.31
45	4.55	3.56	95	329.96	317.32
46	4.92	3.80	96	384.55	375.74
47	5.32	4.05	97	480.20	474.97
48	5.74	4.33	98	657.98	655.85
49	6.21	4.63	99	1000.00	1000.00

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN: ORDINARY LIFE   PAYMENTS: 100

INITIAL AGE: 0   TERM: 100

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2/C1 C3	AT 4.5% CRVM RESERVE MALE C4	AT 4.5% CRVM RESERVE FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MDD PREM	3.66	3.28	0.896	3.11	2.48	0.797	0.850	0.756	0.890
1	3.28-	2.78-	0.848	0.94-	0.30-	0.319	0.287	0.109	0.376
2	1.37-	1.15-	0.839	1.20	1.40	1.167	0.876-	1.217-	1.391
3	0.87	0.82	0.943	3.52	3.25	0.923	4.046	3.963	0.979
4	3.27	2.95	0.902	5.95	5.19	0.872	1.820	1.759	0.967
5	5.84	5.23	0.896	8.52	7.25	0.851	1.459	1.386	0.950
6	8.59	7.67	0.893	11.26	9.41	0.836	1.311	1.227	0.936
7	11.51	10.27	0.892	14.18	11.70	0.825	1.232	1.139	0.925
8	14.61	13.02	0.891	17.28	14.11	0.817	1.183	1.084	0.917
9	17.87	15.94	0.892	20.56	16.64	0.809	1.151	1.044	0.907
10	21.31	19.00	0.892	24.01	19.30	0.804	1.127	1.016	0.903
11	24.91	22.20	0.891	27.63	22.09	0.799	1.109	0.995	0.897
12	28.66	25.55	0.891	31.37	25.00	0.797	1.095	0.978	0.895
13	32.55	29.02	0.892	35.21	28.01	0.796	1.082	0.965	0.892
14	36.56	32.63	0.893	39.09	31.13	0.796	1.069	0.954	0.891
15	40.69	36.36	0.894	43.00	34.35	0.799	1.057	0.945	0.894
16	44.95	40.22	0.895	46.91	37.67	0.803	1.044	0.937	0.897
17	49.33	44.20	0.896	50.84	41.09	0.808	1.031	0.930	0.902
18	53.84	48.30	0.897	54.79	44.61	0.814	1.018	0.924	0.907
19	58.49	52.52	0.898	58.83	48.28	0.821	1.006	0.919	0.914
20	63.31	56.87	0.898	62.98	52.07	0.827	0.995	0.916	0.921
21	68.31	61.34	0.898	67.29	56.01	0.832	0.985	0.913	0.927
22	73.51	65.95	0.897	71.80	60.11	0.837	0.977	0.911	0.933
23	78.92	70.74	0.896	76.53	64.39	0.841	0.970	0.909	0.939
24	84.56	75.70	0.895	81.51	68.84	0.845	0.964	0.909	0.944
25	90.45	80.85	0.894	86.76	73.47	0.847	0.959	0.909	0.947
26	96.60	86.23	0.893	92.31	78.29	0.848	0.956	0.908	0.950
27	103.01	91.82	0.891	98.15	83.31	0.849	0.953	0.907	0.953
28	109.69	97.66	0.890	104.28	88.53	0.849	0.951	0.907	0.954
29	116.65	103.76	0.889	110.71	93.96	0.849	0.949	0.906	0.955
30	123.90	110.12	0.889	117.43	99.61	0.848	0.948	0.905	0.954

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN 1 ORDINARY LIFE
PAYMENTS 80

INITIAL AGE: 20
TERM 80

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2/C1 C3	AT 4.5% CRVM RESERVE MALE C4	AT 4.5% CRVM RESERVE FEMALE C5	K AT 4.5% C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MOD PREM	7.08	6.31	0.891	6.44	5.18	0.804	0.910	0.821	0.902
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	5.58	4.92	0.882	4.83	4.35	0.901	0.866	0.884	1.022
3	11.39	10.01	0.879	9.90	8.87	0.896	0.869	0.846	1.019
4	17.45	15.30	0.877	15.24	13.59	0.892	0.873	0.848	1.017
5	23.76	20.79	0.875	20.88	18.49	0.886	0.879	0.889	1.013
6	30.36	26.51	0.873	26.82	23.60	0.880	0.883	0.890	1.008
7	37.24	32.48	0.872	33.08	28.92	0.874	0.888	0.890	1.002
8	44.41	38.70	0.871	39.66	34.45	0.869	0.893	0.890	0.998
9	51.69	45.19	0.871	46.55	40.21	0.864	0.897	0.890	0.992
10	59.66	51.97	0.871	53.76	46.19	0.859	0.901	0.889	0.986
11	67.76	59.03	0.871	61.28	52.40	0.855	0.904	0.888	0.982
12	76.19	66.39	0.871	69.11	58.85	0.852	0.907	0.886	0.978
13	84.96	74.05	0.872	77.26	65.55	0.848	0.909	0.885	0.972
14	94.08	82.02	0.872	85.72	72.52	0.846	0.911	0.884	0.970
15	103.56	90.52	0.872	94.49	79.74	0.844	0.912	0.883	0.968
16	113.39	98.95	0.873	103.58	87.24	0.842	0.913	0.882	0.964
17	123.58	107.94	0.873	112.99	94.98	0.841	0.914	0.880	0.963
18	134.12	117.27	0.874	122.69	102.97	0.839	0.915	0.878	0.960
19	144.98	126.96	0.876	132.70	111.20	0.838	0.915	0.876	0.957
20	156.16	136.99	0.877	143.01	119.67	0.837	0.916	0.874	0.954
21	167.65	147.36	0.879	153.62	128.35	0.836	0.916	0.871	0.951
22	179.44	158.06	0.881	164.51	137.26	0.834	0.917	0.868	0.947
23	191.54	169.07	0.883	175.71	146.40	0.833	0.917	0.866	0.943
24	203.95	180.38	0.884	187.20	155.79	0.832	0.918	0.864	0.941
25	216.68	191.99	0.886	199.00	165.44	0.831	0.918	0.862	0.938
26	229.70	203.91	0.888	211.09	175.36	0.831	0.919	0.860	0.936
27	243.03	216.13	0.889	223.52	185.57	0.830	0.920	0.859	0.934
28	256.63	228.66	0.891	236.22	196.08	0.830	0.920	0.858	0.932
29	270.51	241.49	0.893	249.27	206.88	0.830	0.921	0.857	0.929
30	284.65	254.61	0.894	262.64	217.98	0.830	0.923	0.856	0.928

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN : ORDINARY LIFE
PAYMENTS : 65

INITIAL AGE: 35
TERM : 65

POLICY YEAR	58 CSO AT 4.5% MALE CRVM RESERVE C1	58 CSO AT 4.5% FEMALE CRVM RESERVE C2	RATIO C2/C1 C3	K AT 4.5% MALE CRVM RESERVE C4	K AT 4.5% FEMALE CRVM RESERVE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MOD PREM	13.49	13.74	0.870	12.16	9.79	0.805	0.901	0.834	0.925
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	11.49	9.97	0.868	10.49	8.48	0.808	0.913	0.851	0.931
3	23.37	20.33	0.870	21.32	17.24	0.809	0.912	0.848	0.930
4	35.62	31.08	0.873	32.49	26.26	0.808	0.912	0.845	0.926
5	48.23	42.21	0.875	43.99	35.53	0.808	0.912	0.842	0.923
6	61.19	53.72	0.878	55.82	45.04	0.807	0.912	0.838	0.919
7	74.49	65.59	0.881	67.97	54.80	0.806	0.912	0.835	0.915
8	88.14	77.81	0.883	80.46	64.92	0.806	0.913	0.833	0.913
9	102.14	90.37	0.885	93.28	75.10	0.805	0.913	0.831	0.910
10	116.49	103.25	0.886	106.44	85.68	0.805	0.914	0.830	0.909
11	131.19	116.48	0.888	119.95	96.55	0.805	0.914	0.829	0.907
12	146.21	130.04	0.889	133.77	107.73	0.805	0.915	0.828	0.906
13	161.56	143.95	0.891	147.97	119.24	0.806	0.916	0.828	0.905
14	177.21	158.19	0.893	162.52	131.07	0.806	0.917	0.829	0.903
15	193.16	172.75	0.894	177.43	143.23	0.807	0.918	0.829	0.903
16	209.37	187.62	0.896	192.71	155.72	0.808	0.920	0.830	0.902
17	225.84	202.78	0.898	208.31	168.54	0.809	0.922	0.831	0.901
18	242.56	216.23	0.900	224.21	181.69	0.810	0.924	0.833	0.900
19	259.51	233.94	0.901	240.39	195.15	0.812	0.926	0.834	0.901
20	276.68	249.90	0.903	256.81	208.93	0.814	0.928	0.836	0.901
21	294.06	266.10	0.905	273.46	223.05	0.816	0.930	0.838	0.902
22	311.61	282.52	0.907	290.34	237.55	0.818	0.932	0.841	0.902
23	329.31	299.16	0.908	307.46	252.46	0.821	0.934	0.844	0.904
24	347.13	316.00	0.910	324.83	267.85	0.825	0.936	0.844	0.907
25	365.05	353.00	0.912	342.44	283.73	0.829	0.938	0.852	0.909
26	383.03	350.15	0.914	360.27	300.10	0.833	0.941	0.857	0.911
27	401.04	367.42	0.916	378.28	316.91	0.838	0.943	0.863	0.915
28	419.07	384.78	0.918	396.43	334.11	0.843	0.946	0.868	0.918
29	437.07	402.20	0.920	414.64	351.58	0.848	0.949	0.874	0.922
30	455.01	419.66	0.922	432.88	369.27	0.853	0.951	0.880	0.925

DATE: 11/7/79

TABLE 1. COMPARISON OF CRVM RESERVES BY SEX

PLAN: ORDINARY LIFE
PAYMENTS: 50
INITIAL AGE: 50
TERM: 50

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2/C1 C3	K AT 4.5% CRVM RESERVE MALE C4	K AT 4.5% CRVM RESERVE FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MOD PREM	28.47	24.39	0.857	25.34	19.54	0.771	0.890	0.801	0.900
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	20.83	18.67	0.896	19.32	15.19	0.786	0.928	0.814	0.877
3	41.98	37.68	0.898	39.02	30.76	0.788	0.929	0.816	0.878
4	63.42	57.02	0.899	59.06	46.70	0.791	0.931	0.819	0.880
5	85.14	76.67	0.901	79.40	63.02	0.794	0.933	0.822	0.881
6	107.11	96.61	0.902	100.03	79.75	0.797	0.934	0.825	0.884
7	129.31	116.83	0.903	120.47	96.92	0.801	0.935	0.830	0.887
8	151.70	137.31	0.905	142.15	114.59	0.806	0.937	0.835	0.891
9	174.24	158.03	0.907	163.66	132.81	0.811	0.939	0.840	0.894
10	196.90	178.96	0.909	185.47	151.62	0.817	0.942	0.847	0.899
11	219.64	200.07	0.911	207.56	171.01	0.824	0.945	0.855	0.905
12	242.43	221.33	0.913	229.87	190.92	0.831	0.948	0.863	0.910
13	265.23	242.70	0.915	252.35	211.29	0.837	0.951	0.871	0.915
14	288.00	264.14	0.917	274.91	231.98	0.844	0.955	0.878	0.920
15	310.69	285.65	0.919	297.51	252.98	0.850	0.958	0.886	0.925
16	333.25	307.13	0.922	320.10	274.14	0.856	0.961	0.893	0.928
17	355.62	328.60	0.924	342.67	295.63	0.863	0.964	0.900	0.934
18	377.70	350.00	0.927	365.25	317.45	0.869	0.967	0.907	0.937
19	399.41	371.27	0.930	387.85	339.71	0.874	0.971	0.915	0.942
20	420.72	392.36	0.933	410.46	362.43	0.883	0.976	0.924	0.946
21	441.60	415.18	0.936	433.01	385.57	0.890	0.981	0.933	0.951
22	462.09	435.66	0.938	455.40	409.02	0.898	0.986	0.943	0.957
23	482.27	453.75	0.941	477.47	432.59	0.906	0.990	0.953	0.963
24	502.24	473.44	0.943	499.07	456.10	0.914	0.994	0.963	0.969
25	522.03	492.77	0.944	520.08	479.37	0.922	0.996	0.973	0.977
26	541.65	511.80	0.945	540.47	502.43	0.929	0.998	0.981	0.983
27	561.01	530.62	0.946	560.26	524.94	0.937	0.999	0.989	0.990
28	580.02	549.29	0.947	579.52	547.23	0.944	0.999	0.996	0.997
29	598.51	567.78	0.949	598.39	569.24	0.951	1.000	1.003	1.002
30	616.37	586.04	0.951	616.91	591.00	0.958	1.001	1.008	1.007

DATE: 11/7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN : ORDINARY LIFE
PAYMENTS : 35

INITIAL AGE: 45
TERM : 35

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2/C1 C3	AT 4.5% CRVM RESERVE MALE C4	AT 4.5% CRVM RESERVE FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MOD PREM	64.22	56.29	0.845	57.54	43.18	0.750	0.896	0.795	0.888
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	33.54	30.99	0.924	33.21	29.60	0.891	0.990	0.955	0.964
3	66.66	61.87	0.928	66.42	59.66	0.898	0.994	0.944	0.968
4	99.23	92.58	0.933	99.66	90.33	0.906	1.004	0.976	0.971
5	131.18	123.01	0.938	132.91	121.63	0.915	1.013	0.989	0.975
6	162.50	153.07	0.942	166.08	153.51	0.924	1.022	1.003	0.981
7	193.24	182.62	0.945	199.00	185.81	0.934	1.030	1.017	0.988
8	223.50	211.61	0.947	231.47	218.29	0.943	1.036	1.032	0.996
9	253.45	240.03	0.947	265.24	250.68	0.952	1.039	1.044	1.005
10	283.13	267.93	0.946	294.14	282.74	0.961	1.039	1.055	1.016
11	312.55	295.39	0.945	324.13	314.37	0.970	1.037	1.064	1.026
12	341.60	322.56	0.944	353.23	345.52	0.978	1.034	1.071	1.036
13	370.10	349.50	0.944	381.56	376.22	0.986	1.031	1.076	1.044
14	397.83	376.20	0.946	409.31	406.55	0.993	1.029	1.081	1.050
15	424.62	402.55	0.948	436.56	436.53	1.000	1.028	1.084	1.055
16	450.40	428.42	0.951	463.29	466.06	1.006	1.029	1.088	1.058
17	475.14	451.58	0.955	489.34	494.99	1.011	1.030	1.091	1.059
18	498.91	477.89	0.958	514.63	523.09	1.016	1.032	1.095	1.061
19	521.83	501.28	0.961	538.77	550.12	1.021	1.032	1.097	1.062
20	544.02	523.73	0.963	561.67	575.98	1.025	1.032	1.100	1.064
21	565.62	545.30	0.964	583.35	600.66	1.030	1.031	1.102	1.068
22	586.77	566.10	0.965	603.96	624.22	1.034	1.029	1.103	1.072
23	607.65	586.24	0.965	623.71	646.42	1.037	1.026	1.103	1.075
24	628.45	605.85	0.964	642.49	668.63	1.040	1.023	1.104	1.079
25	649.35	625.03	0.963	661.86	689.90	1.042	1.019	1.104	1.082
26	670.51	643.98	0.960	681.04	710.93	1.044	1.016	1.104	1.087
27	692.14	662.85	0.958	700.95	732.09	1.044	1.015	1.105	1.090
28	714.46	681.81	0.954	722.23	753.03	1.044	1.011	1.105	1.094
29	737.90	701.02	0.950	745.65	776.71	1.042	1.011	1.106	1.097
30	763.26	720.64	0.944	771.81	801.28	1.038	1.011	1.108	1.100

DATE: 11/ 7/79

TABLE 1 COMPARISON OF CRVM RESERVES BY SEX

PLAN : LIFE PAID UP AT 65
PAYMENTS : 45

INITIAL AGE: 20
TERM : 80

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2 / C1 C3	5A CSO AT 4.5% CRVM RESERVE MALE C4	K AT 4.5% CRVM RESERVE FEMALE C5	RATIO C5 / C4 C6	RATIO C4 / C1 C7	RATIO C5 / C2 C8	RATIO C6 / C3 C9
MOD PREM	7.45	6.70	0.899	6.81	5.56	0.816	0.914	0.830	0.908
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	5.96	5.32	0.893	5.22	4.75	0.910	0.876	0.893	1.019
3	12.17	10.83	0.890	10.71	9.69	0.905	0.880	0.895	1.017
4	18.65	16.56	0.888	16.48	14.85	0.901	0.884	0.897	1.015
5	25.41	22.52	0.886	22.57	20.21	0.895	0.888	0.897	1.010
6	32.46	28.72	0.885	28.98	25.80	0.890	0.893	0.898	1.006
7	39.82	35.19	0.884	35.74	31.62	0.885	0.898	0.899	1.001
8	47.50	41.94	0.883	42.83	37.68	0.880	0.902	0.898	0.997
9	55.50	48.99	0.883	50.27	43.98	0.875	0.906	0.898	0.991
10	63.84	56.35	0.883	58.04	50.54	0.871	0.909	0.897	0.986
11	72.51	64.02	0.883	66.16	57.35	0.867	0.912	0.896	0.982
12	81.55	72.01	0.883	74.61	64.43	0.864	0.915	0.895	0.978
13	90.95	80.34	0.883	83.41	71.79	0.861	0.917	0.894	0.975
14	100.74	89.04	0.884	92.55	79.46	0.859	0.919	0.893	0.972
15	110.92	98.04	0.884	102.04	87.40	0.857	0.920	0.891	0.969
16	121.49	107.44	0.884	111.88	95.65	0.855	0.921	0.890	0.967
17	132.45	117.23	0.885	122.07	104.19	0.854	0.922	0.889	0.965
18	143.79	127.41	0.886	132.61	113.01	0.852	0.922	0.867	0.962
19	155.50	137.98	0.887	143.49	122.12	0.851	0.923	0.865	0.959
20	167.57	148.94	0.889	154.71	131.50	0.850	0.923	0.883	0.956
21	180.00	160.29	0.890	166.27	141.15	0.849	0.924	0.841	0.954
22	192.78	172.01	0.892	178.17	151.07	0.848	0.924	0.878	0.951
23	205.93	184.10	0.894	190.44	161.27	0.847	0.925	0.876	0.947
24	219.44	196.54	0.896	203.03	171.78	0.846	0.925	0.874	0.944
25	233.32	209.35	0.897	216.01	182.61	0.845	0.926	0.872	0.942
26	247.58	222.53	0.899	229.34	193.77	0.845	0.926	0.871	0.940
27	262.20	236.08	0.900	243.06	205.28	0.845	0.927	0.870	0.939
28	277.18	250.01	0.902	257.17	217.16	0.844	0.928	0.869	0.936
29	292.52	264.32	0.904	271.68	229.40	0.844	0.929	0.868	0.934
30	308.21	279.01	0.905	286.60	242.03	0.844	0.930	0.867	0.933

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN : LIFE PAID UP AT 65
PAYMENTS : 30

INITIAL AGES 35
TERM 65

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2/C1 C3	58 CSO AT 4.5% X CRVM RESERVE MALE C4	58 CSO AT 4.5% X CRVM RESERVE FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MOD PREM	15.17	13.44	0.886	13.86	11.50	0.830	0.914	0.856	0.937
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	13.25	11.75	0.887	12.27	16.28	0.838	0.926	0.875	0.945
3	26.97	23.98	0.889	24.96	20.90	0.837	0.925	0.872	0.942
4	41.16	36.69	0.891	38.08	31.89	0.837	0.925	0.869	0.939
5	55.79	49.88	0.894	51.62	43.22	0.837	0.925	0.866	0.936
6	70.88	63.54	0.896	65.60	54.89	0.837	0.926	0.864	0.934
7	86.41	77.67	0.899	80.01	66.91	0.836	0.926	0.861	0.930
8	102.41	92.26	0.901	94.86	79.30	0.836	0.926	0.860	0.928
9	118.69	107.31	0.903	110.17	92.08	0.836	0.927	0.858	0.926
10	135.84	122.81	0.904	125.94	105.27	0.836	0.927	0.857	0.925
11	153.27	138.79	0.906	142.18	118.89	0.836	0.928	0.857	0.923
12	171.19	155.26	0.907	158.92	132.96	0.837	0.928	0.856	0.923
13	189.60	172.21	0.908	176.17	147.51	0.837	0.929	0.857	0.922
14	208.48	189.67	0.910	193.95	162.54	0.838	0.930	0.857	0.921
15	227.85	207.63	0.911	212.26	178.06	0.839	0.932	0.858	0.921
16	247.70	226.10	0.913	231.14	194.10	0.840	0.933	0.858	0.920
17	268.03	245.07	0.914	250.54	210.64	0.841	0.935	0.860	0.920
18	288.86	264.56	0.916	270.49	227.75	0.842	0.936	0.861	0.919
19	310.20	284.55	0.917	290.97	245.38	0.843	0.938	0.862	0.919
20	332.07	305.07	0.919	311.96	263.57	0.845	0.939	0.864	0.919
21	354.47	326.13	0.920	333.50	282.36	0.847	0.941	0.866	0.921
22	377.43	347.75	0.921	355.60	301.80	0.849	0.942	0.868	0.922
23	400.96	364.95	0.923	378.32	321.95	0.851	0.944	0.870	0.922
24	425.08	392.75	0.924	401.69	342.09	0.854	0.945	0.873	0.924
25	449.84	416.17	0.925	425.76	364.66	0.856	0.946	0.876	0.925
26	475.26	440.24	0.926	450.56	387.28	0.860	0.948	0.880	0.929
27	501.41	465.00	0.927	476.13	410.76	0.863	0.950	0.883	0.931
28	528.37	490.50	0.928	502.49	435.07	0.866	0.951	0.887	0.933
29	556.21	516.79	0.929	529.67	460.17	0.869	0.952	0.890	0.935
30	585.04	543.95	0.930	557.75	486.09	0.872	0.953	0.894	0.938

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN: LIFE PAID UP AT 65
PAYMENTS: 15

POLICY: 58 CSO
YEAR

INITIAL AGE: 50
TERM: 50

	C1 MALE AT 4.5% CRVM RESERVE	C2 FEMALE AT 4.5% CRVM RESERVE	C3 RATIO C2/C1	C4 MALE AT 4.5% K CRVM RESERVE	C5 FEMALE AT 4.5% K CRVM RESERVE	C6 RATIO C5/C4	C7 RATIO C4/C1	C8 RATIO C5/C2	C9 RATIO C6/C3
MOD PREM	39.57	35.32	0.893	36.28	29.93	0.825	0.917	0.847	0.924
1	5.92	5.54	0.936	5.66	4.98	0.880	0.956	0.899	0.940
2	38.79	36.00	0.928	36.79	31.34	0.852	0.948	0.871	0.918
3	72.65	67.44	0.928	68.95	58.66	0.851	0.949	0.870	0.917
4	107.56	99.89	0.929	102.18	86.96	0.851	0.950	0.871	0.916
5	143.56	135.39	0.924	136.39	116.31	0.853	0.950	0.872	0.918
6	180.73	168.01	0.930	171.77	146.78	0.855	0.950	0.874	0.919
7	219.12	203.81	0.930	208.34	178.44	0.856	0.951	0.876	0.920
8	259.82	240.85	0.931	246.21	211.42	0.859	0.951	0.878	0.923
9	299.92	279.23	0.931	285.49	245.82	0.861	0.952	0.880	0.925
10	342.55	319.02	0.931	326.29	281.74	0.863	0.953	0.883	0.927
11	386.85	360.34	0.931	360.74	319.25	0.866	0.953	0.886	0.930
12	433.00	403.32	0.931	412.95	358.39	0.868	0.954	0.889	0.932
13	481.23	448.11	0.931	459.06	399.21	0.870	0.954	0.891	0.934
14	531.80	494.91	0.931	507.25	441.74	0.871	0.954	0.893	0.936
15	585.04	543.95	0.930	557.75	488.09	0.872	0.953	0.894	0.938
16	598.62	557.67	0.932	571.97	500.68	0.875	0.955	0.898	0.939
17	612.08	571.34	0.934	586.19	515.46	0.879	0.958	0.902	0.941
18	625.38	585.04	0.935	600.40	530.47	0.884	0.960	0.907	0.945
19	638.45	598.62	0.938	614.63	545.78	0.888	0.963	0.912	0.947
20	651.27	612.08	0.940	628.86	561.41	0.893	0.966	0.917	0.950
21	663.84	625.38	0.942	643.06	577.33	0.898	0.969	0.923	0.953
22	676.18	638.45	0.944	657.15	593.46	0.903	0.972	0.930	0.957
23	688.33	651.27	0.946	671.05	609.68	0.909	0.975	0.936	0.961
24	700.35	663.64	0.948	684.64	625.85	0.914	0.978	0.943	0.964
25	712.27	676.18	0.949	697.87	641.86	0.920	0.980	0.949	0.969
26	724.07	688.33	0.951	710.71	657.65	0.925	0.982	0.955	0.973
27	735.73	700.35	0.952	723.16	673.20	0.931	0.983	0.961	0.978
28	747.17	712.27	0.953	735.29	688.53	0.936	0.984	0.967	0.982
29	758.30	724.07	0.955	747.17	703.68	0.942	0.985	0.972	0.986
30	769.06	735.73	0.957	758.83	718.65	0.947	0.987	0.977	0.990

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN: 20 PAY LIFE
PAYMENTS: 20

INITIAL AGE: 20
TERM: 80

POLICY YEAR	58 CSO AT 4.5% ACRVM RESERVE MALE C1	58 CSO AT 4.5% ACRVM RESERVE FEMALE C2	RATIO C2/C1 C3	K AT 4.5% ACRVM RESERVE MALE C4	K AT 4.5% ACRVM RESERVE FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MOD PREM	10.90	9.86	0.905	10.02	8.23	0.821	0.919	0.835	0.907
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	9.57	8.63	0.902	8.58	7.54	0.879	0.897	0.874	0.975
3	19.57	17.61	0.900	17.59	15.41	0.876	0.899	0.875	0.973
4	30.00	26.96	0.899	27.04	23.63	0.874	0.901	0.876	0.972
5	40.91	36.71	0.897	36.98	32.19	0.870	0.904	0.877	0.970
6	52.31	46.89	0.896	47.43	41.13	0.867	0.907	0.877	0.968
7	64.22	57.52	0.896	58.42	50.46	0.864	0.910	0.877	0.964
8	76.66	68.63	0.895	69.93	60.19	0.861	0.912	0.877	0.962
9	89.65	80.25	0.895	81.59	70.33	0.859	0.915	0.876	0.959
10	103.20	92.38	0.895	94.61	80.91	0.855	0.917	0.876	0.955
11	117.35	105.06	0.895	107.79	91.91	0.853	0.919	0.875	0.953
12	132.12	118.30	0.895	121.56	103.41	0.851	0.920	0.874	0.951
13	147.53	132.12	0.896	135.92	115.39	0.849	0.921	0.873	0.948
14	163.62	146.55	0.896	150.89	127.88	0.848	0.922	0.873	0.946
15	180.40	161.61	0.896	166.49	140.88	0.846	0.923	0.872	0.944
16	197.90	177.34	0.896	182.73	154.43	0.845	0.923	0.871	0.943
17	216.12	193.75	0.896	199.63	168.52	0.844	0.924	0.870	0.942
18	235.09	210.87	0.897	217.21	183.16	0.843	0.924	0.869	0.940
19	254.81	228.73	0.898	235.49	198.37	0.842	0.924	0.867	0.938
20	275.31	247.34	0.898	254.48	214.16	0.842	0.924	0.866	0.930
21	285.18	256.38	0.849	263.71	221.92	0.842	0.925	0.866	0.937
22	295.31	265.71	0.900	273.19	229.47	0.841	0.925	0.865	0.934
23	305.70	275.31	0.901	282.93	238.03	0.841	0.926	0.865	0.933
24	316.36	285.18	0.901	292.92	246.41	0.841	0.926	0.864	0.933
25	327.29	295.31	0.902	303.19	255.02	0.841	0.926	0.864	0.932
26	338.47	305.70	0.903	313.71	263.68	0.841	0.927	0.863	0.931
27	349.92	316.36	0.904	324.50	272.99	0.841	0.927	0.863	0.930
28	361.60	327.29	0.905	335.57	282.37	0.841	0.928	0.861	0.929
29	373.52	338.47	0.906	346.92	292.01	0.842	0.929	0.861	0.929
30	385.66	349.92	0.907	358.55	301.92	0.842	0.930	0.863	0.928

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN : 20 PAY LIFE
PAYMENTS : 20

INITIAL AGE: 35
TERM : 65

POLICY YEAR	58 CSO AT 4.5% MALE CRVM RESERVE C1	58 CSO AT 4.5% FEMALE CRVM RESERVE C2	RATIO C2/C1 C3	56 CSO AT 4.5% MALE CRVM RESERVE C4	56 CSO AT 4.5% FEMALE CRVM RESERVE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MOD PREM	16.72	16.70	0.892	17.19	14.38	0.837	0.918	0.861	0.938
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	16.97	15.16	0.893	15.76	13.29	0.843	0.929	0.877	0.944
3	34.59	30.97	0.895	32.11	27.07	0.843	0.928	0.874	0.942
4	52.86	47.42	0.897	49.07	41.36	0.843	0.928	0.872	0.940
5	71.79	64.53	0.899	66.64	56.15	0.843	0.928	0.870	0.938
6	91.38	82.32	0.901	84.84	71.45	0.842	0.928	0.868	0.935
7	111.64	100.76	0.903	103.68	87.28	0.842	0.929	0.866	0.932
8	132.61	119.89	0.904	123.19	103.66	0.841	0.929	0.865	0.930
9	154.31	139.69	0.905	143.38	120.63	0.841	0.929	0.864	0.929
10	176.77	160.20	0.906	164.30	138.22	0.841	0.929	0.863	0.928
11	200.01	181.45	0.907	185.95	156.46	0.841	0.930	0.862	0.927
12	224.05	203.45	0.908	208.39	175.39	0.842	0.930	0.862	0.927
13	248.92	226.25	0.909	231.65	195.05	0.842	0.931	0.862	0.926
14	274.64	249.87	0.910	255.77	215.45	0.842	0.931	0.862	0.925
15	301.26	274.33	0.911	280.77	236.63	0.843	0.932	0.863	0.925
16	328.79	299.67	0.911	306.72	258.63	0.843	0.933	0.863	0.925
17	357.30	325.92	0.912	333.63	281.47	0.844	0.934	0.864	0.925
18	386.83	353.12	0.913	361.52	305.20	0.844	0.935	0.864	0.924
19	417.46	381.31	0.913	390.45	329.84	0.845	0.935	0.865	0.924
20	449.26	410.55	0.914	420.44	355.45	0.845	0.936	0.866	0.925
21	462.49	423.28	0.915	433.43	366.95	0.847	0.937	0.867	0.926
22	475.85	436.18	0.917	446.59	378.76	0.848	0.939	0.868	0.925
23	489.33	449.26	0.918	459.95	390.92	0.850	0.940	0.870	0.926
24	502.90	462.49	0.920	473.49	403.46	0.852	0.942	0.872	0.926
25	516.54	475.85	0.921	487.22	416.39	0.855	0.943	0.875	0.928
26	530.23	489.33	0.923	501.12	429.73	0.858	0.945	0.878	0.930
27	543.95	502.90	0.925	515.17	443.43	0.861	0.947	0.882	0.931
28	557.67	516.54	0.926	529.32	457.44	0.864	0.949	0.886	0.933
29	571.38	530.23	0.928	543.53	471.67	0.868	0.951	0.890	0.935
30	585.04	545.95	0.930	557.75	486.04	0.872	0.953	0.894	0.938

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN : 20 PAY LIFE
PAYMENTS : 20

INITIAL AGE: 50
TERM : 50

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2 / C1 C3	K AT 4.5% CRVM RESERVE MALE C4	K AT 4.5% CRVM RESERVE FEMALE C5	RATIO C5 / C4 C6	RATIO C4 / C1 C7	RATIO C5 / C2 C8	RATIO C6 / C3 C9
MOD PREM	33.96	30.05	0.885	30.90	25.19	0.815	0.910	0.838	0.921
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	26.62	24.62	0.925	25.18	21.12	0.839	0.946	0.858	0.907
3	53.87	49.91	0.926	51.05	42.94	0.841	0.948	0.860	0.908
4	81.78	75.86	0.928	77.60	65.44	0.843	0.949	0.843	0.908
5	110.36	102.50	0.929	104.83	88.68	0.846	0.950	0.865	0.911
6	139.62	129.84	0.930	132.75	112.70	0.849	0.951	0.866	0.913
7	169.59	157.91	0.931	161.41	137.57	0.852	0.952	0.871	0.915
8	200.27	186.74	0.932	190.86	163.36	0.856	0.953	0.875	0.918
9	231.71	216.35	0.934	221.15	190.17	0.860	0.954	0.879	0.921
10	263.94	246.78	0.935	252.35	218.06	0.864	0.956	0.884	0.924
11	297.00	278.07	0.936	284.30	247.06	0.868	0.958	0.888	0.927
12	330.97	310.26	0.937	317.62	277.18	0.873	0.960	0.893	0.932
13	365.93	343.41	0.938	351.77	308.39	0.877	0.961	0.898	0.935
14	401.99	377.60	0.939	386.98	340.66	0.880	0.963	0.902	0.937
15	439.28	412.94	0.940	423.34	374.02	0.883	0.964	0.906	0.939
16	477.95	449.51	0.941	460.94	408.54	0.886	0.964	0.909	0.942
17	518.21	487.55	0.941	500.09	444.35	0.889	0.965	0.911	0.945
18	560.28	527.15	0.941	540.91	481.63	0.890	0.965	0.914	0.946
19	604.49	568.58	0.941	583.73	520.59	0.892	0.966	0.916	0.948
20	651.27	612.08	0.940	628.86	561.41	0.893	0.966	0.917	0.950
21	663.84	625.38	0.942	643.06	577.33	0.898	0.969	0.923	0.953
22	676.16	638.45	0.944	657.15	593.46	0.903	0.972	0.930	0.957
23	688.33	651.27	0.946	671.05	609.68	0.909	0.975	0.936	0.961
24	700.35	663.64	0.948	684.64	625.85	0.914	0.978	0.943	0.964
25	712.27	676.18	0.949	697.87	641.86	0.920	0.980	0.949	0.969
26	724.07	688.33	0.951	710.71	657.65	0.925	0.982	0.955	0.973
27	735.73	700.35	0.952	723.16	673.20	0.931	0.983	0.961	0.978
28	747.17	712.27	0.953	735.29	648.53	0.936	0.984	0.967	0.982
29	758.30	724.07	0.955	747.17	703.68	0.942	0.985	0.972	0.986
30	769.06	735.73	0.957	756.83	718.65	0.947	0.987	0.977	0.990

DATE: 11/ 7/79

TABLE 1 COMPARISON OF CRVM RESERVES BY SEX

PLAN: ENDOWMENT AT 65
PAYMENTS: 45

INITIAL AGE: 20
TERM: 45

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2/C1 C3	K AT 4.5% CRVM RESERVE MALE C4	K AT 4.5% CRVM RESERVE FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MOD PREM	9.67	9.32	0.964	9.33	8.72	0.935	0.965	0.936	0.970
1	0.00	0.00	0.000	0.00	0.51	0.000	0.000	0.000	0.000
2	8.29	8.06	0.972	7.85	8.58	1.093	0.947	1.065	1.124
3	16.94	16.45	0.971	16.10	17.00	1.056	0.950	1.033	1.088
4	25.97	25.18	0.970	24.76	25.79	1.042	0.953	1.024	1.074
5	35.40	34.28	0.968	33.86	34.96	1.032	0.956	1.020	1.066
6	45.25	43.78	0.968	43.44	44.54	1.025	0.960	1.017	1.059
7	55.54	53.69	0.967	53.51	54.53	1.019	0.963	1.016	1.054
8	66.29	64.06	0.966	64.07	64.95	1.014	0.967	1.014	1.050
9	77.50	74.89	0.966	75.13	75.82	1.009	0.969	1.012	1.045
10	89.20	86.20	0.966	86.70	87.15	1.005	0.972	1.011	1.040
11	101.41	98.02	0.967	98.79	98.97	1.002	0.974	1.010	1.036
12	114.14	110.36	0.967	111.40	111.28	0.999	0.976	1.008	1.033
13	127.41	123.24	0.967	124.56	124.13	0.997	0.978	1.007	1.031
14	141.26	136.68	0.968	138.27	137.53	0.995	0.979	1.006	1.028
15	155.70	150.71	0.968	152.55	151.49	0.993	0.980	1.005	1.026
16	170.73	165.35	0.969	167.41	166.04	0.992	0.981	1.004	1.025
17	186.36	180.62	0.969	182.86	181.18	0.991	0.981	1.003	1.023
18	202.62	196.56	0.970	198.91	196.93	0.990	0.982	1.002	1.021
19	219.50	213.16	0.971	215.59	213.29	0.989	0.982	1.001	1.019
20	237.00	230.46	0.972	232.90	230.29	0.989	0.983	0.999	1.017
21	255.14	248.46	0.974	250.87	247.94	0.988	0.983	0.998	1.014
22	273.94	267.17	0.975	269.51	266.27	0.988	0.984	0.997	1.013
23	293.42	286.61	0.977	288.85	285.31	0.988	0.984	0.995	1.011
24	313.62	306.80	0.978	308.92	305.12	0.988	0.985	0.995	1.010
25	334.57	327.76	0.980	329.77	325.72	0.988	0.985	0.994	1.008
26	356.28	349.53	0.981	351.41	347.16	0.988	0.986	0.993	1.007
27	378.80	372.15	0.982	373.89	369.50	0.988	0.987	0.993	1.006
28	402.15	395.66	0.984	397.26	392.77	0.989	0.988	0.993	1.005
29	426.36	420.09	0.985	421.56	417.03	0.989	0.989	0.993	1.004
30	451.49	445.50	0.987	446.85	442.33	0.990	0.990	0.993	1.003

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN : ENDOWMENT AT 65
PAYMENTS : 30

INITIAL AGE: 35
TERM : 30

POLICY YEAR	58 CSO AT 2.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2/C1 C3	58 CSO AT 4.5% CRVM RESERVE MALE C4	K AT 4.5% CRVM RESERVE FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MOD PREM	20.41	19.51	0.956	19.70	18.74	0.951	0.955	0.961	0.995
1	1.77	2.94	1.661	2.62	4.57	1.744	1.480	1.554	1.050
2	20.60	21.19	1.029	21.14	22.64	1.071	1.026	1.066	1.041
3	40.17	40.23	1.001	40.37	41.43	1.026	1.005	1.030	1.025
4	60.48	60.06	0.993	60.35	60.97	1.010	0.998	1.015	1.017
5	81.55	80.72	0.990	81.08	81.26	1.002	0.994	1.007	1.012
6	103.39	102.23	0.989	102.61	102.33	0.997	0.992	1.001	1.008
7	126.01	124.58	0.989	124.93	124.21	0.994	0.991	0.997	1.005
8	148.47	147.80	0.989	148.11	146.94	0.992	0.991	0.994	1.003
9	173.78	171.91	0.989	172.15	170.57	0.991	0.991	0.992	1.002
10	199.00	196.95	0.990	197.12	195.16	0.990	0.991	0.991	1.000
11	225.14	222.96	0.990	223.04	220.76	0.990	0.991	0.990	1.000
12	252.24	249.98	0.991	249.97	247.42	0.990	0.991	0.990	0.999
13	280.35	278.06	0.992	277.96	275.20	0.990	0.991	0.990	0.998
14	309.49	307.26	0.993	307.08	304.16	0.990	0.992	0.990	0.997
15	339.74	337.61	0.994	337.37	334.35	0.991	0.993	0.990	0.997
16	371.12	369.17	0.995	368.90	365.84	0.992	0.994	0.991	0.997
17	403.72	402.01	0.996	401.72	398.64	0.992	0.995	0.992	0.996
18	437.62	436.20	0.997	435.89	432.99	0.993	0.996	0.993	0.996
19	472.91	471.83	0.998	471.49	468.74	0.994	0.997	0.994	0.996
20	509.68	508.97	0.999	508.59	506.21	0.995	0.998	0.995	0.996
21	548.08	547.75	0.999	547.33	545.35	0.996	0.999	0.996	0.997
22	588.22	588.31	1.000	587.82	586.35	0.997	0.999	0.997	0.997
23	630.28	630.77	1.001	630.24	629.34	0.999	1.000	0.998	0.998
24	674.44	675.32	1.001	674.76	674.49	1.000	1.000	0.999	0.999
25	720.93	722.15	1.002	721.60	721.94	1.000	1.001	1.000	0.998
26	770.03	771.48	1.002	770.97	771.86	1.001	1.001	1.000	0.999
27	822.05	823.58	1.002	823.15	824.40	1.002	1.001	1.001	1.000
28	877.40	878.77	1.002	878.45	879.76	1.001	1.001	1.001	0.999
29	936.52	937.43	1.001	937.24	938.20	1.000	1.001	1.001	1.000
30	1000.00	1000.00	1.000	1000.00	1000.00	1.000	1.000	1.000	1.000

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN: ENDOWMENT AT 65
PAYMENTS: 15
INITIAL AGE: 30
TERM: 15

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2/C1 C3	K AT 4.5% CRVM RESERVE MALE C4	K AT 4.5% CRVM RESERVE FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
MOD PREM	55.57	53.66	0.966	53.97	51.68	0.958	0.971	0.963	0.992
1	22.78	24.88	1.090	24.27	27.83	1.147	1.065	1.120	1.052
2	73.44	75.80	1.029	75.01	78.20	1.043	1.021	1.034	1.014
3	126.11	128.46	1.019	127.84	130.77	1.023	1.014	1.018	1.004
4	180.94	183.52	1.014	182.88	185.66	1.015	1.011	1.012	1.001
5	238.09	240.94	1.012	240.25	243.02	1.012	1.009	1.009	1.000
6	297.75	300.90	1.011	300.13	303.02	1.010	1.008	1.007	0.999
7	360.13	363.58	1.010	362.73	365.87	1.009	1.007	1.006	0.999
8	425.44	429.23	1.009	428.32	431.74	1.008	1.007	1.006	0.999
9	494.10	498.09	1.008	497.16	500.99	1.008	1.006	1.006	1.000
10	566.35	570.48	1.007	569.57	573.74	1.007	1.006	1.006	1.000
11	642.64	646.74	1.006	645.91	650.26	1.007	1.005	1.009	1.001
12	723.49	727.28	1.005	726.58	730.80	1.006	1.004	1.005	1.001
13	809.48	812.60	1.004	812.07	815.68	1.004	1.003	1.004	1.000
14	901.36	903.28	1.002	902.97	905.25	1.003	1.002	1.002	1.000
15	1000.00	1000.00	1.000	1000.00	1000.00	1.000	1.000	1.000	1.000

DATE: 11/ 7/79

TABLE I   COMPARISON OF CRVM RESERVES BY SEX

PLAN: TERM TO 65
PAYMENTS: 45

INITIAL AGE: 20
TERM: 45

POLICY YEAR	C1 *58 CSO* *AT 4.5%* *CRVM RESERVE* *MALE*	C2 *58 CSO* *AT 4.5%* *CRVM RESERVE* *FEMALE*	C3 RATIO C2/C1	C4 *AT 4.5%* *CRVM RESERVE* *MALE*	C5 *AT 4.5%* *CRVM RESERVE* *FEMALE*	C6 RATIO C5/C4	C7 RATIO C4/C1	C8 RATIO C5/C2	C9 RATIO C6/C3
MOD PREM	4.31	3.57	0.828	3.64	2.55	0.701	0.845	0.714	0.847
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	2.68	2.05	0.765	1.90	1.60	0.642	0.709	0.780	0.101
3	5.46	4.14	0.758	3.91	3.25	0.831	0.716	0.785	0.096
4	8.33	6.28	0.754	6.04	4.96	0.821	0.725	0.790	0.089
5	11.32	8.49	0.750	8.32	6.71	0.806	0.735	0.790	0.075
6	14.44	10.76	0.745	10.75	8.53	0.793	0.744	0.793	1.064
7	17.66	13.12	0.743	13.33	10.40	0.780	0.755	0.793	1.050
8	21.02	15.56	0.740	16.06	12.33	0.768	0.764	0.792	1.038
9	24.49	18.10	0.739	18.92	14.31	0.756	0.773	0.791	1.023
10	28.07	20.73	0.739	21.90	16.34	0.746	0.780	0.788	1.009
11	31.78	23.46	0.738	25.01	18.41	0.736	0.787	0.785	0.494
12	35.60	26.27	0.738	28.21	20.54	0.728	0.792	0.782	0.956
13	39.55	29.17	0.738	31.52	22.71	0.720	0.797	0.779	0.979
14	43.61	32.16	0.737	34.90	24.93	0.714	0.800	0.775	0.969
15	47.79	35.23	0.737	38.35	27.18	0.709	0.802	0.772	0.962
16	52.07	38.36	0.737	41.86	29.97	0.704	0.804	0.768	0.955
17	56.43	41.62	0.738	45.41	31.76	0.699	0.804	0.763	0.947
18	60.84	44.94	0.739	48.98	34.03	0.695	0.805	0.757	0.940
19	65.27	48.30	0.740	52.55	36.26	0.690	0.805	0.751	0.932
20	69.69	51.71	0.742	56.09	38.42	0.685	0.805	0.743	0.923
21	74.06	55.12	0.744	59.58	40.49	0.680	0.804	0.735	0.914
22	78.36	58.51	0.747	62.98	42.45	0.674	0.804	0.726	0.902
23	82.57	61.82	0.749	66.30	44.29	0.668	0.803	0.716	0.892
24	86.65	65.04	0.751	69.49	46.03	0.662	0.802	0.707	0.881
25	90.58	68.12	0.752	72.54	47.57	0.656	0.801	0.698	0.872
26	94.32	71.05	0.753	75.40	48.99	0.650	0.799	0.690	0.863
27	97.80	73.79	0.754	78.06	50.25	0.644	0.798	0.681	0.854
28	100.99	76.30	0.756	80.49	51.34	0.638	0.797	0.673	0.844
29	103.81	78.54	0.757	82.65	52.21	0.632	0.796	0.665	0.835
30	106.20	80.44	0.757	84.50	52.84	0.625	0.796	0.657	0.826

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN 1 TERM TO 65
PAYMENTS : 30

INITIAL AGE: 35
TERM : 10

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2 / C1 C3	AT 4.5% CRVM RESERVE MALE C4	AT 4.5% CRVM RESERVE FEMALE C5	RATIO C5 / C4 C6	RATIO C4 / C1 C7	RATIO C5 / C2 C8	RATIO C6 / C3 C9
MOD PREM	7.62	5.98	0.785	6.28	4.38	0.697	0.824	0.732	0.888
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	5.34	3.94	0.738	4.33	2.82	0.651	0.811	0.716	0.882
3	10.77	7.99	0.742	8.70	5.65	0.649	0.808	0.707	0.875
4	16.26	12.12	0.745	13.11	8.46	0.645	0.806	0.698	0.866
5	21.78	16.32	0.749	17.52	11.28	0.640	0.804	0.687	0.854
6	27.29	20.57	0.754	21.91	13.92	0.635	0.803	0.677	0.842
7	32.77	24.81	0.757	26.25	16.52	0.629	0.801	0.666	0.831
8	38.20	29.02	0.760	30.54	19.03	0.623	0.799	0.656	0.820
9	43.55	33.16	0.761	34.74	21.44	0.617	0.798	0.647	0.811
10	48.80	37.21	0.762	38.84	23.74	0.611	0.796	0.638	0.802
11	53.90	41.14	0.763	42.79	25.92	0.606	0.794	0.630	0.794
12	58.80	44.92	0.764	46.58	27.97	0.600	0.792	0.623	0.785
13	63.45	48.51	0.765	50.19	29.88	0.595	0.791	0.616	0.778
14	67.79	51.87	0.765	53.57	31.61	0.590	0.790	0.609	0.771
15	71.76	54.95	0.766	56.68	33.13	0.585	0.790	0.603	0.764
16	75.26	57.68	0.766	59.48	34.41	0.579	0.791	0.597	0.756
17	78.21	59.99	0.767	61.97	35.41	0.572	0.790	0.590	0.746
18	80.54	61.81	0.767	63.76	36.09	0.566	0.792	0.584	0.738
19	82.13	63.05	0.768	65.05	36.37	0.559	0.792	0.577	0.728
20	82.48	63.61	0.767	65.60	36.21	0.552	0.792	0.569	0.720
21	82.65	63.39	0.767	65.35	35.58	0.545	0.790	0.561	0.711
22	81.28	62.29	0.766	64.10	34.45	0.537	0.789	0.553	0.701
23	78.58	60.16	0.766	61.83	32.81	0.531	0.787	0.545	0.693
24	74.34	56.86	0.765	58.37	30.65	0.525	0.785	0.539	0.686
25	68.34	52.20	0.764	53.58	27.92	0.521	0.784	0.535	0.682
26	60.26	45.97	0.763	47.23	24.52	0.519	0.784	0.533	0.680
27	49.80	37.94	0.762	39.06	20.27	0.519	0.784	0.534	0.681
28	36.54	27.82	0.760	28.74	14.97	0.521	0.785	0.538	0.686
29	20.17	15.30	0.759	15.87	8.30	0.523	0.787	0.542	0.689
30	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000

DATE: 11/ 7/79

TABLE 1   COMPARISON OF CRVM RESERVES BY SEX

PLAN : TERM TO 65
PAYMENTS : 15

INITIAL AGE: 50
TERM : 15

POLICY YEAR	58 CSO AT 4.5% CRVM RESERVE MALE C1	58 CSO AT 4.5% CRVM RESERVE FEMALE C2	RATIO C2 / C1 C3	AT 4.5% CRVM RESERVE MALE C4	AT 4.5% CRVM RESERVE FEMALE C5	RATIO C5 / C4 C6	RATIO C4 / C1 C7	RATIO C5 / C2 C8	RATIO C6 / C3 C9
MOD PREM	15.22	11.70	0.769	12.19	7.73	0.634	0.801	0.661	0.824
1	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000
2	6.86	5.32	0.776	5.48	2.79	0.509	0.799	0.524	0.656
3	13.24	10.26	0.775	10.59	5.32	0.502	0.800	0.514	0.648
4	19.05	14.76	0.775	15.23	7.54	0.495	0.799	0.511	0.639
5	24.20	18.71	0.773	19.29	9.42	0.488	0.797	0.503	0.631
6	28.57	22.05	0.772	22.66	10.91	0.481	0.793	0.495	0.623
7	32.00	24.65	0.770	25.25	12.00	0.475	0.789	0.487	0.617
8	34.33	26.40	0.769	26.98	12.70	0.471	0.786	0.481	0.612
9	35.38	27.17	0.768	27.72	12.99	0.469	0.783	0.478	0.611
10	34.94	26.79	0.767	27.34	12.83	0.469	0.782	0.479	0.611
11	32.74	25.08	0.766	25.64	12.14	0.473	0.783	0.484	0.617
12	28.51	21.81	0.765	22.19	10.75	0.480	0.785	0.493	0.627
13	21.92	16.74	0.764	17.28	8.44	0.488	0.788	0.504	0.639
14	12.57	9.58	0.762	9.95	4.95	0.497	0.792	0.517	0.652
15	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000

DATE: 11/ 7/79   TABLE 2   COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN: ORDINARY LIFE
POLICY: 58 CSO   PAYMENTS: 100

INITIAL AGE: 0   TERM 100

YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2/C1 C3	K AT 5.5% CSV METH-R MALE C4	K AT 5.5% CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
ADJ PREM	4.22	3.88	0.919	3.13	2.54	0.812	0.742	0.655	0.884
1	26.81-	26.03-	0.971	14.68-	13.27-	0.904	0.548	0.510	0.931
2	25.64-	25.08-	0.978	13.27-	12.20-	0.919	0.518	0.486	0.940
3	24.16-	23.80-	0.985	11.69-	11.01-	0.942	0.484	0.463	0.956
4	22.53-	22.40-	0.994	10.02-	9.73-	0.971	0.445	0.434	0.971
5	20.75-	20.65-	1.005	8.22-	8.36-	1.017	0.396	0.401	1.012
6	18.81-	19.16-	1.019	6.27-	6.90-	1.100	0.333	0.360	1.079
7	16.72-	17.33-	1.036	4.16-	5.33-	1.281	0.249	0.308	1.236
8	14.46-	15.36-	1.062	1.89-	3.67-	1.942	0.131	0.239	1.829
9	12.05-	13.24-	1.099	0.55	1.89-	3.436	0.046-	0.143	3.126-
10	9.49-	11.00-	1.159	3.15	0.00	0.000	0.332-	0.000	0.000
11	6.78-	8.62-	1.271	5.91	2.00	0.338	0.872-	0.232-	0.266-
12	3.93-	6.13-	1.560	8.77	4.11	0.469	2.232-	0.670-	0.301-
13	0.96-	3.52-	3.667	11.72	6.30	0.538	12.208-	1.790-	0.147-
14	2.12	0.78-	0.368-	14.70	8.59	0.584	6.934	11.013-	1.587-
15	5.31	2.06	0.388	17.68	10.95	0.619	3.330	5.316	1.595
16	8.60	5.02	0.584	20.66	13.39	0.648	2.402	2.667	1.110
17	12.00	8.04	0.673	23.63	15.93	0.674	1.969	1.972	1.001
18	15.52	11.24	0.724	26.61	18.55	0.697	1.715	1.650	0.963
19	19.17	14.52	0.757	29.65	21.29	0.718	1.547	1.466	0.948
20	22.97	17.90	0.779	32.79	24.15	0.737	1.428	1.349	0.946
21	26.94	21.40	0.794	36.07	27.14	0.752	1.339	1.268	0.947
22	31.10	25.02	0.805	39.52	30.28	0.766	1.271	1.210	0.952
23	35.47	28.80	0.812	43.19	33.57	0.777	1.218	1.166	0.957
24	40.06	32.75	0.818	47.10	37.03	0.786	1.176	1.131	0.961
25	44.89	36.89	0.822	51.27	40.66	0.793	1.142	1.102	0.965
26	49.97	41.23	0.825	55.73	44.47	0.798	1.115	1.079	0.967
27	55.32	45.79	0.828	60.47	48.46	0.801	1.093	1.058	0.969
28	60.94	50.59	0.830	65.51	52.65	0.804	1.075	1.041	0.969
29	66.85	55.64	0.832	70.84	57.04	0.805	1.060	1.025	0.968
30	73.05	60.96	0.834	78.46	61.64	0.806	1.047	1.011	0.966

DATE: 11/ 7/79

TABLE 2 COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : ORDINARY LIFE
PAYMENTS : 90

INITIAL AGE: 20
TERM : 80

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2/C1 C3	AT 5.5% CSV METH-R MALE C4	AT 5.5% CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C9/C2 C8	RATIO C6/C3 C9
ADJ PREM	6.96	6.28	0.902	5.94	4.73	0.796	0.853	0.753	0.882
1	20.36-	20.44-	1.004	12.01-	11.76-	0.918	0.629	0.575	0.919
2	16.00-	16.66-	1.041	9.18-	8.50-	0.926	0.574	0.510	0.896
3	11.42-	12.71-	1.113	5.33-	5.07-	0.951	0.467	0.399	0.854
4	6.61-	8.59-	1.300	1.22-	1.48-	1.213	0.185	0.172	0.933
5	1.54-	4.28-	2.779	1.16	2.29	0.725	2.052-	0.535-	0.261
6	3.79	0.24	0.063	7.04	6.24	0.778	2.069	26.083	12.667
7	9.40	5.00	0.532	12.83	10.41	0.811	1.365	2.082	1.524
8	15.30	10.00	0.654	18.12	14.77	0.815	1.184	1.477	1.246
9	21.49	15.28	0.711	23.72	19.33	0.815	1.104	1.265	1.146
10	27.99	20.82	0.744	29.63	24.12	0.814	1.059	1.159	1.094
11	34.82	26.65	0.765	35.85	29.12	0.812	1.030	1.093	1.061
12	41.98	32.77	0.781	42.38	34.36	0.811	1.010	1.049	1.038
13	49.49	39.20	0.792	49.23	39.85	0.809	0.995	1.017	1.021
14	57.36	45.95	0.801	56.40	45.59	0.808	0.983	0.992	1.009
15	65.62	53.02	0.808	63.90	51.54	0.807	0.974	0.973	0.999
16	74.24	60.44	0.814	71.71	57.86	0.807	0.966	0.957	0.991
17	83.24	68.23	0.820	79.86	64.39	0.806	0.959	0.944	0.983
18	92.62	76.39	0.825	86.33	71.16	0.806	0.954	0.932	0.977
19	102.36	84.91	0.830	97.12	78.18	0.805	0.949	0.921	0.970
20	112.34	93.81	0.834	106.23	85.44	0.804	0.945	0.911	0.964
21	122.87	103.08	0.839	115.66	92.93	0.803	0.941	0.902	0.957
22	133.64	112.70	0.843	125.41	100.66	0.803	0.938	0.893	0.953
23	144.77	122.67	0.847	135.49	108.62	0.802	0.936	0.885	0.947
24	156.25	132.98	0.851	145.90	116.86	0.801	0.934	0.879	0.941
25	168.09	143.63	0.854	156.66	125.37	0.800	0.932	0.873	0.937
26	180.29	154.63	0.858	167.75	134.17	0.800	0.930	0.868	0.932
27	192.89	165.97	0.861	179.20	143.28	0.800	0.929	0.863	0.929
28	205.73	177.63	0.864	191.02	152.72	0.799	0.928	0.860	0.925
29	218.96	189.74	0.867	203.21	162.48	0.800	0.928	0.856	0.923
30	232.51	202.14	0.869	215.78	172.58	0.800	0.928	0.854	0.921

DATE: 11/ 7/79

TABLE 2   COMPARISON OF CASH SURRENDER VALUES BY SEX

~ METHOD b

PLAN : ORDINARY LIFE
PAYMENTS : 65

INITIAL AGE: 35
TERM : 65

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2/C1 C3	K AT 5.5% CSV METH-R MALE C4	K AT 5.5% CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
ADJ PREM	12.90	11.23	0.871	11.29	9.01	0.798	0.875	0.802	0.916
1	18.69-	19.25-	1.019	13.84-	13.03-	0.941	0.733	0.677	0.923
2	8.96-	10.40-	1.203	4.94-	6.02-	1.219	0.550	0.551-	1.011
3	1.34	1.95-	1.455-	4.31	1.27	0.295	3.216	0.651-	0.203-
4	12.05	7.30	0.606	13.91	8.62	0.634	1.154	1.208	1.046
5	23.15	16.95	0.732	23.86	16.62	0.697	1.031	0.981	0.952
6	34.63	27.01	0.780	34.16	24.68	0.722	0.986	0.914	0.928
7	46.08	37.45	0.806	44.81	32.98	0.736	0.964	0.881	0.913
8	58.73	48.26	0.822	55.82	41.55	0.744	0.950	0.861	0.905
9	71.36	59.44	0.833	67.19	50.40	0.750	0.942	0.848	0.900
10	84.00	70.99	0.841	78.94	59.55	0.754	0.935	0.839	0.897
11	97.82	82.92	0.848	91.05	69.02	0.758	0.931	0.832	0.894
12	111.64	95.23	0.853	103.56	78.82	0.761	0.928	0.828	0.892
13	125.83	107.93	0.858	116.46	88.96	0.764	0.926	0.824	0.890
14	140.39	121.01	0.862	129.78	99.46	0.766	0.924	0.822	0.889
15	155.30	134.47	0.866	143.51	110.31	0.769	0.924	0.820	0.888
16	170.55	148.30	0.870	157.66	121.52	0.771	0.924	0.819	0.886
17	186.13	162.48	0.873	172.19	133.11	0.773	0.925	0.819	0.885
18	202.04	177.02	0.876	187.10	145.06	0.775	0.926	0.819	0.885
19	218.25	191.88	0.879	202.35	157.36	0.778	0.927	0.820	0.885
20	234.76	207.05	0.882	217.92	170.03	0.780	0.928	0.821	0.884
21	251.55	222.55	0.885	233.79	183.09	0.783	0.929	0.823	0.885
22	268.60	238.34	0.887	249.96	196.58	0.786	0.931	0.825	0.886
23	285.89	254.44	0.890	266.45	210.56	0.790	0.932	0.828	0.888
24	303.39	270.79	0.893	283.28	225.07	0.745	0.934	0.831	0.890
25	321.06	287.40	0.895	300.43	240.16	0.799	0.936	0.836	0.893
26	338.89	304.25	0.898	317.90	255.03	0.805	0.938	0.841	0.896
27	356.83	321.29	0.900	335.64	272.05	0.810	0.941	0.847	0.900
28	374.67	338.52	0.903	353.60	288.69	0.816	0.943	0.853	0.904
29	392.98	355.48	0.906	371.73	305.73	0.822	0.946	0.859	0.907
30	411.10	373.57	0.908	389.97	323.08	0.828	0.949	0.865	0.912

DATE: 11/7/79

TABLE 2   COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : ORDINARY LIFE   PAYMENTS : 50   INITIAL AGE : 50   TERM : 50

POLICY YEAR	58 CSO AT 5.5 % CSV METH-P MALE C1	58 CSO AT 5.5 % CSV METH-P FEMALE C2	RATIO C2/C1 C3	K AT 5.5 % CSV METH-R MALE C4	AT 5.5 % CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
ADJ PREM	21.79	23.67	0.852	24.68	18.70	0.758	0.868	0.790	0.890
1	19.32	16.84	0.975	20.25	17.14	0.876	1.048	0.942	0.898
2	0.17	1.87	1.000	2.65	4.33	1.634	15.588	2.316	0.149
3	19.37	15.51	0.801	15.41	9.52	0.618	0.796	0.614	0.772
4	39.29	33.29	0.847	33.88	23.77	0.702	0.862	0.714	0.829
5	59.58	51.44	0.863	52.73	38.45	0.729	0.885	0.747	0.845
6	80.22	69.98	0.872	71.96	53.58	0.745	0.897	0.766	0.854
7	101.17	88.87	0.878	91.54	69.21	0.756	0.905	0.779	0.861
8	122.42	108.11	0.883	111.52	85.40	0.766	0.911	0.790	0.867
9	143.92	127.68	0.887	131.90	102.22	0.775	0.916	0.801	0.874
10	165.64	147.56	0.891	152.68	119.70	0.784	0.922	0.811	0.880
11	183.55	167.71	0.894	173.83	137.85	0.793	0.927	0.822	0.887
12	205.60	188.10	0.897	195.32	156.62	0.802	0.932	0.833	0.894
13	231.77	208.70	0.900	217.08	175.93	0.810	0.937	0.843	0.900
14	254.02	229.48	0.903	239.03	195.66	0.819	0.941	0.853	0.907
15	276.29	250.33	0.906	261.12	215.76	0.826	0.945	0.862	0.912
16	298.54	271.42	0.909	283.31	236.21	0.834	0.949	0.870	0.917
17	320.67	292.52	0.912	305.54	257.05	0.841	0.953	0.879	0.922
18	342.62	313.64	0.915	327.48	278.33	0.849	0.957	0.887	0.928
19	364.29	334.74	0.919	350.50	300.18	0.856	0.962	0.897	0.931
20	385.62	355.73	0.922	373.15	322.63	0.865	0.968	0.907	0.938
21	400.65	376.55	0.926	395.84	345.64	0.873	0.974	0.918	0.943
22	427.27	397.10	0.929	418.47	367.09	0.882	0.979	0.929	0.949
23	444.70	417.33	0.932	440.59	392.80	0.891	0.985	0.941	0.956
24	467.99	437.23	0.934	462.91	410.57	0.900	0.989	0.953	0.964
25	488.18	456.83	0.936	484.40	440.21	0.909	0.992	0.964	0.971
26	508.27	476.20	0.937	505.33	463.64	0.917	0.994	0.974	0.979
27	528.19	495.44	0.938	525.72	486.82	0.926	0.995	0.983	0.987
28	547.80	514.60	0.939	545.63	509.77	0.934	0.996	0.991	0.995
29	566.95	533.65	0.941	565.20	532.55	0.942	0.997	0.998	1.001
30	585.51	552.54	0.944	584.50	555.17	0.950	0.998	1.005	1.006

DATE: 11/ 7/79

TABLE 2 COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : ORDINARY LIFE   PAYMENTS : 35   INITIAL AGE: 65   TERM : 35

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2/C1 C3	K AT 5.5% CSV METH-R MALE C4	K AT 5.5% CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
ADJ PREM	63.38	53.64	0.846	59.61	43.40	0.728	0.941	0.809	0.861
1	13.85-	16.66-	1.203	42.92-	30.15-	0.709	3.070	1.810	0.589
2	18.15	12.78	0.704	10.10	2.05-	0.203	0.556-	0.160-	0.288
3	49.87	42.26	0.847	22.47	26.66	1.186	0.451	0.631	1.400
4	81.19	71.69	0.883	95.23	56.13	1.016	0.680	0.783	0.152
5	112.02	100.99	0.902	84.17	86.41	0.960	0.787	0.856	1.086
6	142.35	130.04	0.914	121.18	117.44	0.969	0.851	0.903	1.060
7	172.22	158.71	0.922	154.10	149.07	0.967	0.895	0.939	1.049
8	201.74	186.94	0.927	186.71	181.05	0.970	0.925	0.968	1.046
9	231.07	214.71	0.929	218.73	213.10	0.974	0.947	0.993	1.048
10	260.25	242.06	0.930	250.00	244.99	0.980	0.961	1.012	1.054
11	289.29	269.10	0.930	280.45	276.59	0.986	0.969	1.028	1.060
12	318.07	295.94	0.930	310.10	307.85	0.993	0.975	1.040	1.068
13	346.43	322.67	0.931	339.07	338.81	0.999	0.979	1.050	1.073
14	374.26	349.26	0.934	367.53	369.54	1.005	0.982	1.058	1.076
15	400.93	375.61	0.937	395.60	400.04	1.011	0.987	1.065	1.079
16	426.81	401.57	0.941	423.23	430.24	1.017	0.992	1.071	1.081
17	451.71	426.91	0.945	450.31	459.94	1.021	0.997	1.077	1.080
18	475.70	451.47	0.949	476.60	488.91	1.026	1.002	1.083	1.081
19	498.89	475.17	0.952	501.79	516.89	1.030	1.006	1.088	1.082
20	521.40	497.97	0.955	525.76	543.74	1.034	1.008	1.092	1.083
21	543.36	519.94	0.957	548.51	569.45	1.038	1.009	1.095	1.085
22	564.93	541.17	0.958	570.17	594.08	1.042	1.009	1.098	1.088
23	586.27	561.78	0.958	590.97	617.76	1.045	1.008	1.100	1.091
24	607.59	581.89	0.958	611.22	640.49	1.048	1.006	1.101	1.094
25	629.07	601.66	0.956	631.28	663.12	1.050	1.004	1.102	1.098
26	650.90	621.18	0.954	651.63	685.37	1.052	1.001	1.103	1.103
27	673.26	640.70	0.952	672.82	707.83	1.052	0.999	1.105	1.105
28	696.43	660.37	0.948	695.54	731.00	1.051	0.999	1.107	1.109
29	720.85	680.35	0.944	720.67	755.49	1.044	1.000	1.110	1.110
30	747.36	700.83	0.958	748.89	781.92	1.044	1.002	1.116	1.113

DATE: 11/ 7/79

TABLE 2   COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

| PLAN : LIFE PAID UP AT 65 | | | | | | | INITIAL AGE: 20 | |
| PAYMENTS : 1 45 | | | | | | | TERM : 1 80 | |

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2/C1 C3	K AT 5.5% CSV METH-R MALE C4	K AT 5.5% CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
ADJ PREM	7.20	6.53	0.907	6.18	4.97	0.804	0.858	0.761	0.886
1	20.20-	20.27-	1.003	12.81-	11.75-	0.917	0.634	0.580	0.914
2	15.57-	16.21-	1.041	8.93-	8.23-	0.922	0.574	0.508	0.886
3	11.71-	11.97-	1.118	4.60-	4.54-	0.946	0.448	0.379	0.846
4	5.61-	7.54-	1.344	0.40-	0.65-	1.625	0.071	0.086	1.209
5	0.23-	2.90-	12.609	4.28	3.42	0.799	18.609-	1.179-	1.063
6	5.44	1.98	0.364	9.29	7.70	0.829	1.708	3.869	2.277
7	11.40	7.11	0.624	14.61	12.19	0.834	1.282	1.714	1.337
8	17.61	12.51	0.708	20.26	16.91	0.835	1.167	1.352	1.179
9	24.25	18.19	0.750	26.24	21.85	0.833	1.082	1.201	1.111
10	31.17	24.17	0.775	32.54	27.03	0.831	1.044	1.118	1.072
11	38.43	30.47	0.794	39.19	32.46	0.828	1.020	1.065	1.044
12	46.06	37.08	0.805	46.17	38.14	0.826	1.002	1.029	1.026
13	54.06	44.03	0.814	53.50	44.10	0.824	0.990	1.002	1.012
14	62.45	51.32	0.822	61.16	50.34	0.823	0.979	0.981	1.001
15	71.26	58.98	0.828	69.19	56.86	0.822	0.971	0.964	0.993
16	80.47	67.02	0.833	77.54	63.69	0.821	0.964	0.950	0.986
17	90.09	75.45	0.837	86.30	70.80	0.820	0.958	0.938	0.980
18	100.12	84.30	0.842	95.40	78.20	0.820	0.953	0.928	0.974
19	110.55	93.55	0.846	104.85	85.88	0.819	0.948	0.918	0.968
20	121.37	103.22	0.850	114.67	93.84	0.818	0.945	0.909	0.962
21	152.58	113.51	0.855	124.85	102.07	0.818	0.942	0.901	0.957
22	144.18	123.80	0.859	135.40	110.58	0.817	0.939	0.893	0.951
23	156.19	134.69	0.862	146.32	119.36	0.816	0.937	0.886	0.947
24	168.61	145.97	0.866	157.63	128.49	0.815	0.935	0.880	0.941
25	181.46	157.66	0.869	169.34	137.94	0.815	0.933	0.875	0.938
26	194.73	169.76	0.872	181.45	147.74	0.814	0.932	0.870	0.933
27	208.42	182.29	0.875	193.98	157.91	0.814	0.931	0.866	0.930
28	222.53	195.25	0.877	206.95	168.47	0.814	0.930	0.863	0.928
29	237.07	208.65	0.880	220.38	179.43	0.814	0.930	0.860	0.925
30	252.02	222.48	0.885	234.26	190.80	0.814	0.930	0.858	0.922

DATE: 11/ 7/79   TABLE 2) COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : LIFE PAID UP AT 65   INITIAL AGE: 35
PAYMENTS : 30   & 65
                                                                                    TERM

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2/C1 C3	K AT 5.5% CSV METH-R MALE C4	K AT 5.5% CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
ADJ PREM	14.11	12.45	0.882	12.52	10.23	0.817	0.887	0.822	0.926
1	18.13-	10.47-	1.019	13.86-	13.05-	0.942	0.764	0.707	0.924
2	6.90-	8.69-	1.259	3.66-	4.74-	1.295	0.530	0.545	1.024
3	4.82	1.57	0.326	6.97	3.91	0.561	1.446	2.490	0.721
4	17.03	12.51	0.724	18.03	12.91	0.716	1.060	1.049	0.940
5	29.68	23.55	0.793	29.53	22.24	0.753	0.995	0.944	0.950
6	42.82	35.28	0.824	41.47	31.91	0.769	0.968	0.904	0.933
7	56.44	47.49	0.841	53.85	41.93	0.779	0.954	0.883	0.926
8	70.55	60.18	0.853	66.70	52.32	0.784	0.945	0.869	0.919
9	85.17	73.36	0.861	80.02	63.09	0.788	0.940	0.860	0.915
10	100.32	87.02	0.867	93.84	74.28	0.792	0.935	0.854	0.913
11	115.99	101.20	0.872	108.16	85.91	0.794	0.932	0.849	0.911
12	132.19	115.90	0.877	123.00	98.00	0.797	0.930	0.846	0.909
13	148.94	131.13	0.880	138.40	110.58	0.799	0.929	0.843	0.908
14	166.22	146.92	0.884	154.37	123.66	0.801	0.929	0.842	0.906
15	184.05	163.26	0.887	170.92	137.26	0.803	0.929	0.841	0.905
16	202.42	180.16	0.890	188.09	151.40	0.805	0.929	0.840	0.904
17	221.34	197.63	0.893	205.85	166.09	0.807	0.930	0.840	0.904
18	240.84	215.67	0.895	224.21	181.36	0.809	0.931	0.841	0.904
19	260.92	234.30	0.898	243.16	197.19	0.811	0.932	0.842	0.903
20	281.61	253.52	0.900	262.70	213.63	0.813	0.933	0.843	0.903
21	302.92	273.36	0.902	282.85	230.72	0.816	0.934	0.844	0.905
22	324.87	293.81	0.904	303.64	248.51	0.818	0.935	0.846	0.905
23	347.49	314.99	0.906	325.13	267.09	0.821	0.936	0.848	0.906
24	370.79	336.83	0.908	347.55	286.53	0.825	0.937	0.851	0.909
25	394.62	359.39	0.910	370.37	306.89	0.829	0.938	0.854	0.911
26	419.61	382.70	0.912	394.21	328.20	0.833	0.939	0.858	0.913
27	445.24	406.80	0.914	418.91	350.46	0.837	0.941	0.862	0.916
28	471.77	431.75	0.915	444.51	373.67	0.841	0.942	0.865	0.919
29	499.30	457.60	0.916	471.03	397.78	0.844	0.943	0.869	0.921
30	527.94	484.43	0.918	498.54	422.80	0.848	0.944	0.873	0.924

DATE: 11/ 7/79

TABLE 2   COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : LIFE PAID UP AT 65
PAYMENTS : 15

INITIAL AGE: 50
TERM : 50

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2 / C1 C3	AT 5.5% CSV METH-R MALE C4	AT 5.5% CSV METH-R FEMALE C5	RATIO C5 / C4 C6	RATIO C4 / C1 C7	RATIO C5 / C2 C8	RATIO C6 / C3 C9
ADJ PREM	37.06	32.66	0.881	34.36	27.62	0.804	0.927	0.846	0.913
1	13.60-	13.11-	0.978	20.24-	17.74-	0.876	1.510	1.353	0.896
2	15.99	13.76	0.861	7.65	5.13	0.671	0.478	0.373	0.779
3	46.47	41.69	0.897	36.65	29.02	0.792	0.789	0.596	0.883
4	76.06	70.71	0.906	66.79	53.93	0.807	0.855	0.763	0.891
5	110.89	100.86	0.910	98.09	79.95	0.815	0.885	0.793	0.896
6	144.97	132.21	0.912	130.63	107.15	0.820	0.901	0.810	0.899
7	180.39	164.84	0.914	164.49	135.64	0.825	0.912	0.823	0.903
8	217.24	198.83	0.915	199.79	165.54	0.829	0.920	0.833	0.906
9	255.63	234.26	0.916	236.66	196.97	0.832	0.926	0.841	0.908
10	295.69	271.24	0.917	275.22	230.06	0.836	0.931	0.848	0.912
11	337.58	309.89	0.918	315.60	264.89	0.839	0.935	0.855	0.914
12	381.48	350.34	0.918	357.94	301.52	0.842	0.938	0.861	0.917
13	427.65	392.78	0.918	402.41	340.00	0.845	0.941	0.866	0.920
14	476.35	437.39	0.918	449.19	380.59	0.847	0.943	0.870	0.923
15	527.94	484.43	0.918	498.54	422.80	0.848	0.944	0.873	0.924
16	542.44	498.90	0.920	513.60	437.85	0.853	0.947	0.878	0.927
17	556.88	513.41	0.922	528.72	453.19	0.857	0.949	0.883	0.930
18	571.20	527.94	0.924	543.92	466.85	0.862	0.952	0.888	0.933
19	585.33	542.44	0.927	559.20	484.44	0.867	0.955	0.894	0.935
20	599.25	556.88	0.929	574.57	501.46	0.873	0.959	0.900	0.940
21	612.94	571.20	0.932	589.97	518.39	0.879	0.963	0.905	0.943
22	626.42	585.33	0.934	605.33	535.65	0.885	0.966	0.915	0.948
23	639.74	599.25	0.937	620.55	553.10	0.891	0.970	0.923	0.951
24	652.98	612.94	0.939	635.49	570.59	0.898	0.973	0.931	0.956
25	666.15	626.42	0.940	650.04	588.00	0.905	0.976	0.939	0.963
26	679.24	639.74	0.942	664.28	605.24	0.911	0.978	0.946	0.967
27	692.24	652.98	0.943	678.12	622.30	0.918	0.980	0.953	0.973
28	705.04	666.15	0.945	691.63	639.19	0.924	0.981	0.960	0.978
29	717.53	679.25	0.947	704.91	655.96	0.931	0.982	0.966	0.983
30	729.63	692.24	0.949	714.01	672.61	0.937	0.984	0.972	0.981

DATE: 11/ 7/79

TABLE 2   COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : 20 PAY LIFE   PAYMENTS : 20   INITIAL AGE: 20   TERM : 80

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2 / C1 C3	K AT 5.5% CSV METH-R MALE C4	K AT 5.5% CSV METH-R FEMALE C5	RATIO C5 / C4 C6	RATIO C4 / C1 C7	RATIO C5 / C2 C8	RATIO C6 / C3 C9
ADJ PREM	9.81	8.94	0.911	8.56	6.92	0.808	0.873	0.774	0.887
1	18.55-	18.75-	1.011	12.74-	11.65-	0.914	0.687	0.621	0.904
2	11.07-	12.06-	1.089	6.32-	6.06-	0.959	0.571	0.502	0.881
3	5.20-	5.04-	1.575	0.47	0.18-	0.383-	0.147	0.036	0.243-
4	5.09	2.33	0.458	7.69	6.01	0.782	1.511	2.579	1.707
5	13.84	10.08	0.729	15.35	12.52	0.816	1.109	1.242	1.121
6	23.06	18.24	0.791	23.50	19.38	0.825	1.019	1.062	1.043
7	32.78	26.84	0.819	32.16	26.59	0.827	0.981	0.991	1.010
8	43.02	35.91	0.835	41.32	34.18	0.827	0.960	0.952	0.990
9	53.82	45.47	0.845	51.02	42.15	0.826	0.948	0.927	0.978
10	65.12	55.55	0.852	61.25	50.54	0.825	0.940	0.910	0.968
11	77.15	66.18	0.858	72.05	59.36	0.824	0.934	0.897	0.960
12	89.73	77.38	0.862	83.42	68.62	0.823	0.929	0.887	0.955
13	103.01	89.18	0.866	95.38	78.37	0.822	0.926	0.879	0.949
14	116.98	101.60	0.869	107.96	88.61	0.821	0.923	0.872	0.945
15	131.67	114.68	0.871	121.18	99.37	0.820	0.920	0.866	0.941
16	147.12	128.46	0.873	135.05	110.67	0.819	0.918	0.862	0.938
17	163.35	142.97	0.875	149.61	122.52	0.819	0.918	0.857	0.936
18	180.39	158.25	0.877	164.87	134.93	0.818	0.914	0.853	0.933
19	199.25	174.31	0.879	180.86	147.91	0.818	0.912	0.849	0.931
20	216.95	191.19	0.881	197.60	161.49	0.817	0.911	0.845	0.927
21	226.15	199.47	0.882	206.07	168.36	0.817	0.911	0.844	0.926
22	235.66	208.05	0.883	214.82	175.44	0.817	0.912	0.843	0.925
23	245.47	216.95	0.884	223.87	182.75	0.816	0.912	0.842	0.923
24	255.60	226.15	0.885	233.22	190.30	0.816	0.912	0.841	0.922
25	266.05	235.66	0.886	242.87	198.10	0.816	0.913	0.841	0.921
26	276.81	245.47	0.887	252.83	206.17	0.815	0.913	0.840	0.919
27	287.88	255.60	0.888	263.11	214.52	0.815	0.914	0.839	0.918
28	299.26	266.05	0.889	273.72	223.18	0.815	0.915	0.839	0.917
29	310.93	276.81	0.890	284.67	232.13	0.815	0.916	0.839	0.916
30	322.89	287.88	0.892	295.95	241.38	0.816	0.917	0.838	0.915

DATE: 11/ 7/79

TABLE 2   COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : 20 PAY LIFE
PAYMENTS : 20

INITIAL AGE: 35
TERM : 65

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2 / C1 C3	K AT 5.5% CSV METH-R MALE C4	K AT 5.5% CSV METH-R FEMALE C5	RATIO C5 / C4 C6	RATIO C4 / C1 C7	RATIO C5 / C2 C8	RATIO C6 / C3 C9
ADJ PREM	16.61	14.92	0.888	15.13	12.44	0.822	0.900	0.834	0.926
1	16.41-	16.90-	1.030	13.06-	13.03-	0.940	0.845	0.771	0.913
2	2.22-	4.42-	1.991	0.94-	2.39-	2.626	0.410	0.541	1.319
3	12.63	8.70	0.689	12.63	8.73	0.691	1.000	1.003	1.003
4	28.13	22.47	0.799	26.77	20.33	0.759	0.952	0.905	0.950
5	44.31	36.91	0.833	41.52	32.42	0.781	0.937	0.878	0.938
6	61.17	52.03	0.851	56.92	45.02	0.791	0.931	0.865	0.929
7	78.74	67.83	0.861	72.95	56.13	0.797	0.926	0.857	0.926
8	97.04	84.32	0.869	89.68	71.78	0.800	0.924	0.851	0.921
9	116.11	101.53	0.874	107.12	86.02	0.803	0.923	0.847	0.919
10	135.98	119.48	0.879	125.30	100.89	0.805	0.921	0.844	0.916
11	154.68	136.20	0.882	144.26	116.41	0.807	0.921	0.842	0.915
12	176.25	157.73	0.885	164.04	132.64	0.809	0.920	0.841	0.914
13	200.70	178.11	0.887	184.68	149.61	0.810	0.920	0.840	0.913
14	224.09	199.36	0.890	206.24	167.36	0.811	0.920	0.839	0.913
15	248.44	221.53	0.892	228.75	185.91	0.813	0.921	0.839	0.911
16	273.80	244.66	0.894	252.27	205.32	0.814	0.921	0.839	0.911
17	300.22	268.77	0.895	276.82	225.62	0.815	0.922	0.839	0.911
18	323.77	293.93	0.897	302.45	246.86	0.816	0.923	0.840	0.910
19	356.53	320.19	0.898	329.20	269.06	0.817	0.923	0.844	0.910
20	386.58	347.60	0.899	357.12	292.30	0.818	0.924	0.841	0.910
21	400.04	360.35	0.901	370.16	303.44	0.820	0.925	0.842	0.910
22	413.71	373.34	0.902	383.46	314.94	0.821	0.927	0.844	0.910
23	427.57	386.58	0.904	397.01	326.46	0.823	0.929	0.846	0.910
24	441.59	400.04	0.906	410.84	339.24	0.826	0.930	0.848	0.912
25	455.76	413.71	0.908	424.95	352.10	0.829	0.932	0.851	0.913
26	470.05	427.57	0.910	439.50	365.46	0.832	0.935	0.855	0.914
27	484.43	441.59	0.912	453.89	379.27	0.836	0.937	0.859	0.917
28	498.90	455.76	0.914	468.65	393.48	0.840	0.939	0.863	0.919
29	513.41	470.05	0.916	483.55	408.01	0.844	0.942	0.868	0.921
30	527.94	484.43	0.918	498.54	422.80	0.848	0.944	0.873	0.924

DATE: 11/ 7/79

TABLE 2 COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : 20 PAY LIFE
PAYMENTS : 20

INITIAL AGE: 50
TERM : 50

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2 / C1 C3	K 5.5% CSV METH-R MALE C4	K 5.5% CSV METH-R FEMALE C5	RATIO C5 / C4 C6	RATIO C4 / C1 C7	RATIO C5 / C2 C8	RATIO C6 / C3 C9
ADJ PREM	32.07	28.04	0.874	29.27	23.25	0.794	0.913	0.829	0.908
1	16.58-	16.05-	0.968	20.32-	17.81-	0.876	1.226	1.110	0.905
2	7.30	5.74	0.786	2.16	0.42	0.494	0.296	0.073	0.247
3	31.90	28.25	0.886	25.40	19.38	0.763	0.796	0.686	0.881
4	57.22	51.50	0.900	49.39	39.07	0.791	0.863	0.759	0.879
5	83.30	75.49	0.906	74.14	59.53	0.803	0.890	0.789	0.886
6	110.15	100.27	0.910	99.67	80.61	0.811	0.905	0.806	0.891
7	137.80	125.84	0.913	126.01	102.99	0.817	0.914	0.818	0.895
8	166.26	152.26	0.916	153.24	126.16	0.823	0.922	0.829	0.898
9	195.56	179.55	0.918	181.42	150.43	0.829	0.928	0.838	0.903
10	225.76	207.76	0.920	210.62	175.86	0.835	0.933	0.846	0.908
11	256.91	236.91	0.922	240.88	202.51	0.841	0.938	0.855	0.912
12	289.06	267.06	0.924	272.24	230.38	0.846	0.942	0.863	0.916
13	322.32	298.29	0.925	304.75	259.46	0.851	0.945	0.870	0.920
14	356.80	330.66	0.927	338.45	289.72	0.856	0.949	0.876	0.923
15	392.63	364.30	0.928	373.45	321.18	0.860	0.951	0.882	0.927
16	429.96	399.31	0.929	409.86	353.95	0.864	0.953	0.886	0.930
17	469.00	445.87	0.929	447.91	388.15	0.867	0.955	0.891	0.933
18	509.99	474.16	0.930	487.83	423.94	0.869	0.957	0.894	0.934
19	553.26	514.40	0.930	529.94	461.69	0.871	0.958	0.898	0.937
20	599.25	556.88	0.929	574.57	501.46	0.873	0.959	0.900	0.940
21	612.94	571.20	0.932	589.97	518.39	0.879	0.963	0.908	0.943
22	626.42	585.13	0.934	605.33	535.65	0.885	0.966	0.915	0.948
23	639.74	599.75	0.937	620.55	553.10	0.891	0.970	0.923	0.951
24	652.98	612.94	0.939	635.49	570.59	0.898	0.973	0.931	0.956
25	666.15	626.42	0.940	650.08	588.00	0.905	0.976	0.939	0.963
26	679.25	639.74	0.942	664.28	605.24	0.911	0.978	0.946	0.967
27	692.24	652.98	0.943	678.12	622.30	0.918	0.980	0.953	0.973
28	705.04	666.15	0.945	691.63	639.19	0.924	0.981	0.960	0.978
29	717.53	679.25	0.947	704.91	655.46	0.931	0.982	0.966	0.983
30	729.63	692.24	0.949	714.01	672.61	0.937	0.984	0.972	0.987

DATE: 11/ 7/79

TABLE 2 COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN: ENDOWMENT AT 65 PAYMENTS: 45

INITIAL AGE: 20 TERM: 45

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2/C1 C3	K AT 5.5% CSV METH-R MALE C4	K AT 5.5% CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
AOJ PREM	9.03	8.67	0.960	8.34	7.68	0.921	0.924	0.886	0.959
1	19.05-	18.92-	0.993	13.19-	12.22-	0.926	0.692	0.646	0.933
2	12.42-	12.52-	1.008	7.04-	5.87-	0.834	0.567	0.469	0.822-
3	5.46-	5.41-	1.064	0.52-	0.82	1.577-	0.095	0.141-	1.462-
4	1.88	1.23	0.654	6.40	7.87	1.230	3.404	6.398	1.881
5	9.61	8.53	0.898	13.75	15.28	1.111	1.431	1.771	1.237
6	17.77	16.43	0.925	23.58	23.09	1.070	1.214	1.405	1.157
7	26.36	24.37	0.934	29.88	31.31	1.048	1.134	1.271	1.122
8	35.41	33.29	0.940	38.68	39.96	1.033	1.092	1.200	1.099
9	44.94	42.42	0.944	47.98	49.06	1.023	1.068	1.157	1.084
10	54.97	52.05	0.947	57.61	58.64	1.014	1.052	1.127	1.071
11	65.52	62.19	0.949	68.17	68.71	1.008	1.040	1.105	1.062
12	76.83	72.68	0.951	79.08	79.30	1.003	1.032	1.088	1.055
13	88.31	84.13	0.953	90.56	90.45	0.999	1.025	1.079	1.048
14	100.61	95.98	0.954	102.63	102.18	0.996	1.020	1.065	1.044
15	113.53	108.45	0.955	115.30	114.50	0.993	1.016	1.056	1.040
16	127.11	121.59	0.957	128.60	127.47	0.991	1.012	1.048	1.036
17	141.35	135.42	0.958	142.55	141.07	0.990	1.008	1.042	1.033
18	155.29	149.98	0.960	157.16	155.53	0.988	1.006	1.036	1.029
19	171.91	165.68	0.961	172.47	170.28	0.987	1.003	1.030	1.027
20	188.25	181.36	0.963	188.49	185.95	0.987	1.001	1.025	1.025
21	205.32	198.23	0.965	205.25	202.44	0.986	1.000	1.021	1.022
22	223.16	215.92	0.968	222.78	219.52	0.985	0.998	1.017	1.018
23	241.79	234.46	0.970	241.13	237.50	0.985	0.997	1.013	1.015
24	261.26	253.87	0.972	260.32	256.37	0.985	0.996	1.010	1.015
25	281.62	274.19	0.974	280.42	276.17	0.985	0.996	1.007	1.011
26	302.90	295.49	0.976	301.46	296.96	0.985	0.995	1.005	1.009
27	325.15	317.79	0.977	323.51	318.61	0.985	0.995	1.003	1.008
28	348.41	341.18	0.979	346.63	341.78	0.986	0.995	1.002	1.007
29	372.73	365.70	0.981	370.88	365.93	0.987	0.995	1.001	1.006
30	398.18	391.41	0.983	396.32	391.34	0.987	0.995	1.000	1.004

DATE: 11/ 7/79

TABLE 2 COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN: ENDOWMENT AT 65
PAYMENTS: 30
INITIAL AGE: 35
YEAR: 30

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE (C1)	5A CSO AT 5.5% CSV METH-P FEMALE (C2)	RATIO C2/C1 (C3)	K AT 5.5% CSV METH-R MALE (C4)	K AT 5.5% CSV METH-R FEMALE (C5)	RATIO C5/C4 (C6)	RATIO C4/C1 (C7)	RATIO C5/C2 (C8)	RATIO C6/C3 (C9)
ADJ PREM	18.98	18.12	0.955	18.29	17.39	0.951	0.964	0.960	0.996
1	15.03-	14.88-	0.990	14.79-	14.20-	0.960	0.984	0.954	0.970
2	1.53	1.10	0.719	1.46	1.61	1.103	0.954	1.464	1.534
3	18.90	17.92	0.948	18.48	18.19	0.984	0.978	1.015	1.038
4	37.07	35.60	0.960	36.30	35.57	0.980	0.979	0.999	1.021
5	56.07	54.17	0.966	54.96	53.17	0.978	0.980	0.993	1.012
6	75.92	73.67	0.970	74.48	72.83	0.978	0.981	0.989	1.008
7	96.65	94.11	0.974	94.89	92.79	0.982	0.982	0.986	1.004
8	118.52	115.51	0.976	116.26	113.70	0.978	0.983	0.984	1.002
9	140.97	137.95	0.979	138.61	135.63	0.979	0.983	0.983	1.000
10	164.64	161.44	0.981	162.02	158.65	0.979	0.984	0.983	0.998
11	189.39	186.03	0.982	186.52	182.81	0.980	0.985	0.983	0.998
12	215.25	211.81	0.984	212.20	208.20	0.981	0.986	0.983	0.997
13	242.50	238.83	0.986	239.12	234.91	0.982	0.987	0.984	0.996
14	270.18	267.16	0.987	267.16	262.48	0.984	0.988	0.984	0.997
15	300.18	296.37	0.989	296.99	292.52	0.985	0.989	0.985	0.996
16	331.16	328.03	0.991	328.11	323.60	0.986	0.991	0.986	0.995
17	363.60	360.75	0.992	360.79	356.33	0.988	0.992	0.988	0.996
18	397.63	395.11	0.994	395.11	390.80	0.989	0.994	0.989	0.995
19	433.36	431.22	0.995	431.18	427.12	0.991	0.995	0.990	0.996
20	470.92	469.21	0.996	469.12	465.43	0.992	0.996	0.992	0.996
21	510.49	509.25	0.998	509.07	505.47	0.994	0.997	0.993	0.996
22	552.23	551.49	0.999	551.22	548.62	0.995	0.998	0.995	0.996
23	596.36	596.13	1.000	595.78	593.89	0.997	0.999	0.996	0.997
24	643.12	643.39	1.000	642.99	641.86	0.998	1.000	0.998	0.998
25	692.81	693.54	1.001	693.12	692.77	0.999	1.000	0.999	0.998
26	745.77	746.86	1.001	746.46	746.82	1.000	1.001	1.000	0.999
27	802.43	803.72	1.002	803.36	804.26	1.001	1.001	1.001	0.999
28	863.26	864.52	1.001	864.23	865.37	1.001	1.001	1.001	1.000
29	928.88	929.75	1.001	929.58	930.48	1.001	1.001	1.001	1.000
30	1000.00	1000.00	1.000	1000.00	1000.00	1.000	1.000	1.000	1.000

DATE: 11/ 7/79

TABLE 2   COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : ENDOWMENT AT 65   INITIAL AGE: 50
PAYMENTS : 15   TERM : 15

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2/C1 C3	58 CSO AT 5.5% CSV METH-R MALE C4	58 CSO AT 5.5% CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
ADJ PREM	53.85	51.97	0.965	55.06	52.79	0.959	1.022	1.016	0.994
1	5.21	4.27	1.330	22.68-	20.77-	0.916	7.065-	4.864-	0.669
2	51.57	52.74	1.023	27.05	28.62	1.054	0.525	0.543	1.039
3	102.28	103.66	1.013	79.30	80.65	1.017	0.775	0.778	1.004
4	155.52	157.17	1.011	134.20	135.46	1.009	0.863	0.862	0.998
5	211.51	213.47	1.009	191.94	193.27	1.007	0.907	0.905	0.998
6	270.47	272.79	1.009	252.76	254.30	1.006	0.935	0.932	0.997
7	332.68	335.38	1.008	316.91	318.82	1.006	0.953	0.951	0.998
8	398.45	401.53	1.008	384.74	387.13	1.006	0.966	0.964	0.998
9	468.14	471.57	1.007	456.60	459.53	1.006	0.975	0.973	0.999
10	542.19	545.88	1.007	532.90	536.35	1.006	0.983	0.983	0.999
11	621.12	624.89	1.006	614.09	617.92	1.006	0.989	0.989	1.000
12	705.55	709.14	1.005	700.70	704.61	1.006	0.993	0.994	1.001
13	796.22	799.24	1.004	793.35	796.82	1.004	0.996	0.997	1.000
14	894.01	895.90	1.002	892.81	895.08	1.003	0.999	0.999	1.001
15	1000.00	1000.00	1.000	1000.00	1000.00	1.000	1.000	1.000	1.000

DATE: 11/ 7/79

TABLE 2   COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN: 1 TERM TO 65
PAYMENTS: 45

INITIAL AGE: 20
TERM: 45

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2/C1 C3	58 CSO AT 5.5% K CSV METH-R MALE C4	58 CSO AT 5.5% K CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
ADJ PREM	5.13	4.50	0.877	4.03	2.99	0.742	0.786	0.664	0.846
1	21.03-	21.09-	1.003	12.44-	11.41-	0.917	0.592	0.541	0.914
2	18.64-	19.23-	1.032	10.80-	9.97-	0.923	0.574	0.518	0.894
3	16.14-	17.31-	1.072	9.05-	8.46-	0.935	0.561	0.489	0.872
4	13.52-	15.33-	1.134	7.16-	6.89-	0.962	0.530	0.449	0.848
5	10.78-	13.29-	1.233	5.13-	5.27-	1.027	0.476	0.397	0.833
6	7.90-	11.15-	1.411	2.93-	3.57-	1.218	0.371	0.320	0.863
7	4.89-	8.92-	1.824	0.57-	1.81-	3.175	0.117	0.203	1.741
8	1.74-	6.59-	3.787	1.95	0.02	0.010	1.121	0.003-	0.003
9	1.55	4.15-	2.677-	4.62	1.92	0.416	2.981	0.463-	0.155-
10	4.99	1.59-	0.319-	7.43	3.88	0.522	1.489	2.440-	1.636-
11	8.56	1.08	0.126	10.38	5.90	0.568	1.213	5.463	4.508
12	12.29	3.86	0.314	13.45	7.98	0.593	1.094	2.067	1.849
13	16.17	6.76	0.418	16.64	10.14	0.609	1.029	1.500	1.457
14	20.20	9.76	0.483	19.94	12.37	0.620	0.987	1.267	1.284
15	24.38	12.89	0.529	23.34	14.64	0.627	0.957	1.136	1.185
16	28.70	16.13	0.562	26.83	16.97	0.633	0.935	1.052	1.126
17	33.14	19.49	0.588	30.38	19.33	0.636	0.917	0.992	1.082
18	37.69	22.96	0.609	33.99	21.70	0.638	0.902	0.945	1.048
19	42.29	26.52	0.627	37.63	24.05	0.639	0.890	0.907	1.019
20	46.94	30.17	0.643	41.28	26.36	0.639	0.879	0.874	0.994
21	51.59	33.47	0.657	44.93	28.61	0.637	0.871	0.845	0.970
22	56.22	37.58	0.668	48.52	30.78	0.634	0.863	0.819	0.949
23	60.81	41.28	0.679	52.07	32.85	0.631	0.856	0.796	0.929
24	65.33	44.92	0.688	55.53	34.82	0.627	0.850	0.775	0.911
25	69.77	48.49	0.695	58.90	36.69	0.623	0.844	0.757	0.896
26	74.07	51.95	0.701	62.13	38.44	0.619	0.839	0.740	0.883
27	78.18	55.27	0.707	65.20	40.05	0.614	0.834	0.725	0.866
28	82.06	58.42	0.712	68.06	41.52	0.610	0.830	0.711	0.857
29	85.63	61.36	0.717	70.75	42.62	0.605	0.826	0.698	0.844
30	88.63	64.02	0.721	73.14	43.89	0.600	0.823	0.686	0.832

DATE: 11/7/79

TABLE 2 COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : TERM TO 65
PAYMENTS : 30

POLICY = 58 CSO   58 CSO
YEAR = AT 5.5%   AT 5.5%   AT 5.5%   AT 5.5%

INITIAL NET TERM : 35 / TERM : 30

YEAR	C1 MALE	C2 FEMALE	C3 RATIO C2/C1	C4 MALE	C5 FEMALE	C6 RATIO	C7 RATIO C4/C1	C8 RATIO C5/C2	C9 RATIO C6/C3
ADJ PREM	8.58	7.05	0.822	6.79	4.99	0.735	0.791	0.708	0.894
1	20.49	20.79	1.015	12.94	12.20	0.943	0.632	0.587	0.929
2	15.25	16.85	1.105	8.75	9.39	1.073	0.574	0.557	0.971
3	9.86	12.77	1.295	4.47	6.55	1.465	0.453	0.513	1.151
4	4.38	8.56	1.954	0.13	3.69	28.385	0.030	0.431	14.527
5	1.19	4.24	3.563	4.25	0.86	0.202	3.571	0.203	0.057
6	6.80	0.17	0.025	8.65	1.94	0.224	1.272	11.412	8.960
7	12.44	4.63	0.372	13.05	4.68	0.359	1.049	1.011	0.965
8	18.08	9.10	0.503	17.44	7.35	0.421	0.965	0.808	0.837
9	23.70	13.56	0.572	21.78	9.96	0.457	0.919	0.735	0.799
10	29.28	17.98	0.614	26.06	12.49	0.479	0.890	0.695	0.780
11	34.78	22.34	0.642	30.25	14.93	0.494	0.870	0.668	0.769
12	40.15	26.60	0.663	34.33	17.27	0.503	0.855	0.649	0.759
13	45.34	30.73	0.678	38.26	19.51	0.510	0.844	0.635	0.752
14	50.28	34.70	0.690	42.04	21.61	0.514	0.836	0.623	0.745
15	54.92	38.45	0.700	45.59	23.54	0.516	0.830	0.612	0.737
16	59.16	41.91	0.708	48.88	25.26	0.517	0.826	0.603	0.730
17	62.93	45.02	0.715	51.81	26.74	0.516	0.823	0.594	0.722
18	66.14	47.70	0.721	54.30	27.94	0.515	0.821	0.586	0.714
19	68.69	49.86	0.726	56.24	28.76	0.511	0.819	0.577	0.704
20	70.46	51.40	0.729	57.48	29.18	0.508	0.816	0.568	0.697
21	71.32	52.23	0.732	57.95	29.17	0.503	0.813	0.558	0.687
22	71.09	52.23	0.735	57.50	28.68	0.499	0.809	0.549	0.679
23	69.59	51.25	0.736	56.04	27.71	0.494	0.805	0.541	0.671
24	66.63	49.15	0.738	53.43	26.35	0.491	0.802	0.534	0.665
25	61.88	45.74	0.739	49.49	24.23	0.490	0.800	0.530	0.663
26	55.12	40.79	0.740	44.01	21.56	0.490	0.798	0.529	0.662
27	45.99	34.06	0.741	36.70	18.06	0.492	0.798	0.530	0.664
28	34.09	25.25	0.741	27.22	13.50	0.496	0.794	0.535	0.669
29	18.95	14.03	0.740	15.14	7.57	0.500	0.799	0.540	0.676
30	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000

DATE: 11/ 7/79

TABLE 2   COMPARISON OF CASH SURRENDER VALUES BY SEX

METHOD R

PLAN : TERM TO 65   INITIAL AGE: 50
PAYMENTS : 15   TERM : 15

POLICY YEAR	58 CSO AT 5.5% CSV METH-P MALE C1	58 CSO AT 5.5% CSV METH-P FEMALE C2	RATIO C2/C1 C3	K AT 5.5% CSV METH-R MALE C4	K AT 5.5% CSV METH-R FEMALE C5	RATIO C5/C4 C6	RATIO C4/C1 C7	RATIO C5/C2 C8	RATIO C6/C3 C9
ADJ PREM	17.34	13.79	0.795	13.78	9.18	0.666	0.795	0.666	0.838
1	23.21-	22.51-	0.970	17.82-	15.53-	0.871	0.768	0.690	0.898
2	15.45-	16.27-	1.053	11.64-	12.07-	1.037	0.753	0.742	0.965
3	8.04-	10.29-	1.280	5.75-	8.80-	1.530	0.715	0.855	1.195
4	1.09-	4.67-	4.284	0.23-	5.79-	25.174	0.211	1.240	5.876
5	5.30	0.52	0.098	4.78	3.05-	0.638-	0.902	5.865-	6.510-
6	11.03	5.19	0.471	9.21	0.63-	0.068-	0.835	0.121-	0.144-
7	15.94	9.23	0.579	12.95	1.46	0.113	0.812	0.158	0.195
8	19.88	12.53	0.630	15.92	3.22	0.202	0.801	0.257	0.321
9	22.65	14.97	0.661	17.99	4.65	0.258	0.794	0.311	0.390
10	24.05	16.36	0.680	19.03	5.70	0.300	0.791	0.348	0.441
11	23.81	16.52	0.694	18.84	6.29	0.334	0.791	0.381	0.481
12	21.65	15.24	0.704	17.18	6.25	0.364	0.794	0.410	0.517
13	17.25	12.26	0.711	13.74	5.38	0.392	0.797	0.439	0.551
14	10.19	7.29	0.715	8.15	3.38	0.415	0.800	0.464	0.580
15	0.00	0.00	0.000	0.00	0.00	0.000	0.000	0.000	0.000

To: (C) Committee Technical Task Force on Valuation and Nonforfeiture Value Regulation

From: Daniel F. Case, Associate Actuary
         American Counsel of Life Insurance
         Washington, D.C.   20006

Date: ‧ November 21, 1979

Re: Proposed Amendments to Standard Valuation and Nonforfeiture Laws

Your chairman, Ted Becker, has given us permission to send the enclosed memorandum directly to you, in order that you may receive it a few days in advance of your December 1 meeting.

The memorandum sets forth proposals which the Council's Actuarial Committee has asked us to present to you as an exposure draft. We hope that you will be able to discuss these proposals at your upcoming meeting and thus begin a process by which the NAIC may adopt some much-needed changes to the Standard Laws.

As the memorandum indicates, the proposed amendments would: (1) establish a system for automatically updating the statutory valuation and nonforfeiture interest rates; (2) adopt a new mortality table for Ordinary life insurance; (3) change the excess initial expense allowance in the Standard Nonforfeiture Law for Life Insurance; and (4) make other changes in the Standard Nonforfeiture Law for Life Insurance.

<div align="center">

DESCRIPTION OF DYNAMIC INTEREST RATE BASIS
CONTAINED IN PROPOSED AMENDMENTS TO
THE STANDARD VALUATION LAW AND
THE STANDARD NONFORFEITURE LAW FOR LIFE INSURANCE

</div>

The dynamic interest rate proposal involves statutory interest rates determined as weighted averages of a basic rate of 3% and a reference interest rate representative of current new money interest rates. The valuation interest rates may be expressed as:

$$I = .03 + W (R - .03), \text{ and}$$

the nonforfeiture interest rate for life insurance may be expressed as:

$$I = .04 + W (R - .03)$$

where I represents the statutory interest rate, W represents the weighting factor and R represents the reference interest rate. The additional 1% in the expression for the life insurance nonforfeiture rate reflects the differential between valuation and nonforfeiture interest rates present in the current model laws.

Except as noted below, the rate I applies at all durations of a policy or contract issued in a given year.

Reference Interest Rate

The reference interest rate is based on the Average of Yields on Seasoned Aa Public Utility Bonds, as published by Moody's Investors Service, Inc.

For life insurance and for deferred annuities issued at ages less than 55, the reference interest rate is equal to the lesser of the 12-month average and the 36-month average, ending on June 30, of Moody's Average of Yields on Seasoned Aa Public Utility Bonds. For other products — deferred annuities issued at ages 55 and over, immediate annuities, and guaranteed interest contracts — where financial results are more directly related to yields on current investments, the reference rate that is proposed is simply the 12-month average of the same Moody's index. (For details concerning the effective date of changes in the valuation and nonforfeiture interest rates see the section of this memorandum headed Timing of Interest Rate Changes.)

Moody's *Average of Yields on Seasoned Aa Public Utility Bonds* was chosen as the basis for determination of the reference interest rate because of the high correlation and the level of margins between those yields and gross yields on new investments of life insurance companies. A study of the historical gross yields on new investments of 55 life insurance companies supports this conclusion. Appendix I contains a discussion of (i) the choice of the reference rate periods, (ii) the correlation studies, and (iii) the margins in the reference rate indexes.

<u>Weighting Factors</u>

The proposed weighting factors were determined after extensive analyses of cash flow patterns for the different product groups. Consideration was given to the need to invest and reinvest funds, and a variety of future investment scenarios were assumed. The research also took account of expenses and Federal income tax characteristics of each of the product groups. Appendix II describes the methodology and assumptions that were used and the results of the analyses. Following is a summary description.

The analyses of cash flow patterns took into account both increasing and decreasing assumptions as to future interest rates. In a decreasing-interest-rate environment future premiums and considerations, interest on invested assets and roll-over of those assets are assumed to be invested at rates lower than the initial investments. This is partially offset by capital gains which emerge when the net cash flow becomes negative. In an increasing-interest-rate environment subsequent investments after the first are made at higher rates, but eventual negative cash flows lead to capital losses. The weighting factor recommended for each product group or subdivision thereof is based on the lower of the factors which would result from either the increasing or decreasing assumption as to future interest rates. This introduces an additional measure of conservatism in an aggregate portfolio composed of various types of products, since some products will benefit from a scenario that hurts others.

<u>Weighting Factors for Life Insurance</u>

The weighting factors for life insurance contained in the proposed amendments are .35 for valuation and .40 for nonforfeiture purposes. A .40 figure would be supportable for both valuation and nonforfeiture purposes, but the .35 figure is recommended to provide an added measure of conservatism. As noted above, these weighting factors are applied to the lower of the 12-month and 36-month averages of the Moody's index. This too provides a measure of conservatism. In periods of increasing interest rates the resulting statutory rates are based on the lower 36-month figure. In periods of declining interest rates, however, the lower and more current 12-month figure is used.

<u>Weighting Factors for Deferred Annuities</u>

The products which fall into this group vary widely in their cash flow characteristics. Contracts issued at younger ages exhibit characteristics similar to life insurance, while those issued at higher ages have more in common with immediate annuities and guaranteed interest contracts. The proposed weighting factors vary by issue age in recognition of this. They are .40 for issue ages under 45, .60 for issue ages 45 through 54, and .80 for issue ages 55 or over. Consideration was given to a subdivision based on the length of the deferral period or the number of years to maturity. While this approach was felt to have some merit, it would involve difficulties in defining the maturity date and could leave room for possible abuse.

<u>Weighting Factor for Single Premium Immediate Annuities</u>

A weighting factor of .85 is proposed for single premium immediate annuities.

<u>Weighting Factors for Guaranteed Interest Contracts</u>

The weighting factors for guaranteed interest contracts apply to all active life funds held under group annuity or individual annuity contracts, or similar funding agreements, with interest rate guarantees but without permanent annuity purchase rate guarantees. For such funds with permanent annuity purchase rate guarantees, the deferred annuity weights apply. The weighting factors proposed are as follows:

   For contracts with guarantee periods of 10 years or less, 90% for contracts which provide for payment of full
   book value in a single sum or in periodic payments over a period of less than 5 years and 100% for other
   contracts;

   For contracts with guarantee periods of more than 10 but less than or equal to 20 years, 95%; and

   For contracts with guarantee periods of more than 20 years, 90%.

For the purposes of determining the appropriate weighting factor, the duration of the guarantee period, referred to above, is the length of time for which interest guarantees of any kind apply, except that for contracts which provide for payment of full book value in a single sum or in periodic payments over a period of less than five years, the duration of the guarantee period is the number of years until the earliest date at which full return of book value is available.

It is proposed that the weighting factors and the resulting valuation interest rates be applied to guaranteed interest contracts on a year-of-receipt basis. That is, the net increase over the prior year in the fund associated with these contracts, whether such increase is caused by new deposits or by interest credited, should be valued as a separate liability at the valuation interest rate determined for the year of the increase. At renewal of an interest guarantee, the weighting factor is determined as if the principal is paid out and returned as a consideration under new guarantees.

The stipulation that valuation is to be on a year-of-receipt basis and the absence of permanent annuity purchase rates account for the fact that the weighting factors proposed for guaranteed interest contracts exceed those for immediate annuities and deferred annuities. In a declining-interest-rate scenario, for example, the valuation interest rates for years after the first year of a guaranteed interest contract will decline.

Timing of Interest Rate Changes

For products other than life insurance the statutory valuation interest rates resulting from the reference interest rate determined as of June 30 of a particular calendar year would apply to new business of that calendar year. Specifically, the interest rates in the minimum standard for the valuation of individual annuities issued in a particular calendar year, annuities purchased under group annuity contracts in that calendar year and the net increase during that calendar year in funds held under guaranteed interest contracts would be based on the reference interest rate determined as of June 30 of that year.

For life insurance additional time is needed for administrative reasons between the date on which a required change in the interest rates becomes known and the date on which the change must be implemented. The proposed amendments provide that the statutory valuation and nonforfeiture interest rates for life insurance policies issued in a particular calendar year be determined on the basis of the reference interest rate determined as of June 30 of the immediately preceding calendar year, but in the case of the nonforfeiture interest rates companies are given additional time – up to one year – to implement a change. This proposal is consistent with the long-standing practice of permitting companies a discretionary period of time in which to comply with changes in the nonforfeiture law.

Additional Recommendations

(1) To recognize the possible need for future changes in the mortality table or the reference interest rate index, it is recommended that the state insurance commissioners be authorized to adopt an alternative table or index if approved by the NAIC for this purpose.

(2) To facilitate the administration of the dynamic interest concept, it is recommended that any refiling of nonforfeiture values or their methods of computation for any previously approved policy form which involves only a change in the interest rate used to compute nonforfeiture values shall not require refiling of any provision of that policy form.

Summary

A summary in tabular form of the proposed basis for determination and application of the dynamic valuation and nonforfeiture interest rates is presented below. The table shows the interest rates that would result from the proposed formula based on an assumed reference interest rate of 9%. The illustration is based on a 9% reference interest rate because it reflects the approximate level of the reference rate that the proposal would produce for life insurance for 1979. (For other products, except for deferred annuities issued at ages under 55, the reference rate for 1979 would be 9.60%.)

The interest rates have been rounded to the nearer ¼%, and it is proposed that the interest rates contained in the minimum valuation and nonforfeiture standards be rounded in this fashion in order to avoid insignificant changes in the standards from one year to the next. In addition, it is recommended that for life insurance there be no change in the interest rates contained in the minimum valuation and nonforfeiture standards unless the change from the previous year is ½% or more.

Tables A, B and C illustrate the valuation rates and the nonforfeiture interest rate for life insurance which would have applied if the proposed amendments had been in effect for the years 1960-1979. Table D shows the interest rates that result from the proposed formula for various weighting factors and for a range of reference interest rates from 3.00% to 12.00%.

SUMMARY OF RECOMMENDATION ON DYNAMIC INTEREST RATES

Product Group	Subdivision	Basis of Ref. Rate as of 6/30/t	How Rate is Applied	Weighting Factor		Rounding Rule	Valuation Rate (Assuming 9% Ref. Rate)	
Life Ins.	Valuation	Lower of 36-mos. & 12-mos. averages	Issues of Year t + 1	.35		Nearer 1/4% (but change only if 1/2% or more)	5.00%	
	Nonforfeiture	"	Company Option*	.40 + 1%		"	6.50	
Deferred Annuities	Issue Age: Under 45 / 45-54	" / "	Issues of: Year t / "	.40 * / .60		Nearer 1/4% / "	5.50 / 6.50	
	Over 54	12-mos. avg. only	"	.80		"	7.75	
Immediate Annuities		"	"	.85		"	8.00	
Guaranteed Interest Contracts	Guarantee Period:		Receipts of:	Market Payout	Book Payout		Market Payout	Book Payout
	10 years or less	"	Year t	1.00	.90	"	9.00	8.30
	10+ to 20	"	"	.95	.95	"	8.75	8.75
	Over 20	"	"	.90	.90	"	8.50	8.50

* Applies to issues beginning on a date between 1/1/t + 1 and 1/1/t + 2, as elected by the company.

TABLE A

ILLUSTRATION OF
VALUATION AND NONFORFEITURE INTEREST RATES
FOR LIFE INSURANCE
CORRESPONDING TO ACTUAL HISTORIC REFERENCE RATES
IN EACH OF THE YEARS 1960-1979

Year	Reference Interest Rate	Valuation Interest Rate	Nonforfeiture Interest Rate
1960	4.30%	3.50%	4.50%
1961	4.41	3.50.	4.50
1962	4.50	3.50	4.50
1963	4.32	3.50	4.50
1964	4.39	3.50	4.50
1965	4.39	3.50	4.50
1966	4.55	3.50	4.50
1967	4.88	3.75*	4.75*
1968	5.46	3.75*	5.00
1969	6.09	4.00	5.25*
1970	6.97	4.50	5.50
1971	7.68	4.75*	5.75*
1972	7.85	4.75*	6.00.
1973	7.49	4.50	5.75*
1974	7.85	4.75*	6.00
1975	8.39	5.00	6.25*
1976	9.00	5.00	6.50
1977	8.58	5.00	6.25*
1978	8.66	5.00.	6.25*
1979	8.94	5.00	6.50

*The reference interest rate shown above is the lesser of the
12-month and 36-month averages of the Moody's index ending on
June 30 of the year indicated. See the section of this memo-
randum headed Timing of Interest Rate Changes. The interest
rates marked with an asterisk (*) would not be effective because
of the proposed rule that requires a change of at least 1/2% for
a change to be effective.

TABLE B

ILLUSTRATION OF
VALUATION INTEREST RATES FOR ANNUITIES
CORRESPONDING TO ACTUAL HISTORIC REFERENCE RATES
IN EACH OF THE YEARS 1960-1979

| | Reference Rate | | Deferred Annuities | | | Single Premium |
| | 12-MO. | 36-MO. | ISSUE AGES | | | Immediate |
Year	AVG.	AVG.	0-44	45-54	55+Up	Annuities
1960	4.65%	4.30%	3.50%	3.75%	4.25%	4.50%
1961	4.41	4.45	3.50	3.75	4.25	4.25
1962	4.50	4.52	3.50	4.00	4.25	4.25
1963	4.32	4.41	3.50	3.75	4.00	4.00
1964	4.39	4.40	3.50	3.75	4.00	4.25
1965	4.45	4.39	3.50	3.75	4.25	4.25
1966	4.81	4.55	3.50	4.00	4.50	4.50
1967	5.39	4.88	3.75	4.25	5.00	5.00
1968	6.19	5.46	4.00	4.50	5.50	5.75
1969	5.69	6.09	4.25	4.75	6.00	6.25
1970	8.03	6.97	4.50	5.50	7.00	7.25
1971	8.33	7.68	4.75	5.75	7.25	7.50
1972	7.85	8.07	5.00	6.00	7.00	7.00
1973	7.49	7.89	4.75	5.75	6.50	6.75
1974	8.21	7.85	5.00	6.00	7.25	7.50
1975	9.48	8.39	5.25	6.25	8.25	8.50
1976	9.32	9.00	5.50	6.50	8.00	8.25
1977	8.58	9.13	5.25	6.25	7.50	7.75
1978	8.66	8.85	5.25	6.50	7.50	7.75
1979	9.60	8.94	5.50	6.50	8.25	8.50

The reference interest rate applicable to deferred annuities
issued below age 55 is the lower of the two averages shown. The
12-month average applies to immediate annuities and deferred
annuities issued at age 55 and over.

TABLE C

ILLUSTRATION OF
VALUATION INTEREST RATES
FOR GUARANTEED INTEREST CONTRACTS

Year	Reference Interest Rate	Duration of Guarantee Period (In Years)			
		0 - 10		10+ - 20	Over 20
		Book	Market		
1960	4.65%	4.50%	4.75%	4.50%	4.50%
1961	4.41	4.25	4.50	4.25	4.25
1962	4.50	4.25	4.50	4.50	4.25
1963	4.32	4.25	4.25	4.25	4.25
1964	4.39	4.25	4.50	4.25	4.25
1965	4.45	4.25	4.50	4.50	4.25
1966	4.81	4.75	4.75	4.75	4.75
1967	5.39	5.25	5.50	5.25	5.25
1968	6.19	5.75	6.25	6.00	5.75
1969	6.69	6.25	6.75	6.50	6.25
1970	8.03	7.50	8.00	7.75	7.50
1971	8.33	7.75	8.25	8.00	7.75
1972	7.85	7.25	7.75	7.50	7.25
1973	7.49	7.00	7.50	7.25	7.00
1974	8.21	7.75	8.25	8.00	7.75
1975	9.48	8.75	9.50	9.25	8.75
1976	9.32	8.75	9.25	9.00	8.75
1977	8.58	8.00	8.50	8.25	8.00
1978	8.66	8.00	8.75	8.50	8.00
1979	9.60	9.00	9.50	9.25	9.00

The reference interest rate shown is the 12-month average
of the Moody's index ending June 30 of the year indicated.

TABLE D

ILLUSTRATION OF
VALUATION INTEREST RATES
CORRESPONDING TO REFERENCE RATES
OVER THE INTERVAL 3% to 12%

Reference Rate	Valuation Interest Rates for Weighting Factors							
	.35	.40	.60	.80	.85	.90	.95	1.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
3.50	3.25	3.25	3.25	3.50	3.50	3.50	3.50	3.50
4.00	3.25	3.50	3.50	3.75	3.75	4.00	4.00	4.00
4.50	3.50	3.50	4.00	4.25	4.25	4.25	4.50	4.50
5.00	3.75	3.75	4.25	4.50	4.75	4.75	5.00	5.00
5.50	4.00	4.00	4.50	5.00	5.25	5.25	5.50	5.50
6.00	4.00	4.25	4.75	5.50	5.50	5.75	5.75	6.00
6.50	4.25	4.50	5.00	5.75	6.00	6.25	6.25	6.50
7.00	4.50	4.50	5.50	6.25	6.50	6.50	6.75	7.00
7.50	4.50	4.75	5.75	6.50	6.75	7.00	7.25	7.50
8.00	4.75	5.00	6.00	7.00	7.25	7.50	7.75	8.00
8.50	5.00	5.25	6.25	7.50	7.75	8.00	8.25	8.50
9.00	5.00	5.50	6.50	7.75	8.00	8.50	8.75	9.00
9.50	5.25	5.50	7.00	8.25	8.50	8.75	9.25	9.50
10.00	5.50	5.75	7.25	8.50	9.00	9.25	9.75	10.00
10.50	5.75	6.00	7.50	9.00	9.50	9.75	10.25	10.50
11.00	5.75	6.25	7.75	9.50	9.75	10.25	10.50	11.00
11.50	6.00	6.50	8.00	9.75	10.25	10.75	11.00	11.50
12.00	6.25	6.50	8.50	10.25	10.75	11.00	11.50	12.00

FOOTNOTES TO TABLE D

Column 1   Shows illustrated reference rates.

Column 2   Applies to valuation of life insurance.

Column 3   Applies to valuation of deferred annuities issued
                below age 45. The interest rate in column three
                plus 1% is the recommended nonforfeiture interest
                rate for life insurance.

Column 4   Applies to valuation of deferred annuities issued
                at ages 45 to 54.

Column 5   Applies to valuation of deferred annuities issued
                at ages 55 and over.

Column 6   Applies to single premium deferred annuities.

Column 7   Applies to guaranteed interest contracts with
                guarantee periods over 20 years and to book-value-
                guaranteed interest contracts with guaranteed
                periods of 10 years or less.

Column 8   Applies to guaranteed interest contracts with
                guarantee periods of more than 10 but less than
                or equal to 20 years.

Column 9   Applies to guaranteed interest contracts (other
                than book-value contracts) with guarantee periods
                of 10 years or less.

PROPOSED AMENDMENTS TO NAIC
STANDARD VALUATION AND NONFORFEITURE LAWS

Attached to this memorandum are proposed amendments to the NAIC Standard Valuation and Nonforfeiture Laws.

The Amendments would (1) introduce for the first time a dynamic system for automatic updating of the statutory interest rates used in determining minimum reserves and minimum nonforfeiture values; (2) replace the 1958 CSO Table with a modern life insurance mortality table with sex-distinct mortality rates rather than an age setback for females; (3) change the excess initial expense allowances in the Standard Nonforfeiture Law for Life Insurance; and (4) revise the Standard Nonforfeiture Law for Life Insurance to incorporate most of the recommendations resulting from a study of this law by special committee of the Society of Actuaries.

These proposals are briefly described below. We believe their adoption would significantly improve the regulatory framework for the conduct of business of life insurance in the United States. We urge that the NAIC give the proposals thorough and immediate attention.

1. Dynamic System for Automatic Updating of the Statutory Valuation and Nonforfeiture Interest Rates

Because of rising investment yields, it was found necessary in 1972 and, again, in 1976 to amend the Standard Valuation and Nonforfeiture Laws to increase the statutory interest rates used in determining minimum reserve and nonforfeiture value standards. Each such change takes a great deal of time and effort to obtain enactment in all states of the NAIC-endorsed amendments.

In order to reduce the expense, the delay, and the risk of nonuniformity involved in frequently updating the laws, we believe that a mechanism for automatic adjustment of the statutory interest rates is needed. The attached proposal would create such a mechanism with respect to the Standard Valuation Law and the Standard Nonforfeiture Law for Life Insurance.

Under the attached proposal all types of life insurance, annuities, and deposit fund contracts, both individual and group, would be included within a single framework of dynamic minimum valuation standards that would be incorporated in the model law. Similar automatic adjustments of statutory interest rates would also be built into the minimum nonforfeiture standards for life insurance. The statutory interest rates used in these standards would be tied by formula to the average of yields on seasoned Aa Public Utility Bonds as published by Moody's Investors Service, Inc. A reference interest rate determined from specified averages of those yields ending on June 30 of each year would be used to determine statutory interest rates which would apply at all policy durations to policies and contracts issued in a specified calendar year (or to the net increase in funds in a specified calendar year in the case of certain contracts). Some examples of the statutory interest rates that would be applicable for various products assuming certain reference interest rates are as follows:

STATUTORY INTEREST RATES FOR:

Reference Interest Rate	Life Insurance (Valuation)	Life Insurance (Nonforfeiture)	Deferred Annuities (1) (Valuation)	Immediate Annuities (Valuation)	Guaranteed Interest Contracts (2) (Valuation)
6%	4.00%	5.25%	4.25 to 5.50%	5.50%	5.75 to 6.00%
9%	5.00	6.50	5.50 to 7.75	8.00	8.50 to 9.00
12%	6.25	7.50	6.50 to 10.25	10.75	11.00 to 12.00

(1)   The rates for deferred annuities vary by issue age.

(2)   The rates for guaranteed interest contracts vary depending upon the nature and duration of the guarantee under the contract.

Under the proposed amendments state insurance commissioners would be authorized to adopt changes in the method of determining the reference interest rate if the NAIC determined that it was no longer feasible or appropriate to use the Moody's index and recommended an alternative method for determining the reference interest rate. A complete description of the proposed dynamic interest rate basis and a draft of changes in the Standard Valuation Law required to implement the proposal are attached to this memorandum.

2. New Ordinary Mortality Tables

Since the Commissioners 1958 Standard Ordinary Mortality Table (1958 CSO) was adopted, there has been a dramatic reduction in mortality rates among standard Ordinary insured lives. As a result, changes in the theoretically appropriate amounts of minimum reserve and nonforfeiture value are indicated. The Society of Actuaries' Special Committee to Recommend New Mortality Tables has concluded that it is time to replace the 1958 CSO Table in the laws, and it has prepared a new table (Table K) for the purpose. The Society Committee's "Report on New Mortality Tables for Valuation of Individual Ordinary Insurance," which had been sent to the Society's Board of Governors, was included as an exposure draft attached to the June 1979 report of the NAIC Technical Task Force to Review Valuation and Nonforfeiture Value Regulation. The new table was discussed at the annual meeting of the Society of Actuaries in October 1979. We recommend that a new table similar or identical to Table K be adopted by the NAIC and that state insurance commissioners be authorized to permit the use of further updates in mortality tables in the future if they are recommended by the NAIC.

3. Change in Excess Initial Expense Allowance in Standard Nonforfeiture Law for Life Insurance

The proposed amendments would change the excess initial expense allowance in the formula in the Standard Nonforfeiture Law for Life Insurance to reduce the minimum nonforfeiture values for most permanent policies. For level-premium whole life insurance the formula for computing the excess initial expense allowance would be changed from 65% of premium plus $20 per $1000 of insurance to 125% of premium plus $10 per $1000 of insurance.

For non-level-premium policies, an additional change contained in the proposal would make the initial expense allowance much less dependent on the size of the first-year premium than it otherwise would be, thereby increasing the minimum nonforfeiture values for high first-year-premium policies. More details and the rationale for the new formula may be found in the paper, "Expense Formulas for Minimum Nonforfeiture Values," by C.F.B. Richardson, in the Transactions of the Society of Actuaries, Vol. XXIX, 1977, p. 209.

4. Other Changes in Standard Nonforfeiture Law for Life Insurance

The proposal would also make a number of detail changes in the Standard Nonforfeiture Law for Life Insurance designed to simplify compliance with the law in various circumstances. A previous draft of these proposed changes dated October 6, 1977 has been exposed to the NAIC Technical Task Force to Review Valuation and Nonforfeiture Value Regulation. Differences between the current proposal and tht draft are noted in a footnote in the Summary of Recommended Changes in the Standard Nonforfeiture Law for Life Insurance in the attached memorandum. Additional background on the proposal may be found in the "Report on Actuarial Principles and Practical Problems with Regard to Nonforfeiture Requirements" in the Transactions of the Society of Actuaries, Vol. XXVII, 1975, p. 549.

SUMMARY OF
RECOMMENDED CHANGES IN STANDARD NONFORFEITURE
LAW FOR LIFE INSURANCE

Recommendation*	Reason	Section of Law Which Must Be Changed To Effect Recommendation*
1. Retain adjusted premium method.	It has worked reasonably well.	No change needed.
2. Base adjusted premium on expense allowances related to nonforfeiture net premium.	To remove circularity and complexity from formula, especially in the case of non-level premium policies.	Section 5-5

Recommendation	Reason	Section of Law Which Must Be Changed To Effect Recommendation
3. Decrease the per $1000 component and increase the percent of premium component of the excess initial expense allowance.	To reflect changes in relative expense levels.	Section 5-c
4. Effect of inflation on excess initial expense allowance does not appear substantial.	Average size policy is increasing.	No change needed (other than as in Recommendation 3).
5. Base equivalent level amounts on the first 10 years under the policy.	Initial per $1000 underwriting expenses are most logically related to amounts of insurance in the early years. This formula is less susceptible to manipulation.	Section 5-c
6. Base excess initial expense allowances on levelized net premiums rather than first year adjusted premium.	To produce identical excess initial expense allowances for policies with identical benefits and identical premium paying periods.	Section 5-c
7. Remove per policy costs from gross premiums in determining nonforfeiture value net premiums.	To avoid requiring slightly different nonforfeiture values for each size policy where premiums are not level by duration.	Section 5-c
8. Base excess initial expense allowance on the automatic track for multi-track policies. Allow for additional initial expense allowance on increase in premium at point of increase.	It would be unfair to force all companies into lowest possible expense posture to control a limited number of abuses. At time of premium increase there are additional sales and underwriting expenses.	Section 5-c
9. Base excess initial expense allowance for life-cycle and open policies on similar approach to that used for multi-track policies with additional allowances on increases.	See 8 above.	Section 5-c
Do not use retrospective accumulation of gross premiums. Give broad regulatory freedom to approve completely "open" and undefined policies.	Avoids rate regulation and inconsistencies with adjusted premium approach. There is need to allow freedom for experimentation with new products.	Section 6
10. Establish a procedure to facilitate approval of and to promote flexibility of product designs which are not contemplated by the current Standard Nonforfeiture Law.	To permit the development of new product designs which might be beneficial to the public and would otherwise be inhibited by a nonforfeiture law which is designed to fit more traditional products.	Section 6

Recommendation	Reason	Section of Law Which Must Be Changed To Effect Recommendation
11. Provide for automatic adjustment of statutory nonforfeiture interest rates on a basis similar to that proposed for statutory valuation interest rates.	To avoid having to seek legislation in all jurisidctions each time a change in the interest rate is needed.	Section 5-c
12. New mortality table is recommended.	Life insurance mortality has improved significantly from the experience underlying the 1958 CSO Mortality Table.	Section 5-c
13. Mortality table should include margins.	Tendency toward lower premium forms may produce higher mortality in the future; individual company business varies from the average of the study; margins are needed to provide expenses on paid-up insurance benefits.	No change needed.
14. A six-year age setback would reasonably approximate separate tables for males and females for determining whole life cash values, but separate male and female mortality rates should be developed as part of the new statutory mortality basis.	To more accurately reflect the difference between male and female mortality in nonforfeiture calcula-tions.	Section 5-c
15. Permit other alternatives in deter-mining nonforfeiture values on substandard policies.	There is need to permit other innovative treatment of substandard risks (e.g., graded death benefits).	Section 5-c
16. Policies that never give rise to nonforfeiture values in excess of 2½% of the death benefit at any duration should be exempted.	It is unwieldy and uneconomical to provide trivial nonforfeiture values.	Section 8
17. Extend term insurance exemption from nonforfeiture values to term of 20 years or less expiring before age 71.	Reduces nonforfeiture value incon-sistencies between exempt term plans and longer duration term plans.	Section 8
18. Term riders should be treated as separate policies under a severability principle.	The present law impedes utilization of supplemental term riders because it unnecessarily complicates nonfor-feiture value calculation.	Section 3
19. Treat renewable and convertible term policies as a series of short-term policies for nonforfeiture purposes. Decide this on nature of the coverage.	Not to take this view is contrary to nature of the coverage and requires cash values on term insurance.	No change needed.

Recommendation	Reason	Section of Law Which Must Be Changed To Effect Recommendation
20. Treat deposit of deposit term and deposit whole life as an integral part of the plan and not as a pure term insurance plan.	To ensure that nonforfeiture values equitably reflect the value of the deposit.	Sections 5-c and Section 8
21. Use a single interest rate for statutory minimum cash values.	To eliminate linkage with the valuation and policy cash value interest rates.	Section 5-c and Section 6 of the Standard Valuation Law.
22. Guaranteed paid-up options should be those purchased by cash value on any interest rate at least as high as that specified in the contract for cash values.	To maintain parity between paid-up options before and after lapse but permit companies to offer more liberal paid-up options.	Section 5-c
23. The cash value mortality table should be used for determining guaranteed paid-up values, except that extended term should employ higher mortality.	Extended term mortality is poorer than paid-up mortality.	Section 5-c
24. Specific expense loadings in paid-up option guarantees are not recommended.	Since expense allowances for options which may come into effect many years in the future are imprecise, it is more practical to allow for paid-expenses through mortality and interest margins.	No change needed.
25. Substitute purchase bases granting larger than guaranteed amounts should be permitted for nonforfeiture insurance options and paid-up dividend additions.	To allow companies to offer more liberal nonparticipating nonforfeiture insurance options and paid-up dividend additions than those guaranteed in the policy.	Section 2(a) and Section 5-c
26. Complete exposition of nonforfeiture values in a policy table should not be required for multi-track or "open" plans.	To avoid showing tables of values which will quickly become obsolete and meaningless to the policyholder.	Section 2(e)
27. Single premium life minimum cash values should be based on the same interest rate as is used for annual premium policies.	Over the long term, there is little justification for establishing a different statutory nonforfeiture interest rate for single premium life insurance. Using the same rate as for annual premium life would still enable companies to offer a viable product.	Section 5-c
28. Deferred annuities should be subject to minimum cash value requirements based on an accumulation of premiums after exclusion.	Nonforfeiture values are appropriate during deferred period and the accumulation method is better understood by the public.	No change needed, since the Standard Nonforfeiture Law for Individual Deferred Annuities adopted by the NAIC in 1976 implements this recommendation.

Recommendation	Reason	Section of Law Which Must Be Changed To Effect Recommendation
29. Nonforfeiture values should not be required in accident and health insurance with the possible exception of return of premium contracts.	Except for return of premium policies, health insurance is like term life insurance in that it generally would produce only trivial nonforfeiture values.	No change needed.
30. Technical matters needing further consideration are refund of unearned premiums at death, fractional modes, age nearest and last birthday bases, family policies, uniform seniority rule and removal of requirement for complex or confusing policy provisions relating to cash values.	To clarify and simplify calculation of minimum nonforfeiture values.	Section 3, Section 5-c and Section 7
31. Permit the Commissioner to adopt new mortality tables, under certain conditions.	To avoid the need for periodic legislation to keep the mortality tables up to date.	Section 5-c
32. Permit the Commissioner to change, under certain conditions, the method of determining the "reference interest rate" which triggers automatic changes in the nonforfeiture interest rate standard.	To enable a prompt substitution for the method contained in the law if that method becomes inappropriate.	Section 5-c
33. Permit insurers to change nonforfeiture values without resubmitting the entire policy form for approval.	To avoid unnecessary administrative expense and delay which might arise due to frequent changes in the nonforfeiture interest rate standard.	Section 5-c

APPENDIX I

REFERENCE INTEREST RATE INDEX

The reference interest rate index that is proposed for a calendar year y is: for products where financial results are more directly related to yields on current investments, the 12-month average, ending on June 30 of that year, of Moody's Average of Yields on Seasoned Aa Public Utility Bonds; for other products, the lesser of the above-described 12-month average and a similar 36-month average ending on the same date.

Reference Rate Period. For products where financial results are more directly related to yields on current investments the recent period is the more appropriate, but for annual premium business a longer and more stable platform is desirable for basing a projection of future interest rates. By using the lower of a 36-month and a 12-month running average, a two-way conservatism is introduced. If the 12-month average is higher, use of the 36-month average avoids the prospect of a short-term "spike" in interest rates that fall soon afterwards; if the 12-month average is lower, using it protects against the possibility that the latest development portends a continuing lower level.

June was chosen as the end point of the moving averages in order to provide the best overall fit between 12-month moving averages of Moody's Aa yields and calendar-year gross yields on new investments for large life insurance companies. Such a lag would be expected because of the forward commitment of funds for direct placements and commercial mortgages.

Correlation Studies. Two studies were made of the correlation between the gross yields on new investments of life insurance companies and the Moody's Average of Yields on Seasoned Aa Public Utility Bonds.

The first involved nine large companies, and the results are summarized in Table I-A. As indicated, the period covered by the study ranged from 10 to 27 years, varying by company. The average gross yield Y on new investments for these companies was $0.895X + 1.307\%$, where X is the average for the calendar year of the Moody's Average (see columns (2) and (3) of Table I-A), and the average correlation (R^2) between X and Y was 95 percent (see column (4)).

The second study covered an expanded list of 55 companies — 14 companies with new investments in 1977 of $500 million or more (large companies, 23 companies with new investments of $100 to $500 million (intermediate companies), and 18 companies with new investments of less than $100 million (small companies). The results of this study are summarized in Table I-B. In this study, the gross yields on new investments were correlated with the 12-month average, ending in June of the Moody's Average. For the 55 companies, the average correlation weighted by amount invested was 97 percent, and the average unweighted correlation was 85 percent (see column (3)). For the large and intermediate companies, the correlations were over 90 percent. The coefficients of the least-squares regression lines relating the new investment yields and the Moody's Average are shown in columns (1) and (2) of Table I-B.

Margins in Reference Interest Rate Index. An analysis also was made of the margins for the years 1974-77 of (i) the gross yields on new investments of the 55 companies included in the correlation study over (ii) the reference interest rates. The results are shown in Tables I-C and I-D.

For the reference interest rate determined as the lower of the 12-month and 36-month averages of Moody's Average (Table I-C), the average margins for the 55 companies ranged from 0.45 percent (1977, unweighted basis) to 1.50 percent (1975, weighted basis). The number of companies earning less than the reference rate was 0 in 1974, one in 1975, 10 in 1976, and four in 1977.

For the reference interest rate determined as simply the 12-month average of Moody's Average (Table I-D), the average margins for the 55 companies ranged from 0.21 percent (1976, unweighted basis) to 0.89 percent (1974, unweighted basis). The number of companies earning less than the reference rate was 0 in 1974, 10 in 1975, 21 in 1976, and 4 in 1977.

APPENDIX II

DEVELOPMENT AND TESTING OF
WEIGHTING FACTORS

Contents

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    2.   Determination of Interest Available and Interest Required
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B.   PRODUCT ASSUMPTIONS

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    2.   Deferred Annuities
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E.   SENSITIVITY TESTS

A.   METHODOLOGY

    1.   Introduction

The valuation interest rates produced according to a proposed set of weighting factors can be tested for adequacy and for consistency. Due to the subjective nature of future interest rate assumptions, relative consistency among a set of valuation interest rates for various products is perhaps easier to demonstrate than the absolute adequacy of the rates.

The basic method used to test the valuation interest rates produced according to a proposed set of weighting factors is not a test of reserve adequacy as such, since that would depend on many factors other than interest rates. Rather, our tests focus on the interest assumption alone by making a comparison of (A) with (B), as follows:

(A)   Projected interest available on reserve assets (according to specified investment assumptions applied to projected cash flows generated under specified product assumptions).

(B)   Projected interest required on reserve liabilities (at the valuation interest rate, or rates, being tested).

Relative to a given set of investment assumptions and product assumptions, a valuation interest rate can be judged "adequate" if (A) exceeds (B). A set of valuation interest rates for different product types can be judged "consistent" if the relationship of (A) to (B) is similar for the different product types.

The comparison of (A) with (B) can be made over various projection periods.

    2.   Determination of Interest Available and Interest Required

The detailed methodology underlying the test consists of a year-by-year projection of interest available on reserve assets and interest required on reserve liabilities. These projections are based on product assumptions (which vary from product type to product type) and investment assumptions (common to all product types).

Product assumptions, in general, specify (at annual intervals, for simplicity):

(1)   projected benefit payments,

(2)   projected net valuation premium receipts,

(3)   projected administrative expenses and FIT expenses (but only to the extent that gross investment income, rather than gross premium, is assumed to be the source of cash to pay these expenses on a current basis),

(4)   assumed valuation interest rates, and

(5)   projected valuation reserve liabilities.

Investment assumptions specify (at annual intervals):

(1)   projected reference rates,

(2)   adjustments to convert the reference rates to annual effective rates earned,

(3)   projected credit risk losses (actually, the assumed level cost thereof), and

(4)   projected investment expenses.

In addition, the investment assumptions specify a basic investment survival schedule which projects, at annual intervals measured from the time an investment is made, the proportion of the original principal still outstanding on an investment (and still earning the original yield rate secured at the time the investment was made). They also specify an unscheduled prepayment (or refunding) survival table which projects, depending on how far yield rates have declined since the time an investment was made, what proportion of the principal surviving according to the basic schedule will have also survived the risk of unscheduled prepayment. A prepayment penalty is assumed to be paid by the borrower at the time he makes an unscheduled prepayment.

A year-by-year projection of interest available on reserve assets and interest required on reserve liabilities is developed on the basis of these assumptions. For each point in time in the projection period, investable funds (i.e., net cash available in the reserve asset account to make new investments) are developed, equal to:

        net valuation premiums received,

    plus rollover of reserve assets,

    plus interest available on reserve assets,

    minus benefit payments made,

    minus profits (i.e., the surplus account is assumed to absorb profits and subsidize losses on a cash basis).

Net valuation premiums received come from the product assumptions.

Rollover of reserve assets is developed by comparing the distribution of reserve assets by time of investment for successive points in time.

For a given point in time, the distribution of reserve assets by time of investment is developed by applying the basic investment survival schedule and the unscheduled prepayment survival table (both from the investment assumptions) to the investable funds developed at all previous points in time and by assuming current investment of current investable funds.

Interest available on reserve assets at each point in time is developed by applying the net yield rates secured at the time investments were made to the distribution of reserve assets by time of investment, and then deducting administrative expenses and FIT expenses (to the extent that gross investment income, rather than gross premiums, is assumed to be the source of cash to pay these expenses on a current basis).

The net yield rate secured at the time an investment was made is equal to:

> The reference rate at the time the investment was made,

> plus the adjustment to convert to annual effective rate earned,

> minus the credit risk cost,

> minus the investment expense

(All from the investment assumptions).

Administrative expenses and FIT expenses come from the product assumptions.

Benefit payments come from the product assumptions.

Profits are the balancing item to bring reserve assets equal to reserve liabilities at each point in time.

The investable funds developed through the calculation just described are assumed to purchase new investments in the reserve asset account and the process can continue. It is possible for the investable funds to be negative at some points in time. The implicit assumption is a diversion of cash flow attributable to other policies. The resulting "negative interest" terms in subsequent interest available calculations are logically consistent with this interpretation, since the "other policies" involved must be assumed to require the yield rates available at the time the cash flow was diverted (because, among other reasons, they are being valued by dynamic standards!)

Interest required on reserve liabilities at each point in time is developed by applying the assumed valuation interest rate to the reserve liabilities (both of which come from the product assumptions).

3. Interpretive Statistics

Based on a set of assumptions, the foregoing calculation establishes:

(A)   projected interest available on reserve assets on a year-by-year basis, and

(B)   projected interest required on reserve liabilities on a year-by-year basis.

The very concept of a level valuation rate higher than the ultimate rate to which interest rates may fall involves a recognition that, on a year-by-year basis, reserve interest requirements may sometimes have to be funded from sources other than just current investment income on reserve assets. Granted this point, which seems unavoidable if level valuation rates dynamic by year-of-issue are to be maintained, the crucial question is how to assure that any insufficiency in current interest available on reserve assets will not become unreasonable in relation to the "other sources" to fund reserve interest requirements.

In practice, there could be many "other sources" to fund any current interest deficiencies. From a theoretical point of view, however, it seems logical to require at a minimum that funding for current interest deficiencies be conceived of as coming strictly from excess interest earned in prior years and withheld in surplus. Then, at a minimum, we can argue that the total contribution made over time by interest on reserve assets is commensurate with the total demand made over time by the reserve interest requirements.

For this reason, we decided to summarize the results of our tests by computing and comparing:

(A)   interest available on reserve assets <u>on average over time</u>, and

(B)   interest required on reserve liabilities <u>on average over time</u>.

Thus, we did not test the overall adequacy of reserves, as such, but only the adequacy of the reserve interest rate assumption considered alone. Our test results (unlike the results of an asset share test) were completely insulated from any source of gain and loss other than discrepancies between interest available and interest required on the reserves and our test results (unlike the results of an asset share test) did not include any interest earnings on emerging surplus assets.

Technically, we summarized our test results by comparing (A) and (B) in terms of four statistics:

(1)   average annual excess interest rate over the projection period,

(2)   worse average annual excess interest rate over the projection period,

(3)   average annual interest deficiency over the projection period, and

(4)   worst average annual interest deficiency over the projection period.

<u>Definitions</u>

Let R_t = dollar amount of projected reserve at time t.

$\quad$ A_t = dollar amount of projected interest available at time t.

$\quad$ B_t = dollar amount of projected interest required at time t.

$\quad$ a_t = $\dfrac{A_t}{R_{t-1}}$ = rate of projected interest available at time t, $R_{t-1} \neq 0$.

$\quad$ b_t = $\dfrac{B_t}{R_{t-1}}$ = rate of projected interest required at time t, $R_{t-1} \neq 0$.

$\quad$ p   = length of projection period.

Then

$$AAEIR_n = \frac{\sum\limits_{t=1}^{n} (A_t - B_t)}{\sum\limits_{T=1}^{n} R_{t-1}} = \text{average annual excess interest rate for each n.}$$

$\qquad$ If $R_{t-1} \neq 0$ for t=1, . . ., n

then

$$AAEIR_n = \frac{\sum\limits_{t=1}^{n} (A_t - B_t) R_{t-1}}{\sum\limits_{t=1}^{n} R_{t-1}}$$

so $AAEIR_n$ is a weighted average of annual excess interest rates.

If $R_{t-1} = 0$ for some t's in the range 1, . . ., n, then $AAEIR_n$ is the proper generalization of the weighted average concept.

Statistic (1), the average annual excess interest rate over the projection period, is defined to be $AAEIR_p$. The weighting factors that we recommend are based on requiring this statistic to be zero in a highly pessimistic interest rate scenario.

Statistic (2), the worst average annual excess interest rate over the projection period, is defined to be the smallest of $AAEIR_1$, $AAEIR_2$, . . ., $AAEIR_p$.

These two statistics alone give no information about the further question of whether the current interest deficiencies that develop in the later years of our projections are reasonable in relation to the presumed source to fund them, the prior years excess interest withheld in surplus. Certainly, the surplus associated in practice with a given block of business does not represent in any simple way an accumulation of all profits (from interest or any other source) generated by that block of business. More likely, the surplus associated with a given block of business is managed in practice so as to bear something like a constant ratio to the reserves on that block of business, independently of its profit experience. Early on this is accomplished by relying on retained profits from other blocks of buisness; later on by disbursing excess profits as dividends to policyholders and/or shareholders and by devoting part of any retained profits to support surplus requirements on new or unprofitable blocks of buisness.

In short, it is far from clear what a reasonable assumption might be about the fate of the excess interest earned in the early years of our projections, whether it would in fact be withheld in surplus (perhaps accumulated at interest) or whether it would be "spent" to other purposes before the current interest insufficiencies develop later on in the projections. Therefore, we made no assumption in this regard.

The purpose of the two additional statistics, the "average annual interest deficiency" statistics, is to at least measure the extent to which interest available may be insufficient to cover interest required over some part of the projection period, independently of whether it's sufficient over the project period taken as a whole. They do this essentially by excluding accumulated positive results from the calculation of the averages. Their definitions are as follows:

Let AD_t = accumulated difference at time t

$$= \sum_{R=1}^{t} (A_R - B_R), (AD_o = 0)$$

For a given n, let m be such that AD_m is the largest of AD_o, AD_1, . . ., AD_n.

Let $N_t = 0$ for $t = 1, 2, . . ., m$.

Let $N_t = (A_t - B_t)$ for $t = m+1, m+2, . . ., n$.

Then

$$AAID_n = \frac{\sum_{t=1}^{n} Nt}{\sum_{t=1}^{n} R_{t-1}} = \text{the average annual interest deficiency for each n.}$$

If $R_{t-1} \neq 0$ for $t=1, . . ., n$,

then

$$AAID_n = \frac{\sum_{t=m+1}^{n} (a_t - b_t) R_{t-1}}{\sum_{t=1}^{n} R_{t-1}}$$

so $AAID_n$ is a weighted average comparable to $AAEIR_n$, with zeroes placed in the average for $5=1, 2, . . ., m$.

Statistic (3), the average annual interest deficiency over projection period, is defined to be $AAID_p$.

Statistic (4), the worst average annual interest deficiency over the projection period, is defined to be the smallest of $AAID_1, AAID_2, \ldots, AAID_p$.

The point of these rather elaborate definitions is that statistics designed to measure the extent to which the current interest available may be insufficient to cover current interest required ought to have three characteristics:

(1)   They ought to reflect the extent as well as the depth of any insufficiencies. A long period of successive bad years should weigh more heavily than a single bad year. Thus, AAID (as just defined) sums the insufficiencies over any string of bad years.

(2)   They ought to reflect the relative importance of the insufficiency within the whole pattern of reserve development. An x% insufficiency at a time when reserves have shrunk to immaterial levels should not weigh as heavily as an x% insufficiency at a time when reserves are at a maximum. Thus, AAID relates the insufficiencies to an average reserve exposure rather than to the reserves exposed in the years of insufficiency alone.

(3)   They ought to permit valid comparisons from product type to product type. Thus, AAID is consistently expressed for all product types as a proportion of the total reserves exposed during the whole period since inception of the contract.

        4.   Model Operation

A computer model was built to implement the methodology described here. Based on an assumed projection period, investment assumptions, and product assumptions (including an assumed valuation interest rate), the model performs the year-by-year calculations to determine interest available and interest required and then summarizes the year-by-year results in terms of the four aggregate statistics just defined.

The model has the capacity to vary the assumed valuation interest rate until it achieves a specified target value for any one of the four aggregate statistics. Typically, for a given set of assumptions (including a very pessimistic interest rate assumption), we target the model to produce a value of zero for Statistic (1), the average annual excess interest rate over the project period. The model gives back the valuation interest rate which must be assumed in order to produce that target value (i.e., which makes average interest available in the pessimistic scenario equal average interest required by the valuation rate). The valuation rate thus produced can be translated into a weighting factor.

B.   PRODUCT ASSUMPTIONS

        1.   Life Insurance

For annual and single premium life insurance --

        -- Issue age: 35 ;

        -- Mortality: Table K, Male;

        -- Persistency, annual premium: 75% of LIMRA 1971-72 Expected Lapse Rates, Table 3, durations 1 thru 10, 1.75% lapse rates, durations 11 and over; single premium: 1.75% lapse rates, all durations;

        -- Federal income Tax: Menge Formula applied to net level premium reserves; i.e., phase I tax is charged against investment income;

        -- Administrative expense: none for annual premium, 10 basis points for single premium;

        -- Net premiums and reserves: Commissioners Reserve Valuation Method.

        2.   Deferred Annuities

(a)   Individual Deferred Annuities

For annual and single premium deferred annuities –

- Issue ages: 30, 45, 50, 55, and 60, maturing at age 62;

- Mortality: 1971 IAM Table, Male;

- Persistency: annual premium deferred annuities, same as for annual premium life, above; single premium deferred annuities: 2% lapse rate, all durations;

- Federal Income Tax: nonqualified, same as life insurance; qualified, 15 basis points is charged against investment income;

- Administrative expense: 25 basis points;

- Settlement basis: Cash value at maturity; no death benefits;

- Net premiums and reserves: First year premium equals 80% of renewal premiums. (For single premium, not applicable.)

(b)   Group Deferred Annuities

For single premium deferred annuities –

- Issue ages: same as Individual;

- Mortality: 1971 GAM Table, Male;

- Persistency: not applicable; no cash value during deferral period;

- Federal Income Tax: qualified only, 15 basis points is charged against investment income;

- Administrative expense: 25 basis points;

- Settlement basis: Life income only; no death benefits;

- Net premiums and reserves: Single premium at tested valuation interest rate and mortality basis.

3.   Single Premium Immediate Annuities

(a)   Individual Single Premium Immediate Annuities

- Issue age: 62;

- Mortality: 1971 IAM Table, Male;

- Persistency: not applicable;

- Federal Income Tax: same as Deferred Annuities, above;

- Administrative expense: 25 basis points;

- Net premiums and reserves: Single premium at tested valuation interest rate and mortality basis.

(b)   Group Single Premium Immediate Annuities

Same as for Group Deferred Annuities

4.   Guaranteed Interest Contracts

— Single deposit with guaranteed interest accumulating to maturity;

— Lump sum payable at maturity; both market value and book value payments were tested;

— Maturity: all durations from 1 to 25 were tested;

— Federal Income Tax: Phase I tax based on "interest paid" treatment for guaranteed interest amounts is charged
        against investment income;

— Net premiums and reserves: on a "year-of-receipt" basis, each annual increment to the guaranteed fund is valued
        as the price of a bond whose coupon is the guaranteed rate and which is priced to yield to maturity the
        valuation interest rate applicable to that increment.

— Interest required: includes each year an additional amount sufficient to pay x% of the surplus strain incurred on
        that year's increment to the guaranteed fund, where x is equal to 100 times the ratio of the initial deposit to
        the sum of the initial deposit and all annual fund increments (this is to assure that the valuation rate on the
        original deposit makes provision for a reasonable portion of the surplus strain that will be incurred on
        subsequent fund increments if reference rates decline over time).

C.   INVESTMENT ASSUMPTIONS

    1.   Trend of Reference Rate

Both decreasing and increasing trends were tested.

(a)   Decreasing: 9% initially declining ¼% per year to 4% in the 21st and subsequent years.

(b)   Increasing: 9% initially increasing ¼% per year to 14% in the 21st and subsequent years.

    2.   Adjustments to Reference Rate

Adjustments to convert reference rate to annual effective rate earned:

(a)   First year's investments only: +.45% to reflect average margin between company investments and Moody's AA
        utilities; for conservatism, this margin is eliminated for all investments made after the first year. The effect is to
        relate short term products more closely to current yields while introducing a layer of conservatism for longer term
        products.

(b)   Nominal to effective yield: +.2% (assumes nominal rate is based on semi-annual coupons)

(c)   Investment expenses: —.2%

(d)   Credit risk: —.1% (to provide for default on interest and/or principal)

    3.   Repayment of Invested Assets

(a)   Normal industry experience for scheduled repayment of investments:

Year	Percent of Original Investment Remaining at Beginning of Year	Repayment as a Percent of Original Investment
1	100.0%	2.0%
2	98.0	2.5
3	95.5	3.0
4	92.5	3.5
5	89.0	4.0
6	85.0	5.0
7	80.0	6.0
8	74.0	7.0
9	67.0	7.0
10	60.0	7.0
11	53.0	6.5
12	46.5	6.0
13	40.5	5.5
14	35.0	5.0
15	30.0	4.5
16	25.5	4.0
17	21.5	3.5
18	18.0	3.5
19	14.5	3.0
20	11.5	2.5
21	9.0	2.0
22	7.0	2.0
23	5.0	2.0
24	3.0	1.5
25	1.5	1.5
26	0.0	—

(b)   Unscheduled prepayment of invested assets:

Decline in Reference Rate	Prepayment Survival Percentage
.50%	100%
1.00	95
1.50	85
2.00	70
2.50	50
3.00	15
3.50	5
4.00	0

(c)   Prepayment penalty: One semi-annual coupon (assumed to be taken into investment income at time prepayment occurs)

TEST RESULTS AND RECOMMENDED WEIGHTING FACTORS

Product Type	Average Annual Interest Available	Average Annual Interest Required	Annual Excess Interest Avg/Worst Avg	Annual Interest Deficiency Avg/Worst Avg	Implied Weighting Factor
1. Life Insurance					
Annual Premium Life (D)	5.55%	5.55%	.00/.00%	(.45)/(.45)%	.43
Single Premium Life (D)	6.03	6.03	.00/.00	(.53)/(.53)	.51
Recommended Weighting Factor--Valuation					.35
Nonforfeiture					.40

(D) Indicates decreasing reference.rate trend.

(I) Indicates increasing reference rate trend. Shown only when this assumption leads to a lower implied weighting factor.

TEST RESULTS AND RECOMMENDED WEIGHTING FACTORS

Product Type	Average Annual Interest Available	Average Annual Interest Required	Annual Excess Interest Avg/Worst Avg	Annual Interest Deficiency Avg/Worst Avg	Implied Weighting Factor
2. Deferred Annuities					
(a) Issue Ages Under 45:					
Ind. Ann. Prm. Non-Qual.---					
Issue Age 30(D)	4.87%	4.87%	.00/.00%	(.38)/(.38)%	.31
45(D)	7.06	7.06	.00/(.31)	(.12)/(.43)	.68
Ind. Sngl. Prm. Non-Qual.---					
Issue Age 30(D)	5.51	5.51	.00/.00	(.52)/(.52)	.42
45(D)	7.55	7.55	.00/(.22)	(.23)/(.45)	.76
Ind. Sngl. Prm. Qual.--					
Issue Age 30(D)	5.68	5.68	.00/.00	(.80)/(.80)	.45
45(D)	7.74	7.74	.00/(.42)	(.34)/(.76)	.79
Gr. Sngl. Prm. Qual.---					
Issue Age 30(D)	5.37	5.37	.00/.00	(.74)/(.74)	.40
45(D)	6.14	6.14	.00/.00	(.66)/(.66)	.52
Recommended Weighting Factor					.40

(D) Indicates decreasing reference rate trend.

(I) Indicates increasing reference rate trend. Shown only when this assumption leads to a lower implied weighting factor.

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TEST RESULTS AND RECOMMENDED WEIGHTING FACTORS

Product Type	Average Annual Interest Available	Average Annual Interest Required	Annual Excess Interest Avg/Worst Avg	Annual Interest Deficiency Avg/Worst Avg	Implied Weighting Factor
2. Deferred Annuities					
(b) Issue Ages 45-54:					
Ind. Ann. Prm. Non-Qual.---					
Issue Age 45 (D)	7.06%	7.06%	.00/(.31)%	(.12)/(.43)%	.68
55 (D)	8.84	8.84	.00/(.51)	(.05)/(.51)	.97
55 (I)	8.19	8.19	.00/(.08)	(.65)/(.72)	.87
Ind. Sngl. Prm. Non-Qual.---					
Issue Age 45 (D)	7.55	7.55	.00/(.22)	(.23)/(.45)	.76
55 (D)	9.34	9.34	.00/(.42)	(.02)/(.42)	1.06
55 (I)	8.02	8.02	.00/(.08)	(.55)/(.62)	.84
Ind. Sngl. Prm. Qual.---					
Issue Age 45 (D)	7.74	7.74	.00/(.42)	(.34)/(.76)	.79
55 (D)	9.50	9.50	.00/(.79)	(.03)/(.79)	1.08
55 (I)	8.11	8.11	.00/(.14)	(1.02)/(1.16)	.85
Gr. Sngl. Prm. Qual.---					
Issue Age 45 (D)	6.14	6.14	.00/.00	(.66)/(.65)	.52
55 (D)	7.26	7.26	.00/.00	(.63)/(.63)	.71
Recommended Weighting Factor					.60

(D) Indicates decreasing reference rate trend. Shown only when this assumption leads to a lower implied weighting factor.

(I) Indicates increasing reference rate trend.

3. TEST RESULTS AND RECOMMENDED WEIGHTING FACTORS

Product Type	Average Annual Interest Available	Average Annual Interest Required	Annual Excess Interest Avg/Worst Avg	Annual Interest Deficiency Avg/Worst Avg	Implied Weighting Factor
2. Deferred Annuities					
(c) Issue Ages over 54:					
Ind. Ann. Prm. Non-Qual.--					
Issue Age 55(D)	8.84%	8.84%	.00/(.51)%	(.05)/(.51)%	.97
55(I)	8.19	8.19	.00/(.08)	(.65)/(.72)	.87
60(D)	10.73	10.73	.00/(1.24)	(.17)/(1.24)	1.29
60(I)	7.41	7.41	.00/(.09)	(.85)/(.93)	.74
Ind. Sngl. Prm. Non-Qual.--					
Issue Age 55(D)	9.34	9.34	.00/(.42)	(.02)/(.42)	1.06
55(I)	8.02	8.02	.00/(.08)	(.55)/(.62)	.84
60(D)	11.28	11.28	.00/(1.41)	(.20)/(1.41)	1.38
60(I)	7.38	7.38	.00/(.09)	(.83)/(.91)	.73
Ind. Sngl. Prm. Qual.--					
Issue Age 55(D)	9.50	9.50	.00/(.79)	(.03)/(.79)	1.08
55(I)	8.11	8.11	.00/(.14)	(1.02)/(1.16)	.85
60(D)	11.53	11.53	.00/(2.61)	(.37)/(2.61)	1.42
60(I)	7.43	7.43	.00/(.15)	(1.53)/(1.69)	.74
Gr. Sngl. Prm. Qual.--					
Issue Age 55(D)	7.26	7.26	.00/.00	(.63)/(.63)	.71
60(D)	7.88	7.88	.00/.00	(.63)/(.63)	.81
Recommended Weighting Factor					.80

(D) Indicates decreasing reference rate trend.

(I) Indicates increasing reference rate trend. Shown only when this assumption leads to a lower implied weighting factor.

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D. TEST RESULTS AND RECOMMENDED WEIGHTING FACTORS

3. Single Premium
   Immediate Annuity

Product Type	Average Annual Interest Available	Average Annual Interest Required	Annual Excess Interest Avg/Worst Avg	Annual Interest Deficiency Avg/Worst Avg	Implied Weighting Factor
Individual Non-Qualified (D)	7.65%	7.65%	.00/.00%	(.41)/(.41)%	.78
Individual Qualified (D)	7.87	7.87	.00/.00	(.65)/(.65)	.81
Group Qualified (D)	8.06	8.06	.00/.00	(.60)/(.50)	.84
Recommended Weighting Factor					.85

(D) Indicates decreasing reference rate trend.

(I) Indicates increasing reference rate trend. Shown only when this assumption leads to a lower implied weighting factor.

5. TEST RESULTS AND RECOMMENDED WEIGHTING FACTORS

Product Type	Average Annual Interest Available	Average Annual Interest Required	Annual Excess Interest Avg/Worst Avg	Annual Interest Deficiency Avg/Worst Avg	Implied Weighting Factor*
4. Guaranteed Interest Contracts					
(a) Guarantee Period 10 years or less:					
Market Value Contract--					
5 years (D)	9.07%	9.07%	.00/(.08)%	.00/(.08)	1.02
10 years (D)	8.70	8.70	.00/(.04)	(.01)/(.05)	.98
Book Value Contract--					
5 years (D)	9.73	9.73	.00/(.94)	(.07)/(.94)	1.16
5 years (I)	8.49	8.49	.00/(.09)	(.65)/(.74)	.89
10 years (D)	9.01	9.01	.00/(.55)	(.05)/(.55)	1.09
10 years (I)	8.88	8.88	.00/(.05)	(.48)/(.52)	.92
Recommended Weighting Factors--Market Value Contracts					1.00
Book Value Contracts					.90

(D) Indicates decreasing reference rate trend.

(I) Indicates increasing reference rate trend. Shown only when this assumption leads to a lower implied weighting factor.

*weighting factor corresponding to valuation rate required on initial deposit. Later fund increments were valued based on the then current reference rates and weighting factors, producing a hybrid rate in the average annual interest required column.

D. TEST RESULTS AND RECOMMENDED WEIGHTING FACTORS

Product Type	Average Annual Interest Available	Average Annual Interest Required	Annual Excess Interest Avg/Worst Avg	Annual Interest Deficiency Avg/Worst Avg	Implied Weighting Factor*
4. Guaranteed Interest Contracts					
(b) Guarantee Period 10+ to 20 years:					
Market Value Contracts--					
10 years (D)	8.70	8.70	.00/(.04)	(.01)/(.05)	.98
15 years (D)	8.14	8.14	.00/(.06)	(.03)/(.09)	.93
20 years (D)	7.51	7.51	.00/(.15)	(.02)/(.17)	.93
Book Value Contracts--					
10 years (D)	9.01	9.01	.00/(.55)	(.05)/(.55)	1.09
10 years (I)	8.88	8.88	.00/(.05)	(.48)/(.52)	.92
15 Years (D)	8.40	8.40	.00/(.39)	(.02)/(.39)	1.06
15 Years (I)	9.36	9.36	.00/(.01)	(.41)/(.42)	.94
20 years (D)	7.94	7.94	.00/(.74)	(.00)/(.74)	1.18
Recommended Weighting Factors--All Contracts					.95

(D) Indicates decreasing reference rate trend.

(I) Indicates increasing reference rate trend. Shown only when this assumption leads to a lower implied weighting factor.

*Weighting factor corresponding to valuation rate required on initial deposit. Later fund increments were valued based on the then current reference rates and weighting factors, producing a hybrid rate in the average annual interest required column.

D. TEST RESULTS AND RECOMMENDED WEIGHTING FACTORS

4. Guaranteed Interest Contracts

(c) Guarantee Period over 20 years:

Product Type	Average Annual Interest Available	Average Annual Interest Required	Annual Excess Interest Avg/Worst Avg	Annual Interest Deficiency Avg/Worst Avg	Implied Weighting Factor*
Market Value Contracts--					
20 years (D)	7.51%	7.51%	.00/(.15)%	.02/(.17)%	.93%
25 years (D)	6.89	6.89	.00/(.33)	.00/(.33)	.99
Book Value Contracts--					
20 years (D)	7.94	7.94	.00/(.74)	.00/(.74)	1.18
25 years (D)	6.98	6.98	.00/(.49)	.00/(.49)	1.07
Recommended Weighting Factor--All Contracts					.90

(D) Indicates decreasing reference.rate trend.

(I) Indicates increasing reference rate trend. Shown only when this assumption leads to a lower implied weighting factor.

*Weighting factor corresponding to valuation rate required on initial deposit. Later fund increments were valued based on the then current reference rates and weighting factors, producing a hybrid rate in the average annual interest required column.

E.   SENSITIVITY TESTS

The foregoing results were tested for sensitivity to changes in the assumptions. These tests included changes in the mortality, persistency and issue age assumptions for the various product groups. The investment assumptions were also tested for sensitivity. Changes tested included various alternate trends in the reference interest rate and introduction of unscheduled prepayment of principal. The target statistics were also tested for sensitivity. As a result of this testing, it was concluded that changes in the implied weighting factors resulting from these sensitivity tests were not significantly large enough to warrant changes in the recommended weighting factors or introduction of additional variables.