

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1962 VOL. 14 PT 2**

VALUATION PROBLEMS

What office methods are being used to value:

1. Accidental death benefit and disability income benefit where amounts of insurance are varying multiples of the face amount?
2. Reducing term riders and policies? How should the amount of insurance be determined for these coverages for annual statement purposes and for purposes of Section 818(c) (2) of federal income tax law?
3. Deficiency reserves under banded rate or policy fee systems where the deficiency reserve factor varies by size of policy?

MR. JOHN M. LOFTIS: At Security Life & Trust we write 10, 15, and 20 year decreasing term riders with level gross premiums for the entire duration of the rider. True terminal reserves are negative at most durations. We reserve at all durations one-half of the gross annual premium in force.

Our policy exhibit in-force is approximately one-half of the initial coverage, held constant for the duration of the rider.

We feel that our method of valuation on these riders cannot be considered as a preliminary term reserve method. Therefore, we do not make any adjustment in these reserves under Section 818 (c) (2) for income tax purposes.

We value the deficiency reserves arising from our banded premium rates on a group method by assigning a different plan code at issue. The problem usually occurs only on our nonparticipating plans for large amounts.

MR. HARWOOD ROSSER: About seven years ago Occidental of California had two billion dollars of decreasing term insurance in force on a wide variety of benefit periods, benefits, and plans and riders. They determined the true commuted value and then valued at attained age using one year term mean reserves. This is further touched on in the discussion of Mr. Donald Cody's paper on family income benefits in 1948 *TASA*.

With reference to Section 818 (c) (2) only those decreasing term plans with durations greater than 15 years are eligible for this election. Since most of these will have negative true reserves, I don't feel that it is possible to use the election and arrive at a positive reserve. Usually, both modified reserves and net level reserves are negative on these plans.

Deficiency reserves are most easily handled on a computer if you have access to it in your company. In current day rate books it is possible to have five variables enter into the calculation, namely, plan, age, sex,

amount, and duration since issue. It is possible to rearrange the deficiency reserve formula into two components, compute some valuation constants at issue and use a Karup attained age valuation approach. You would undoubtedly have a separate file for deficient premium reserves and when valuation was desired you would bring it up to date, and then sort the file so that in effect you have it in attained age order. In this way, you can apply a factor at attained age and thus substitute one variable for five.

MR. LEE H. KEMPER: While previous speakers indicated they do not make the election, even though they value these policies on a preliminary term method, the law permits valuation on a preliminary term basis and then revaluing on a net level basis using the approximate formula. I feel that preliminary term reserves on decreasing term insurance are greater than net level reserves. Consequently, if you make the election to value approximately this would give you even greater reserves than true net level.

MR. JAMES G. BRUCE: In the Hartford Life we have, since October 15, 1959, had the policy fee system by which the gross premium is the basic premium per \$1,000 multiplied by the number of thousands plus the policy fee of \$3.00 per \$1,000 not to exceed \$10.00 per policy. For those plans where the basic premium is less than the net premium we determine the number of thousands A of the minimum size policy that has a deficient premium by the formula: $A = \$10.00 \div (P - B)$ for each plan and age at issue, where P is the valuation net premium per thousand and B is the basic premium per thousand. We then sort our policy file at valuation time by age at issue within plan and by amount of insurance. All policies smaller than the critical amount described above are removed. Of course, for many of the ages at issue or plans there are no deficient policies regardless of amount.

The policies that are left are sorted by duration and divided into three groups and listed with summary cards punched for each year, plan, and age at issue, showing number of policies, and amount of insurance. These three groups are policies of amount of \$3,334 and over, \$3,333 and under, and term riders. These cards are then collated with factor cards from which the following factors are taken:

- (1) Deficiency reserve per \$1,000 of insurance,
- (2) Deficiency reserve for \$10.00 of premium.

For those groups under \$3,334 and the term riders this second factor is \$0.

The cards are then put through the calculating punch in which the re-

serve for each group (card) is calculated as the number of thousands times factor (1) minus the number of policies times factor (2).

MR. LAWRENCE C. PATZ: At United Life and Accident, we made a separate punch card file of deficiency premium reserve policies from the permanent in-force file. It became a closed file when we went to the '58 CSO table. The file is kept inactive until the quarterly statement is prepared when it is brought to current status by matching against the in-force file. Using an IBM 650, the reserve is developed by computing the net premium, taking credit for additional loading on any fractional premium policies and computing the deficiency reserve on both direct and reinsured policies.