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# Adopting U.S. GAAP Accounting for Pre-Need Plans 

by Frank J. Buck

## Introduction

Significant amounts of pre-need plans are sold in the Philippines. The benefits are designed to meet a number of known future events such as education fees, memorial benefits and payments upon retirement. In return for premiums paid, benefits are guaranteed. In some cases, inflationary increases are covered as well. Surrender values may be available for early terminations. The benefits payable on early death are, in general, modest.

This paper discusses approaches for reporting pre-need plans under the generally accepted accounting principles of the United States "U.S. GAAP."

## Background

A preneed contract, as defined in the preneed regulations, is "a contract which provides for the payment and/or performance of future service(s) or monetary considerations at the time of actual need, payable in cash or installment by plan holders at stated prices, with or without interest or insurance coverage." While the majority of life insurers consider pre-need products to be life insurance, the industry is currently regulated by the Securities and Exchange Commission and not by the Insurance Commissioner. However, there is a proposal to place the regulation under the jurisdiction of the latter implying the redassification of preneed plans from securities to insurance.

Initially, pre-need companies sold memorial plans that guaranteed the payment of interment services. Now pre-need contracts are classified into three major categories: life, pension and education. Some preneed companies also sell plans that pay for medical expense, travel, weddings and even business expansion.

Pension plans normally provide fixed payments on specific dates, usually at retirement. They do not provide pension payments contingent upon death. Likewise, education plans provide for fixed payments on specific dates. In both cases the amount of mortality and morbidity cover is small. Premium waiver on death or disability is common, but additional payments on death are usually limited to a return of premiums.

The industry has achieved phenomenal growth since the 1980s. It has consistently outpaced the life insurance industry by a wide margin. Throughout the 80s, the annual growth rate was in excess of 30 percent more than double the growth rate of the life insurance industry. By 1996, the number of preneed organizations increased to 83. It is now down to 50 following the failure of several companies.

Table 1 on page 17 shows a summary of the pre-need sales from 1994 until 2001. It also shows the sales for the first six months of each year from 1999 until 2002.

The average annual growth rate of the sales amount from 1994 through 2001 was 11 percent.

In 2000, the life insurance industry reported total first year premium income valued at PhP 6.34 billion up from PhP 5.23 billion in 1999. The total premium income for 2000 was PhP 26.9 billion. The corresponding premium for 1999 was PhP 22.4 billion. The ratio of premium income to disposable was .92 percent. More recent figures are unavailable at this time.

Compared to the earlier years when sales were restricted to memorial (life) plans, the sales composition has changed significantly. In 2002, life plans only accounted for 5 percent of total sales. Pension plans accounted for 61 percent and education plans 34 percent. The top five companies for each major category make up over 70 percent of total sales. The market leaders, based on the sales results for the first six months of 2002, are shown in the tables on pages 17 and 18.

## U.S. GAAP Accounting

Products sold by life insurers in the United States are classified into various types and accounted for according to the relevant Statement of Financial Accounting Standard "SFAS" issued by the Financial Accounting Standards Board "FASB."

SFAS 60 was the first life insurance accounting standard. It covers traditional business and distinguishes between short term and long-term products. SFAS 97 modifies the approach to limited payment contracts and deals with investment contracts and Universal

\left.|  | Table 1: Sales by Year |  |  |
| :--- | ---: | ---: | ---: |
| Year | Plans Sold | Sales Amount | Initial Collection |
| (Php) |  |  |  |$\right]$


| Table 2: Top Companies by Sales Volume of Education Plans, Q 1\&2 2002 |  |  |  |
| :--- | :---: | :---: | :---: |
| Company | Plans Sold | Sales (Php) | \% of Total Sales |
| Philam Plans, Inc. | 11,512 | $1,569,641,543$ | 27 |
| College Assurance |  |  |  |
| Plans Inc. | 39,992 | $1,207,131,792$ | 17 |
| Prudentialife Plans, Inc. | 9,247 | $868,827,388$ | 13 |
| Berkley Int'l. Plans, Inc. | 9,452 | $790,827,815$ | 11 |
| Pacific Plans, Inc. | 7,266 | $787,499,100$ | 11 |
| Top Five Companies | 77,469 | $5,223,927,638$ | 76 |
| Total Education Sales | 99,306 | $6,899,981,287$ |  |

Life-type contracts. SFAS 120 addresses participating business sold by mutual life insurers where policyholder dividends are paid in accordance with the Contribution Principle.

There are accounting standards addressing reinsurance, taxation and investments and other guidance in the form of practice bulletins, statements of accounting concepts, emerging issues task force pronouncements, etc. General industry practice has also developed over time.

The approach to accounting for life insurance products is to issue standards and guidance, but not to set out rigid rules. There are areas of interpretation, especially with products that are unusual in the United States.

## Accounting for Pre-Need Policies

Each plan should be considered on its merits and classified according to the appropriate accounting standard. Contracts are normally
long duration and terms are normally fixed, both in terms of premium payments and benefits, so that it is unlikely that SFAS 97 Universal Life would be appropriate. If there is a significant mortality or morbidity element, SFAS 60 or SFAS 97 limited pay would probably apply. If the mortality or morbidity risk is not significant, the contract should be accounted for as an investment contract under SFAS 97.

Although SFAS 97 paragraph 7 states "a mortality or morbidity risk is present if, under the terms of the contract, the enterprise is required to make payments or forego required premiums contingent upon the death or disability of an individual or group of individuals", paragraph 40 states "a nominal mortality riska risk of insignificant amount or of remote probability-is not sufficient to permit that a contract be accounted for as an insurance contract." There is no rule which determines
continued on page 18

| Table 3: Top Companies by Sales Volume of Life Plans, Q1\&2 2002 |  |  |
| :---: | :---: | :---: |
| Company | Plans Sold | Sales (Php) |
| Pacific Plans, Inc. | \% of Total Sales |  |
| Philam Plans, Inc. | $203,473,120$ | 21 |
| Prudential Plans, Inc. | $195,817,634$ | 21 |
| Loyola Plans, Inc. | $127,033,600$ | 13 |
| St. Peter Life Plans, Inc. | 2,999 | $120,306,772$ |
|  | 4,882 | $80,221,000$ |
| Top Five Companies | 4,794 | $726,852,126$ |
| Total Life Sales | 4,710 | $949,111,660$ |

Table 4: Top Companies by Sales Volume of Pension Plans, Q1\&2 2002

| Company | Plans Sold | Sales (Php) | \% of Total Sales |
| :--- | ---: | ---: | ---: |
| Philam Plans, Inc. | 34,999 | $3,335,291,786$ | 27 |
| Prudentialife Plans, Inc. | 21,348 | $1,842,625,385$ | 15 |
| Loyola Plans, Inc. | 18,013 | $1,305,272,820$ | 11 |
| Comprehensive Annuity Plans |  |  |  |
| \& Pension Corporation | 24,970 | $1,256,741,301$ | 10 |
| TPG Corporation | 11,887 | $785,853,477$ | 6 |
|  |  |  | 70 |
| Top Five Companies | 111,217 | $8,525,784,769$ | 70 |
| Total Pension Sales | 179,705 | $12,138,993,050$ |  |

whether a mortality risk is significant or not. It is a matter of judgement.

If the plan has significant mortality or morbidity, it should be accounted for under SFAS 60 or SFAS 97 limited pay. This treatment is standard and well defined. However, if the mortality risk is insignificant and SFAS 97 investment contract is appropriate, the methodology is less well defined. The balance of this paper describes approaches for reporting under SFAS 97-investment contract methodology.

## Interpreting SFAS 97Investment Contracts

SFAS 97 paragraph 15 says that investment contracts should be "accounted for in a manner consistent with the accounting for interestbearing, or other financial instruments." Further guidance is available in Practice Bulletin 8 issued by the American Institute of Certified Public Accountants. Paragraph 7 states that the FASB 97 UL method for amortizing acquisition costs should be used if there are significant surrender charges or if the contracts yield significant revenues from
sources other than the investment of contract holder funds. This approach is normally used where there is a clearly defined account value (for example, U.S. SPDA contracts).

Paragraph 7 also says that the alternative is to use an accounting method that recognizes acquisition and interest costs as expenses at a constant rate applied to net policy liabilities and that is consistent with the interest method under FASB Statement No. 91.

SFAS 91 was designed for non-refundable fees and costs associated with loans. The examples in Appendix B of the statement make it clear that the methodology is (1) to project future cash flows, (2) calculate the equivalent yield such that the present value of future cash flows equals the initial cash outflow, (3) use this interest rate to calculate the carrying amount at subsequent reporting dates and (4) set the unamortized net fees equal to the difference between the remaining principal and the carrying amount.

Applying this to long-duration contracts subject to SFAS 97-I nvestment Contracts leads to the following: (1) Project future cash flows,
(2) calculate the equivalent yield such that the present value of future cash flows equals the initial cash outflow, (3) use this interest rate to calculate the net liability at subsequent reporting dates and (4) set the unamortized DAC equal to the difference between the benefit reserve and the net liability. The difficulty is in calculating the benefit reserve where there is no obvious account value.

## Example of a Pre-Need Contract

Table 5 in the appendix contains an example of a pre-need policy. Using an education plan, the appendix illustrates many of the concepts described above. The assumptions are set out in page 25.

The plan has a twenty-year duration and provides four years of education benefits and a maturity value. Premiums are payable for five years. Benefits are payable whether the policyholder is alive or dead. In addition, there is a benefit of the return of premiums upon death. There is a cash value which grades into 50 percent of premiums paid, but it is assumed that it is collected by only 30 percent of those who lapse through non-payment of premium.

The reserves are estimated and are based on Philippine statutory reserves. The mortality rates are from the 1973-78 Philippine Intercompany Table posted on the SOA Web site. (These are for illustration purposes only.)

The policy pricing on a statutory basis is shown in Table 6 on page 26 . Net present values of the various cash flow items are calculated. The net present value of the additional death benefit is 1.5 percent of the net present value of the premiums and the net present value of the waiver of premium on death is 0.5 percent of the present value of premiums. In many examples of materiality under U.S. GAAP, a level below 5 percent tends to be considered insignificant. This suggests that the mortality benefit is not significant and that this should be treated as an investment policy. It could also be argued that the substance of this contract is to provide education and maturity benefits and that the death benefit is a minor selling point.

The internal rate of return is calculated in table 7 on page 28 . If the earned interest rate were replaced with the break-even rate, the present value of gross profits in Table 6 would be zero. This internal rate of return is used in Table 8 on page 29 to calculate the net liability. This will provide the basis for the U.S. GAAP projections.

## Calculation of the Benefit Reserve and DAC

For other products under US GAAP, the benefit reserve and DAC are calculated relatively independently and the net liability is the difference between the two. For investment contracts, the net liability is calculated first and the DAC becomes the balancing item between the benefit reserve and net liability.

One approach is to apply the SFAS 91 methodology to the cash flows excluding deferrable expenses. Table 9 on page 28 shows the calculation of the internal rate of return for the cash flow excluding deferrable expenses. The resulting benefit reserve calculation appears in Table 10 on page 29. Given the amount of deferrable expenses, the resulting DAC starts at a reasonable level.

The U.S. GAAP income statement that would result is shown as table 11 on pages 26-27. It should be noted that the investment income is based on the GAAP net liability as opposed to the statutory reserves in Table 6. It should also be noted that the present value of gross profit is unchanged. The difference is the emergence of profits.

## Using a proxy account balance

 An alternative approach is to calculate a proxy account balance for the benefit reserve. One method could be to look at the policy from the point of view of a policyholder who keeps the policy in force. This approach is shown in Appendix on Table 12 on page 36 and Table 13 on pages 32-33). The GAAP earnings are unchanged, but both benefit reserve and DAC are lower.
## Using SFAS 60 / SFAS 97 Limited Pay

If it could be argued that there was a sufficient mortality benefit, the treatment would be as for a traditional plan. Appendix 3 (tables 14 and 15) shows how this approach would work. DAC would be written off over the premium paying period and, as the premiums are payable over a period less than the benefit period, an Unearned Revenue Reserve would be established. In this example, profits would emerge approximately in proportion to the in force and, although the total profits would be the same, would be higher in the early years.

## Product Classification

The pre-need business consists of education plans, pension plans and life plans. Our initial

The pre-need business consists of education plans, pension plans and life plans. Our initial review of current business suggests that there is minimal mortality benefit in the pension plans...


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review of current business suggests that there is minimal mortality benefit in the pension plans, a small mortality benefit in the education plans and significant mortality in the life plans. This suggests SFAS 97 investment contract treatment for the pension plans, SFAS 60 / SFAS 97 limited pay for the life plan and probably SFAS 97 investment contracts for the education plans.

In order to classify products appropriately, a study should be made of the amount of mortality/morbidity covered by each contract. In the example given, the present value of mortality benefits, including waiver of premium on death, was 2.0 percent of the present value of premiums. If waiver of premium on disability was added, this would change to 2.2 percent, still an insignificant amount. However, other at other ages or in different plans the level could be higher.

## Summary and Conclusions

Reporting pre-need plans under US GAAP will require a careful review of the amount of mortality/morbidity benefit provided. For most education and pension plans, we believe that the mortality/morbidity benefit is minimal and that these contracts should be classified as investment contracts.

The treatment of investment contracts where there is no defined account balance is rare in the United States, however, the authoritative literature points to the equivalent yield method of SFAS 91, which, in turn, shows how to approach the calculation of the net liability.

The GAAP benefit reserve should be set equal to the account balance, if one is readily determinable, otherwise, the approach described above, where a second equivalent yield is used to obtain the benefit reserve is the suggested approach for these contracts.

## International Section Council Photos



Gathering in Boston to plan the future activities of the International Section are council members (left to right) Rejean Besner, Marc Slutzky, Randy Makin (newsletter editor), Shumei Kuo (2002-2003 section chairperson), Lisa Kuklinski-Ramirez (2001-2002 section chairperson), Carl Khor, Hubert Mueller (retiring council member) and Michael Enright.

Shumei Kuo, incoming International Section chairperson, presents a gift of appreciation to Lisa KulinksiRamirez, retiring section chairperson.


Members of the International Section enjoying the ambience of the Old South Meeting House during the section reception in Boston.

## Appendix


Assumes premiums and expenses are at start of year
Surrender benefits and maturity benefits are at the end of the year
Education and death benefits are in the middle of the year
Mortality is 1973-78 Phillipine Intercompany Table - (Source: SOA Web site) Statutory Reserves are approximate

| Table 6: Pricing For Sample Education Plan |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | In <br> Force | In Force <br> For <br> Benefits | Total <br> Premium Income | Investment Income | Total Income | Surrender <br> Benefit <br> Outgo | Additional <br> Death <br> Beneftit | Education <br> Benefit <br> Outgo | M aturity Benefit Outgo |
| 1 | 10000 | 10000 | 11,500 | 117 | 11,617 | 276 | 26 | - | - |
| 2 | 0.5977 | 0.6000 | 6,874 | 897 | 7,771 | 309 | 32 | - | - |
| 3 | 0.4469 | 0.4500 | 5,139 | 1,166 | 6,305 | 370 | 37 | - | - |
| 4 | 0.3564 | 0.3600 | 4,099 | 1,302 | 5,401 | 246 | 42 | - | - |
| 5 | 0.3199 | 0.3240 | 3,679 | 1,527 | 5,206 | 460 | 49 | - | - |
| 6 | 0.3030 | 0.3078 | - | 1,446 | 1,446 | 174 | 50 | - | - |
| 7 | 0.2961 | 0.3016 | - | 1,583 | 1,583 | 170 | 52 | - | - |
| 8 | 0.2893 | 0.2956 | - | 1,753 | 1,753 | 166 | 54 | - | - |
| 9 | 0.2826 | 0.2897 | - | 1,957 | 1,957 | 162 | 57 | - | - |
| 10 | 0.2759 | 0.2839 | - | 2,171 | 2,171 | 159 | 60 | - | - |
| 11 | 0.2694 | 0.2782 | - | 2,433 | 2,433 | 155 | 63 | - | - |
| 12 | 0.2629 | 0.2727 | - | 2,683 | 2,683 | 151 | 66 | - | - |
| 13 | 0.2565 | 0.2672 | - | 2,996 | 2,996 | 147 | 69 | - | - |
| 14 | 0.2502 | 0.2619 | - | 3,332 | 3,332 | 144 | 72 | - | - |
| 15 | 0.2439 | 0.2566 | - | 3,723 | 3,723 | 140 | 76 | - | - |
| 16 | 0.2377 | 0.2515 | - | 3,711 | 3,711 | - | 80 | 7,230 | - |
| 17 | 0.2363 | 0.2515 | - | 3,347 | 3,347 | - | 87 | 8,677 | - |
| 18 | 0.2348 | 0.2515 | - | 2,774 | 2,774 | - | 94 | 10,123 | - |
| 19 | 0.2332 | 0.2515 | - | 1,958 | 1,958 | - | 102 | 11,569 | - |
| 20 | 0.2314 | 0.2515 | - | 1,571 | 1,571 | - | 110 | - | 14,461 |
|  |  |  |  |  |  |  |  |  |  |
|  | NPV @ | 12.0\% | 26,990 |  |  | 1,688 | 403 | 5,400 | 1,499 |
|  |  |  |  |  |  |  | 15\% |  |  |

Assumes premiums and expenses are at start of year
Surrender benefits and maturity benefits are at the end of the year
Education and death benefits are in the middle of the year




Table 8: Calculate Net Liability

|  | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Premium |  |
| Year | Value |

Internal Rate of Return
10.26\%

Table 10: Calculate Benefit Reserves and DAC

| Year | Total <br> Premium <br> Value | Surrender <br> Benefit <br> Outgo | Additional <br> Death <br> Benefit | Education <br> Benefit <br> Outgo | M aturity <br> Benefit <br> Outgo | Ongoing Expenses | Cash Flow <br> excluding <br> Deferrable <br> Expenses | Benfit <br> Reserve | Net <br> Liability | DAC |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 11,500 | 276 | 26 | - | - | 915 | 10,283 | 10,791 | 787 | 10,005 |
| 2 | 6,874 | 309 | 32 | - | - | 418 | 6,115 | 17,735 | 4,983 | 12,752 |
| 3 | 5,139 | 370 | 37 | - | - | 324 | 4,408 | 23,226 | 9,539 | 13,687 |
| 4 | 4,099 | 246 | 42 | - | - | 268 | 3,543 | 28,069 | 13,770 | 14,299 |
| 5 | 3,679 | 460 | 49 | - | - | 251 | 2,919 | 32,501 | 17,839 | 14,662 |
| 6 | - | 174 | 50 | - | - | 134 | (358) | 33,698 | 19,295 | 14,403 |
| 7 | - | 170 | 52 | - | - | 142 | (364) | 34,946 | 20,895 | 14,052 |
| 8 | - | 166 | 54 | - | - | 150 | (370) | 36,248 | 22,651 | 13,597 |
| 9 | - | 162 | 57 | - | - | 158 | (377) | 37,605 | 24,580 | 13,025 |
| 10 | - | 159 | 60 | - | - | 167 | (385) | 39,018 | 26,697 | 12,321 |
| 11 | - | 155 | 63 | - | - | 176 | (393) | 40,491 | 29,023 | 11,468 |
| 12 | - | 151 | 66 | - | - | 185 | (402) | 42,025 | 31,578 | 10,448 |
| 13 | - | 147 | 69 | - | - | 195 | (412) | 43,623 | 34,383 | 9,240 |
| 14 | - | 144 | 72 | - | - | 206 | (422) | 45,287 | 37,465 | 7,821 |
| 15 | - | 140 | 76 | - | - | 217 | (433) | 47,019 | 40,851 | 6,167 |
| 16 | - | - | 80 | 7,230 | - | 228 | $(7,539)$ | 41,556 | 37,116 | 4,440 |
| 17 | - | - | 87 | 8,677 | - | 245 | $(9,009)$ | 34,325 | 31,452 | 2,873 |
| 18 | - | - | 94 | 10,123 | - | 264 | $(10,480)$ | 25,240 | 23,662 | 1,578 |
| 19 | - | - | 102 | 11,569 | - | 283 | $(11,953)$ | 14,209 | 13,524 | 685 |
| 20 | - | - | 110 | - | 14,461 | 304 | $(14,875)$ | (0) | (0) | (0) |


| Table 11: US GAAP Income Statement |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | Total <br> Premium Income | Investment Income | Total Income | Surrender <br> Benefit <br> Outgo | Additional Death Benefit | Education <br> Benefit <br> Outgo | Maturity Benefit Outgo |
| 1 | 11,500 | 117 | 11,617 | 276 | 26 | - | - |
| 2 | 6,874 | 578 | 7,452 | 309 | 32 | - | - |
| 3 | 5,139 | 1,081 | 6,220 | 370 | 37 | - | - |
| 4 | 4,099 | 1,528 | 5,627 | 246 | 42 | - | - |
| 5 | 3,679 | 1,994 | 5,673 | 460 | 49 | - | - |
| 6 | - | 2,122 | 2,122 | 174 | 50 | - | - |
| 7 | - | 2,295 | 2,295 | 170 | 52 | - | - |
| 8 | - | 2,486 | 2,86 | 166 | 54 | - | - |
| 9 | - | 2,696 | 2,696 | 162 | 57 | - | - |
| 10 | - | 2,926 | 2,926 | 159 | 60 | - | - |
| 11 | - | 3,179 | 3,179 | 155 | 63 | - | - |
| 12 | - | 3,457 | 3,457 | 151 | 66 | - | - |
| 13 | - | 3,762 | 3,762 | 147 | 69 | - | - |
| 14 | - | 4,097 | 4,097 | 144 | 72 | - | - |
| 15 | - | 4,465 | 4,465 | 140 | 76 | - | - |
| 16 | - | 4,449 | 4,449 | - | 80 | 7,230 | - |
| 17 | - | 3,914 | 3,914 | - | 87 | 8,677 | - |
| 18 | - | 3,147 | 3,147 | - | 94 | 10,123 | - |
| 19 | - | 2,125 | 2,125 | - | 102 | 11,569 | - |
| 20 | - | 1,580 | 1,580 | - | 110 | - | 14,461 |
| NPV @ | 12.0\% |  |  |  |  |  |  |


| Initial <br> Expenses | Renewal Expenses | Commission | VAT, duties and other Taxes | Increase in Reserve | Increase <br> in DAC | Total <br> Expenses | Gross <br> Profit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1,200 | 589 | 7,475 | 1,248 | 10,791 | 10,005 | 11,600 | 17 |
| - | 366 | 1,719 | 746 | 6,943 | 2,747 | 7,368 | 84 |
| - | 286 | 257 | 558 | 5,491 | 935 | 6,064 | 156 |
| - | 238 | 205 | 445 | 4,843 | 612 | 5,406 | 221 |
| - | 223 | 184 | 399 | 4,432 | 363 | 5,384 | 289 |
| - | 134 | - | - | 1,197 | (260) | 1,815 | 307 |
| - | 142 | - | - | 1,248 | (351) | 1,963 | 332 |
| - | 150 | - | - | 1,302 | (455) | 2,126 | 360 |
| - | 158 | - | - | 1,357 | (572) | 2,306 | 390 |
| - | 167 | - | - | 1,414 | (704) | 2,503 | 423 |
| - | 176 | - | - | 1,473 | (853) | 2,719 | 460 |
| - | 185 | - | - | 1,534 | $(1,020)$ | 2,956 | 500 |
| - | 195 | - | - | 1,598 | $(1,208)$ | 3,217 | 544 |
| - | 206 | - | - | 1,664 | $(1,418)$ | 3,504 | 593 |
| - | 217 | - | - | 1,732 | $(1,654)$ | 3,819 | 646 |
| - | 228 | - | - | $(5,463)$ | $(1,727)$ | 3,803 | 645 |
| - | 245 | - | - | $(7,231)$ | $(1,567)$ | 3,345 | 568 |
| - | 264 | - | - | $(9,085)$ | $(1,295)$ | 2,690 | 457 |
| - | 283 | - | - | $(11,031)$ | (893) | 1,815 | 310 |
| - | 304 | - | - | $(14,209)$ | (685 | 1,351 | 229 |
|  |  |  |  |  |  |  | 2,157 |


| Table 13: US GAAP Income Statement |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Total |  |  | Surrender | Additional | Education | M aturity |
|  | Premium | Investment | Total | Benefit | Death | Benefit | Benefit |
| Year | Income | Income | Income | Outgo | Benefit | Outgo | Outgo |
| 1 | 11,500 | 117 | 11,617 | 276 | 26 | - | - |
| 2 | 6,874 | 578 | 7,452 | 309 | 32 | - | - |
| 3 | 5,139 | 1,081 | 6,220 | 370 | 37 | - | - |
| 4 | 4,099 | 1,528 | 5,627 | 246 | 42 | - | - |
| 5 | 3,679 | 1,994 | 5,673 | 460 | 49 | - | - |
| 6 | - | 2,122 | 2,122 | 174 | 50 | - | - |
| 7 | - | 2,295 | 2,295 | 170 | 52 | - | - |
| 8 | - | 2,486 | 2,486 | 166 | 54 | - | - |
| 9 | - | 2,696 | 2,696 | 162 | 57 | - | - |
| 10 | - | 2,926 | 2,926 | 159 | 60 | - | - |
| 11 | - | 3,179 | 3,179 | 155 | 63 | - | - |
| 12 | - | 3,457 | 3,457 | 151 | 66 | - | - |
| 13 | - | 3,762 | 3,762 | 147 | 69 | - | - |
| 14 | - | 4,097 | 4,097 | 144 | 72 | - | - |
| 15 | - | 4,465 | 4,465 | 140 | 76 | - | - |
| 16 | - | 4,449 | 4,449 | - | 80 | 7,230 | - |
| 17 | - | 3,914 | 3,914 | - | 87 | 8,677 | - |
| 18 | - | 3,147 | 3,147 | - | 94 | 10,123 | - |
| 19 | - | 2,125 | 2,125 | - | 102 | 11,569 | - |
| 20 | - | 1,580 | 1,580 | - | 110 | - | 14,461 |
| NPV @ | 12\% |  |  |  |  |  |  |


| Initial <br> Expenses | Renewal Expenses | Commission | VAT, duties and other Taxes | Increase in Reserve | Increase <br> in DAC | Total <br> Expenses | Gross Profit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1,200 | 589 | 7,475 | 1,248 | 7,486 | 6,699 | 11,600 | 17 |
| - | 366 | 1,719 | 746 | 4,220 | 24 | 7,368 | 84 |
| - | 286 | 257 | 558 | 2,946 | $(1,610)$ | 6,064 | 156 |
| - | 238 | 205 | 445 | 3,697 | (533) | 5,406 | 221 |
| - | 223 | 184 | 399 | 4,404 | 334 | 5,384 | 289 |
| - | 134 | - | - | 1,439 | (17) | 1,815 | 307 |
| - | 142 | - | - | 1,530 | (69) | 1,963 | 332 |
| - | 150 | - | - | 1,627 | (130) | 2,126 | 360 |
| - | 158 | - | - | 1,730 | (199) | 2,306 | 390 |
| - | 167 | - | - | 1,839 | (279) | 2,503 | 423 |
| - | 176 | - | - | 1,955 | (371) | 2,719 | 460 |
| - | 185 | - | - | 2,079 | (476) | 2,956 | 500 |
| - | 195 | - | - | 2,210 | (595) | 3,217 | 544 |
| - | 206 | - | - | 2,350 | (732) | 3,504 | 593 |
| - | 217 | - | - | 2,499 | (887) | 3,819 | 646 |
| - | 228 | - | - | $(3,963)$ | (227) | 3,803 | 645 |
| - | 245 | - | - | $(5,806)$ | (143) | 3,345 | 568 |
| - | 264 | - | - | $(7,805)$ | (15) | 2,690 | 457 |
| - | 283 | - | - | $(9,975)$ | 164 | 1,815 | 310 |
| - | 304 | - | - | $(14,461)$ | (937) | 1,351 | 229 |
|  |  |  |  |  |  |  | 2,157 |



| Initial <br> Expenses | Renewal Expenses | Commission | VAT, duties and other Taxes | Increase in Reserve | Increase in DAC | Total <br> Expenses | Gross <br> Profit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1,200 | 589 | 7,475 | 1,248 | 4,975 | 4,467 | 11,322 | 295 |
| - | 366 | 1,719 | 746 | 3,554 | (516) | 7,242 | 176 |
| - | 286 | 257 | 558 | 3,068 | $(1,464)$ | 6,040 | 132 |
| - | 238 | 205 | 445 | 3,048 | $(1,247)$ | 5,470 | 105 |
| - | 223 | 184 | 399 | 2,981 | $(1,239)$ | 5,535 | 94 |
| - | 134 | - | - | 1,293 | 0 | 1,652 | 445 |
| - | 142 | - | - | 1,452 | 0 | 1,816 | 434 |
| - | 150 | - | - | 1,629 | 0 | 1,999 | 424 |
| - | 158 | - | - | 1,826 | 0 | 2,203 | 415 |
| - | 167 | - | - | 2,046 | 0 | 2,431 | 405 |
| - | 176 | - | - | 2,292 | 0 | 2,685 | 395 |
| - | 185 | - | - | 2,566 | 0 | 2,968 | 386 |
| - | 195 | - | - | 2,872 | 0 | 3,284 | 376 |
| - | 206 | - | - | 3,214 | 0 | 3,636 | 367 |
| - | 217 | - | - | 3,596 | 0 | 4,030 | 358 |
| - | 228 | - | - | $(3,492)$ | 0 | 4,047 | 349 |
| - | 245 | - | - | $(5,465)$ | 0 | 3,544 | 347 |
| - | 264 | - | - | $(7,677)$ | 0 | 2,803 | 344 |
| - | 283 | - | - | $(10,156)$ | 0 | 1,797 | 342 |
| - | 304 | - | - | $(13,623)$ | 0 | 1,252 | 339 |

Table 12: Calculate Policyholder's Internal Rate Of Return Policy remains in force

| Year | Total <br> Premium Value | Education <br> Benefit <br> Outgo | Maturity Benefit Outgo | Cash <br> Flow | Benefit Reserve | In Force <br> At End | Benefit Reserve | DAC |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 11,500 | - | - | 11,500 | 12,477 | 0.6000 | 7,486 | 6,693 |
| 2 | 11,500 | - | - | 11,500 | 26,013 | 0.4500 | 11,706 | 6,708 |
| 3 | 11,500 | - | - | 11,500 | 40,700 | 0.3600 | 14,652 | 5,087 |
| 4 | 11,500 | - | - | 11,500 | 56,634 | 0.3240 | 18,349 | 4,544 |
| 5 | 11,500 | - | - | 11,500 | 73,921 | 0.3078 | 22,753 | 4,869 |
| 6 | - | - | - | - | 80,200 | 0.3016 | 24,192 | 4,849 |
| 7 | - | - | - | - | 87,012 | 0.2956 | 25,722 | 4,777 |
| 8 | - | - | - | - | 94,402 | 0.2897 | 27,348 | 4,645 |
| 9 | - | - | - | - | 102,421 | 0.2839 | 29,078 | 4,445 |
| 10 | - | - | - | - | 111,120 | 0.2782 | 30,917 | 4,165 |
| 11 | - | - | - | - | 120,559 | 0.2727 | 32,872 | 3,794 |
| 12 | - | - | - | - | 130,799 | 0.2672 | 34,951 | 3,319 |
| 13 | - | - | - | - | 141,909 | 0.2619 | 37,161 | 2,725 |
| 14 | - | - | - | - | 153,963 | 0.2566 | 39,511 | 1,997 |
| 15 | - | - | - | - | 167,040 | 0.2515 | 42,010 | 1,115 |
| 16 | - | 28,750 | - | $(28,750)$ | 151,282 | 0.2515 | 38,047 | 894 |
| 17 | - | 34,500 | - | $(34,500)$ | 128,197 | 0.2515 | 32,241 | 760 |
| 18 | - | 40,250 | - | $(40,250)$ | 97,161 | 0.2515 | 24,436 | 754 |
| 19 | - | 46,000 | - | $(46,000)$ | 57,500 | 0.2515 | 14,461 | 928 |
| 20 | - | - | 57,500 | $(57,500)$ | - | - | - | 0 |

Internal Rate of Return
8.49\%

## Table 14: SFAS 60 Calculations

| Year | Total <br> Premium Income | Surrender <br> Benefit <br> Outgo | Additional <br> Death <br> Benefit | Education <br> Benefit <br> Outgo | Maturity <br> Benefit <br> Outgo | Deferrable <br> Expenses | Ongoing <br> Expenses | In <br> Force | Benefit <br> Reserve | DAC | Unearned <br> Revenue <br> Reserve | Maint. <br> Reserve |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 11,500 | 276 | 26 | - | - | 9,597 | 915 | 1.00000 | 3,987 | 4,467 | 735 | 254 |
| 2 | 6,874 | 309 | 32 | - | - | 2,413 | 418 | 0.5977 | 6,686 | 3,950 | 1,262 | 581 |
| 3 | 5,139 | 370 | 37 | - | - | 776 | 324 | 0.4469 | 8,996 | 2,486 | 1,742 | 859 |
| 4 | 4,099 | 246 | 42 | - | - | 619 | 268 | 0.3564 | 11,315 | 1,239 | 2,212 | 1,118 |
| 5 | 3,679 | 460 | 49 | - | - | 556 | 251 | 0.3199 | 13,533 | 0 | 2,713 | 1,380 |
| 6 | - | 174 | 50 | - | - | - | 134 | 0.3030 | 14,930 | 0 | 2,594 | 1,395 |
| 7 | - | 170 | 52 | - | - | - | 142 | 0.2961 | 16,497 | 0 | 2,471 | 1,404 |
| 8 | - | 166 | 54 | - | - | - | 150 | 0.2893 | 18,252 | 0 | 2,343 | 1,405 |
| 9 | - | 162 | 57 | - | - | - | 158 | 0.2826 | 20,220 | 0 | 2,209 | 1,397 |
| 10 | - | 159 | 60 | - | - | - | 167 | 0.2759 | 22,425 | 0 | 2,070 | 1,378 |
| 11 | - | 155 | 63 | - | - | - | 176 | 0.2694 | 24,895 | 0 | 1,923 | 1,347 |
| 12 | - | 151 | 66 | - | - | - | 185 | 0.2629 | 27,661 | 0 | 1,768 | 1,301 |
| 13 | - | 147 | 69 | - | - | - | 195 | 0.2565 | 30,760 | 0 | 1,604 | 1,238 |
| 14 | - | 144 | 72 | - | - | - | 206 | 0.2502 | 34,231 | 0 | 1,429 | 1,156 |
| 15 | - | 140 | 76 | - | - | - | 217 | 0.2439 | 38,118 | 0 | 1,243 | 1,052 |
| 16 | - | - | 80 | 7,230 | - | - | 228 | 0.2377 | 34,955 | 0 | 1,043 | 932 |
| 17 | - | - | 87 | 8,677 | - | - | 245 | 0.2363 | 29,876 | 0 | 822 | 759 |
| 18 | - | - | 94 | 10,123 | - | - | 264 | 0.2348 | 22,649 | 0 | 576 | 554 |
| 19 | - | - | 102 | 11,569 | - | - | 283 | 0.2332 | 13,016 | 0 | 303 | 304 |
| 20 | - | - | 110 | - | 14,461 | - | 304 | 0.2314 | 0 | 0 | (0) | 0 |
| NPV | 26,990 | 1,688 | 403 | 5,400 | 1,499 | 13,163 | 2,680 | 3.522 |  |  |  |  |
| Benefit Net Premium |  |  | 33.3\% |  |  | NPV 5 |  | 2.347 |  |  |  |  |
| DAC Net Premium |  |  | 48.8\% |  |  |  |  |  |  |  |  |  |
| Maintenance Expense N P |  |  | 9.9\% |  |  |  |  |  |  |  |  |  |
| Excess Premium |  |  | 17.1\% |  |  |  |  |  |  |  |  |  |

