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Mr. James A. Kroll, ASA, MAAA  
Director, Actuarial Valuation  
Penn Treaty Network America  
3440 Lehigh Street  
Allentown, PA 18103

October 16, 2009

Re: **Long-term Care Assumption and Projection Analysis for Penn Treaty Network America and American Network Insurance Companies**

Dear Mr. Kroll:

Under the terms of the engagement letter dated July 27, 2009, the management of Penn Treaty Network America and American Network Insurance Company ("PTNA" and "ANIC," respectively, and "Company" collectively) has asked us to provide an analysis on the assumptions and methods used to project the Company's Long-term Care ("LTC") blocks of business in conjunction with its consideration of alternatives for rehabilitation. This report presents our findings and recommendations.

### **Background**

The Company was placed in rehabilitation under the Pennsylvania Insurance Commissioner on January 6, 2009. A subsidiary of ANIC, American Independent Network Insurance Company ("AINIC"), domiciled in the state of New York, is not currently in rehabilitation.

As part of the analysis of the feasibility of rehabilitation, the Company must develop assumptions they deem appropriate and use those assumptions to prepare financial projections. These projections are intended to be used by the Rehabilitator to determine whether or not the Company can emerge and become a viable business in the future. The focal point of the projections is the development of statutory surplus in relation to the required risk based capital.

Some of the key financial statement balances from the Company's projections referred to in our analysis are as follows:

| Item (\$ millions)                | PTNA      | ANIC    | Total     |
|-----------------------------------|-----------|---------|-----------|
| 6/30/09 Assets #                  | 963.7     | 127.1   | 1,085.2   |
| 6/30/09 Liabilities*              | 1,245.4   | 121.5   | 1,366.9   |
| 6/30/09 Surplus**                 | (281.7)   | 5.6     | (281.7)   |
| 12/31/09 Surplus – Scenario A *** | (1,352.0) | (45.0)  | (1,352.0) |
| 12/31/09 Surplus – Scenario B *** | (2,115.0) | (130.0) | (2,115.0) |
| 6/30/09 Annualized Premium        | 236.6     | 24.3    | 260.9     |

# PTNA and ANIC assets do not sum to the total because the ANIC surplus is included in both the PTNA and ANIC assets.

\* Includes claim, unearned premium and additional active life reserves

\*\* Based on statutory reserves calculated using current assumptions that the Company now believes to be unrealistic. AINIC's surplus is included in ANIC's surplus, which is then included in PTNA's surplus.

\*\*\* Projected – ANIC included in PTNA

### Projections

The inforce LTC policies for all three entities were included in the projections. (Though AINIC is not in rehabilitation, it was included as it is a subsidiary of ANIC.) The business was segmented into the following groupings:

| <u>Name</u> | <u>Contains</u>                          |
|-------------|--|
| AINIC       | All policies inforce as of June 30, 2009 |
| ANIC NewCo  | Policies issued in 2002 and later        |
| ANIC OldCo  | Policies issued prior to 2002            |
| PTNA NewCo  | Policies issued in 2002 and later        |
| PTNA OldCo  | Policies issued prior to 2002            |

Management's rationale for splitting the ANIC and PTNA blocks into NewCo and OldCo was based primarily on pricing and underwriting differences. In its view, much of the NewCo segments for both ANIC and PTNA contain policies which were priced with more conservative assumptions than the OldCo policies and the underwriting which was performed when the NewCo policies were issued was more thorough and consistent. Consequently, these blocks have performed much more favorably than the OldCo segments.

With respect to the underwriting differences, the Company reported the following:

- After a financial downturn in 2001, the Company discontinued sales until reserves and capital levels could be adequately funded. During this period, the underwriting procedures and protocols were reviewed. It was decided that when sales resumed, the underwriters were to discontinue making special concessions to agents or other marketing organizations in order to write business.
- To improve the risk selection, the Company increased the number of face-to-face and cognitive assessments, and requested medical records on the applicants more frequently.
- Applicants were also categorized into different underwriting classes by using software designed for this purpose. The end result of this was to place the applicants into appropriate risk classes more consistently and accurately than previously.

The Company measured the effectiveness of these changes by monitoring a metric referred to as a "quick hit ratio." This ratio measures the number of policies which incur a claim within one year of policy issue. The higher the ratio, the less effective underwriting was. The Company reported that after making the above changes, the ratio dropped dramatically and, in particular, cognitive claims within one year of issue were nearly eliminated.

Future statutory profits were projected under two different sets of assumptions developed and agreed to by the Company's management based on PTNA's and ANIC's experience, with consideration of industry norms and anticipated future trends. The two sets will be referred to in our report as Scenario A and Scenario B. The Company and Milliman<sup>1</sup> selected these assumptions to represent a range of best estimates and has categorized Scenario A as being more optimistic than Scenario B. The projections assume both PTNA and ANIC will be going concerns throughout the projections. Future rate increases are assumed with Scenario A having higher percentages than Scenario B. Sensitivity tests were also performed to demonstrate the leverage that variations in the assumptions have on the best estimate projections.

We analyzed the assumptions and projections. Our findings are noted below in the *Analysis of Projection Assumptions and Methods* section.

### **Executive Summary and Findings**

In our experience, the following methods and assumption selection criteria are typical industry practices for LTC carriers when performing analyses of this type.

- Projection periods are long enough such that only an immaterial amount of business remains at the end. For LTC, this period usually is in excess of 40 years. Milliman used 60 years.
- The projection model is developed so that the significant policy characteristics of each LTC plan form are represented. This is often done by creating model plans. Each plan contains the chosen characteristics and each policy in the in force block at the start of the projection is

<sup>1</sup> The projections were performed by Milliman, Inc. ("Milliman"). Milliman is an actuarial consulting firm and has much experience in performing these types of projections.

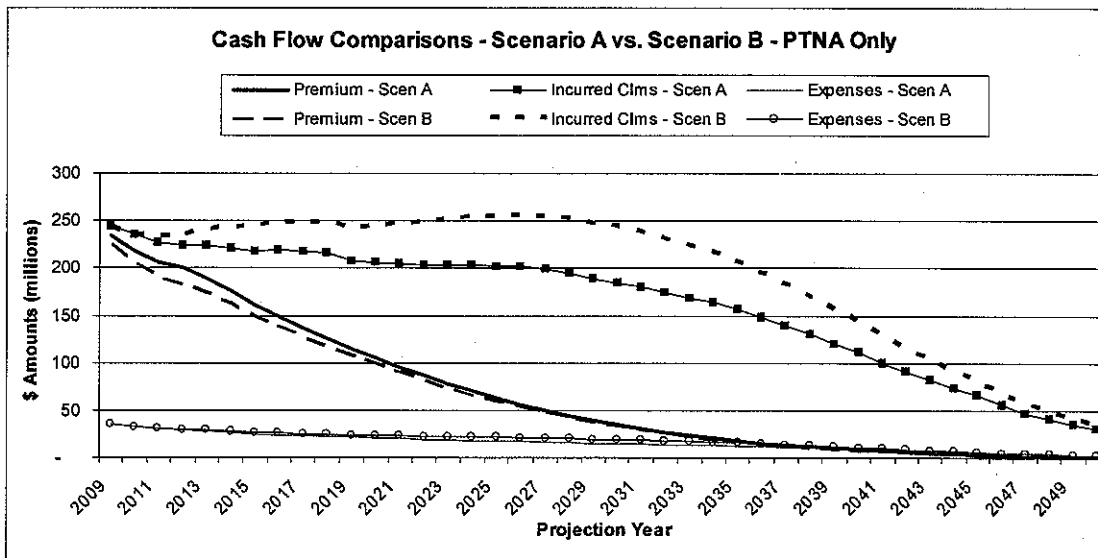
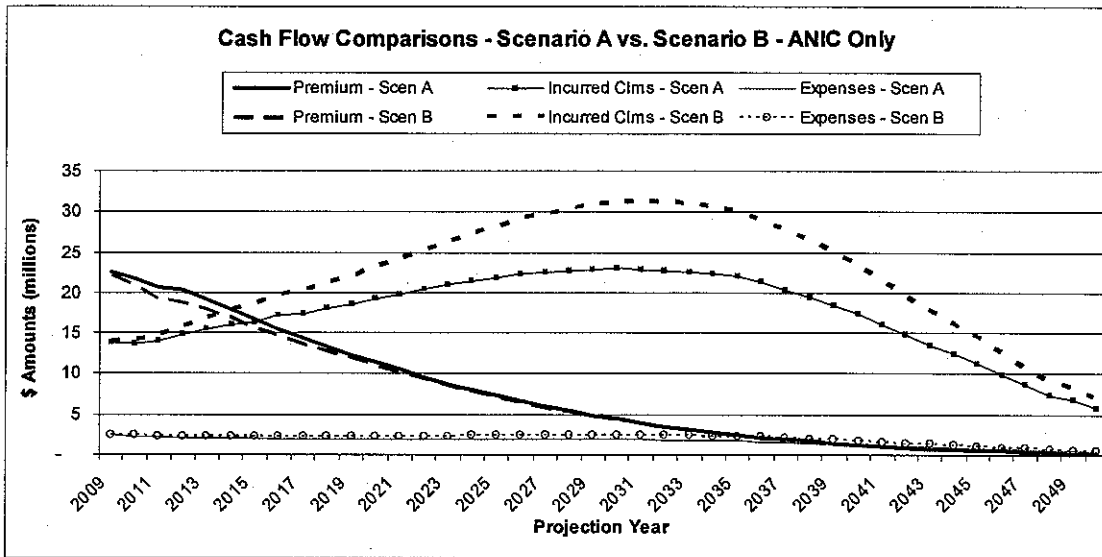
assigned to one of these model cells based on these characteristics. Milliman followed this approach in building the model.

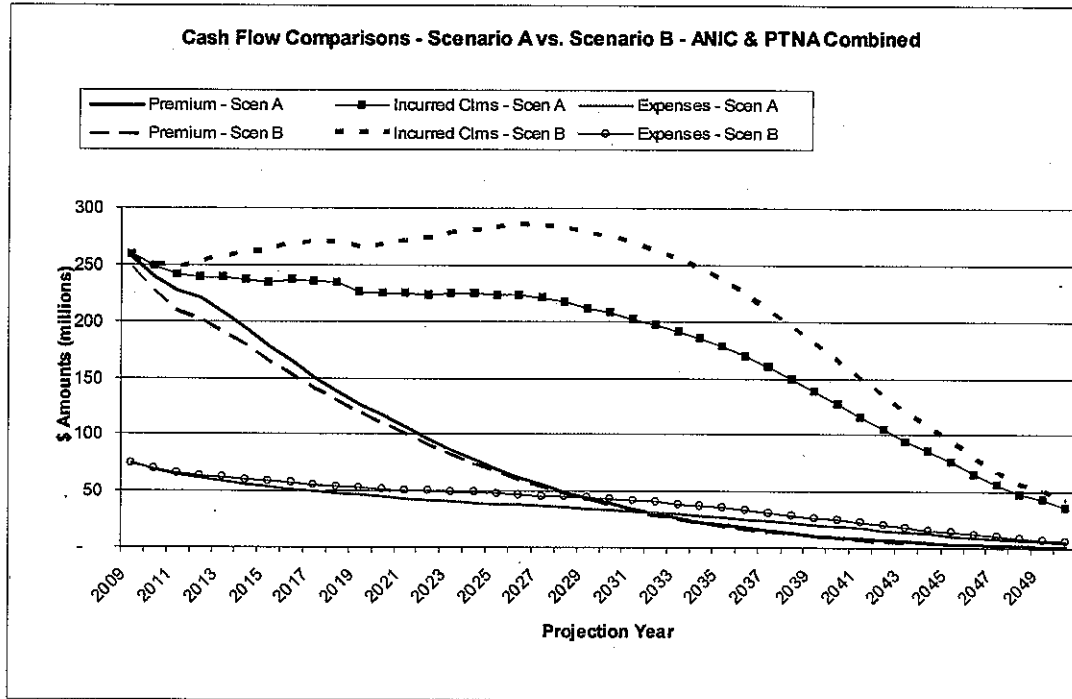
- Depending on the objective, the projection assumptions are based on assumptions which generate the desired cash flows. The objective in this case is a best estimate projection.
- The projection assumptions should be based on credible company experience. To the extent such data is not available, industry experience should be used either to supplement the actual experience or in its place. At times, actuarial judgment is needed to select and/or to refine the assumptions. Milliman followed this approach in building the model.
- In particular for LTC, projected incurred claims can be calculated using incidence and continuance rates or attained age incurred claim costs. Use of a company's actual experience is preferred to the extent it is credible. This is the approach used by Milliman to develop claims for PTNA and ANIC.

We determined that the Company's methods and assumptions included the attributes listed above, with the exception of the use of the Wellness factor which resulted in a decrease in future claims and an increase in future surplus accumulation in Scenario A. We did not see the use of this type of an adjustment by the other LTC companies whose data we analyzed.

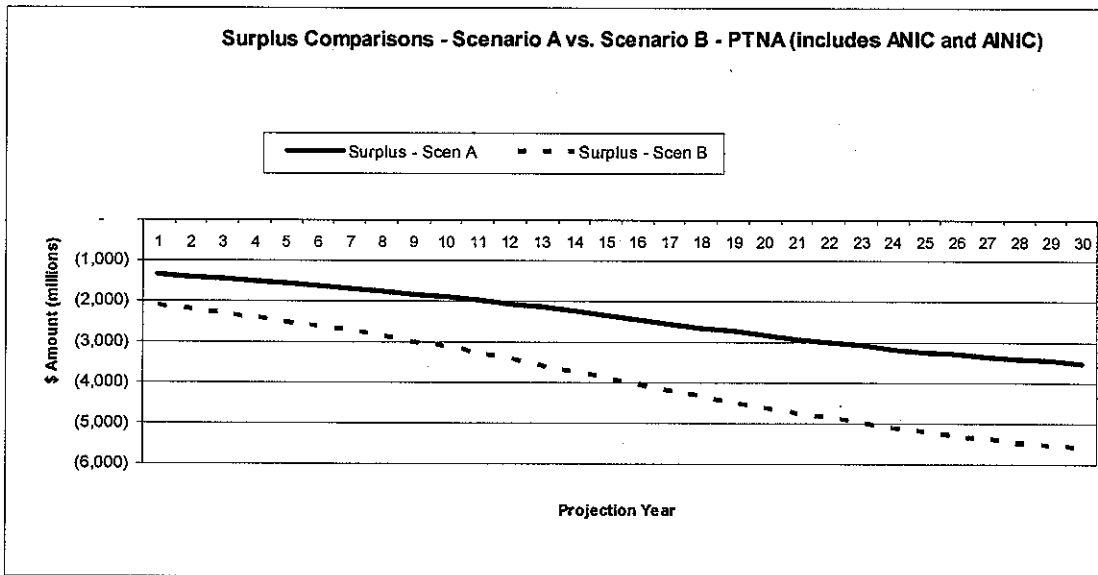
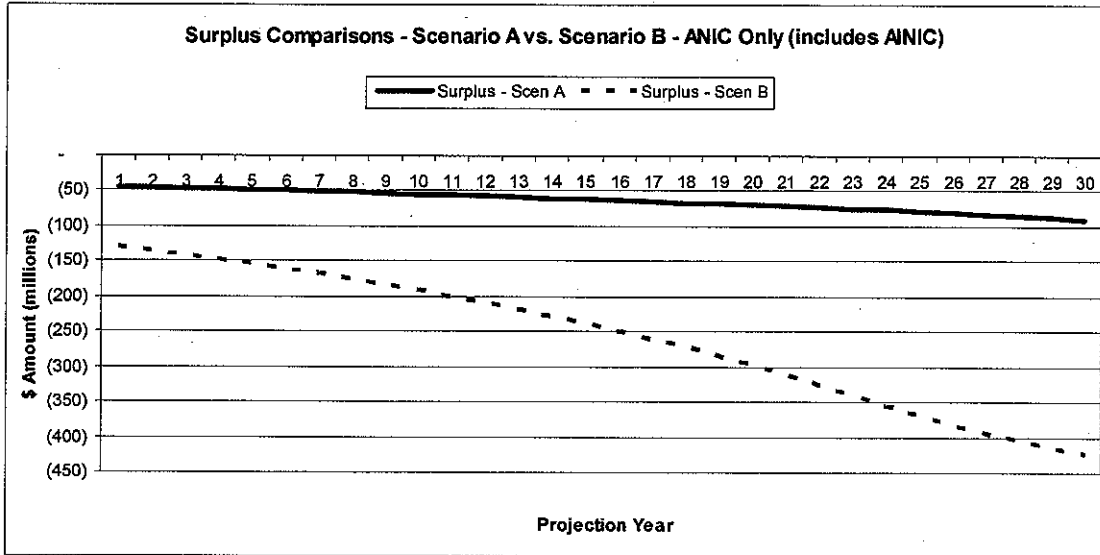
In order to analyze the projection results, we developed various sets of analytics. In all instances, we found the results to be within the range of our calculated metrics.

- *Model Development* – Milliman used the MG-ALFA software package for the projections. MG-ALFA is a well-recognized program for this type of analysis. We compared most of the significant assumptions used in the program and the beginning inventory of in force units against the provided documentation. We performed sample calculations and developed analytics on the projection model results to support our findings.
- *Significant Assumptions* – The Company's projected incurred claims, investment returns, and total termination rates are the key assumptions for the development of a projected statutory income statement and balance sheet. These key assumptions were sensitivity tested for both companies. There were no sensitivity tests that resulted in projected positive surplus for PTNA. Only three sensitivity tests resulted in positive surplus for ANIC. The sensitivity test based on a 10% overall decrease in the future incurred claims, the sensitivity test with a 50 basis point increase in the yield curve, and the sensitivity test based on a 1.5% morbidity improvement in all years of the projection resulted in future positive surpluses for ANIC.
- The following graphs compare the Scenario A and Scenario B cash flows for ANIC, PTNA, and both entities combined. Premiums and expenses projected by the two scenarios were relatively close. The difference was sizable in the projected incurred claims and was primarily responsible for the difference in the projected surplus balances.





- Results** – The recapture of the blocks previously reinsured by Imagine Re resulted in negative surplus positions for PTNA and ANIC combined. (Note: Because it is a subsidiary of ANIC, ANIC’s projected surplus was included in ANIC’s surplus.) Surplus following the recapture was calculated, as of December 31, 2008, using the minimum standard valuation assumptions and method. Given doubts regarding the adequacy of reserves, a gross premium valuation reserve (“GPV reserve”) was calculated at each projection point based on the Scenario A and Scenario B assumptions. (Per Chapter 84a.2 of the Pennsylvania Code, a gross premium valuation is to be performed whenever a significant doubt exists as to reserve adequacy with respect to a major block of contracts, or with respect to the insurer’s health and accident business as a whole. If inadequacy is found to exist, immediate loss recognition shall be made and the reserves restored to adequacy.) Since the GPV reserves were greater than the statutory reserves based on minimum standards, they were used in calculating the projected earnings. Since greater losses materialized, the surpluses were reduced further at the start of the projections and continued to decrease for the remainder of the projections for ANIC, PTNA, and both companies combined as shown in the graphs below.

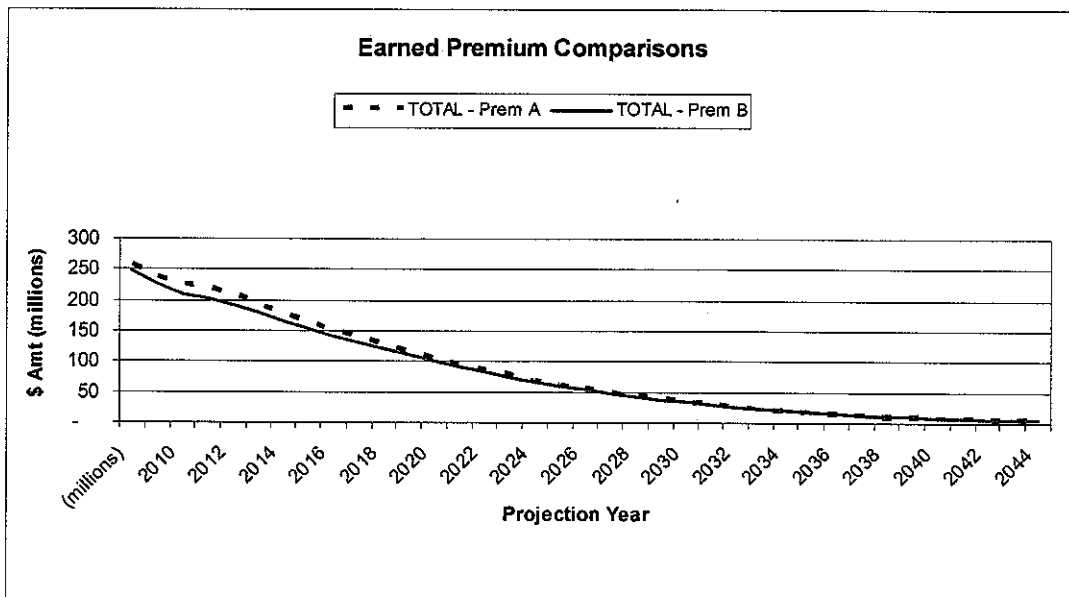


**Analysis of Projection Assumptions and Methods**

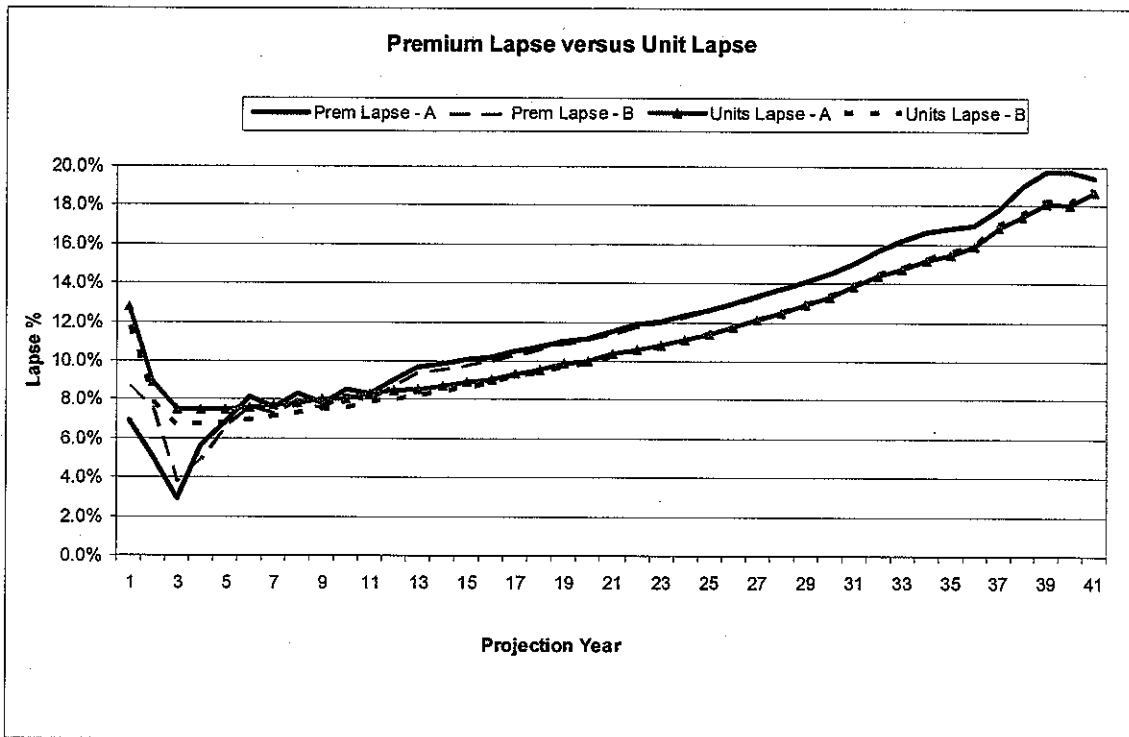
As noted above, the assumptions used by Milliman were based on their evaluation of PTNA's and ANIC's experience, with consideration of industry norms and anticipated future trends. In our analysis we compared the Company's assumptions to comparable assumptions and recent inforce projections from two LTC carriers we are familiar with – they will be referred to as Company ABC and Company XYZ – and from recent Society of Actuaries ("SOA") experience studies. In addition, we have analyzed the assumptions and projections for a number of our audit clients who write LTC business. We also spoke with other LTC carriers in order to understand what the current LTC industry practices were with respect to assumptions.



- Projection Period** – The projection period covered 60 years. This was within the range of observed LTC industry practice for in force blocks given the issue ages of the policies, the low voluntary lapse rates, the runout of the mortality table and the typical pattern of LTC incurred claims.
- Premium Rate Increases** – Two different sets of premium rate increases were assumed in the projections on the OldCo blocks. The percentages used were based on the upper end of what the Company deemed they could get approved by state regulators if PTNA and ANIC were assumed to be going concerns throughout the projection period. These assumptions included the rate increases the Company is currently pursuing based on previous corrective action decisions. For Scenario A, the overall rate increases were 60% for PTNA and 70% for ANIC over ten years. For Scenario B, the overall rate increases were 35% for PTNA and 45% for ANIC over ten years. The premium rate increases assumed in Scenario A are on the high end of the range we have observed.
- Shock Lapses and Anti-selection** – The premium rate increases were accompanied by shock lapses of healthy active policyholders and increases to the claim costs from the expected anti-selection by the remaining policyholders. The latter is within the range of observed LTC industry practice when shock lapses are assumed. However, the amount of the impact was based on actuarial judgment as it is difficult to quantify accurately.
- Premium** – The annualized premium on the blocks at the projection start date were as follows: \$237 million for PTNA and \$24 million for ANIC. The following graph shows the differences in the projected premium for Scenario A versus Scenario B. As illustrated, the premium for Scenario A was higher in the earlier portion of the projection given the greater premium rate increases assumed. In the later periods, the projected premiums were nearly equivalent given the cumulative effect of the lower voluntary lapses used in Scenario B.

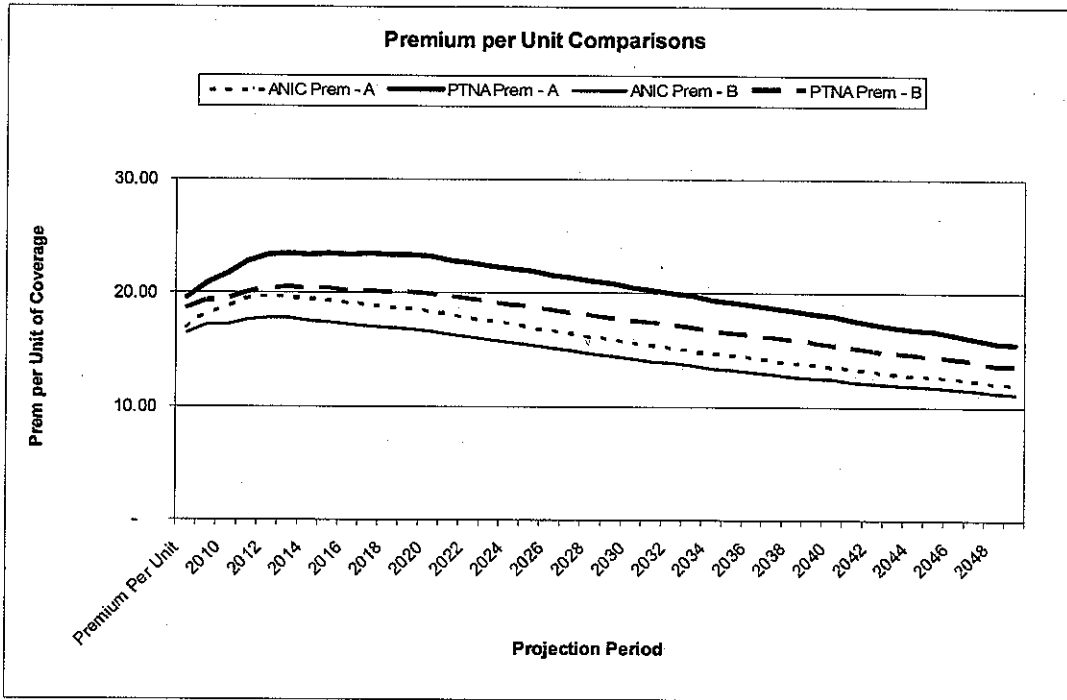


We developed total termination rates based on the annual premium and units and compared them to see that they were consistent with the projected annual premiums. The following graph shows that the premium and unit total termination rates for both scenarios were similar after allowing for the future premium rate increases. The increasing slope reflects mostly the increase in mortality as the policyholders age.



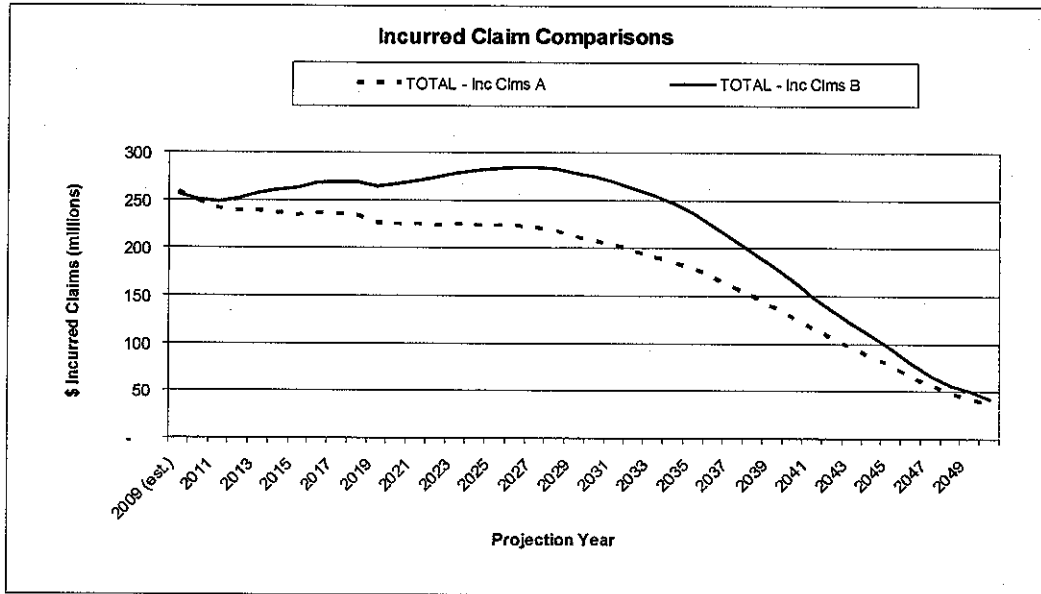
The Company confirmed that all approved and implemented rate increases through the projection start date were properly reflected in the in force premiums. This was important to confirm as the projected premium could possibly be understated if the administration system had not been properly updated with these amounts.

To analyze the application of premium rate increases in the model we developed premium per unit of daily benefit metrics for each projection period for the two scenarios. The following graph illustrates the relationship between the Scenario A and Scenario B premiums per unit for both entities. Based on the assumptions, the Scenario A results should be higher for each entity than Scenario B as is illustrated in the graph.

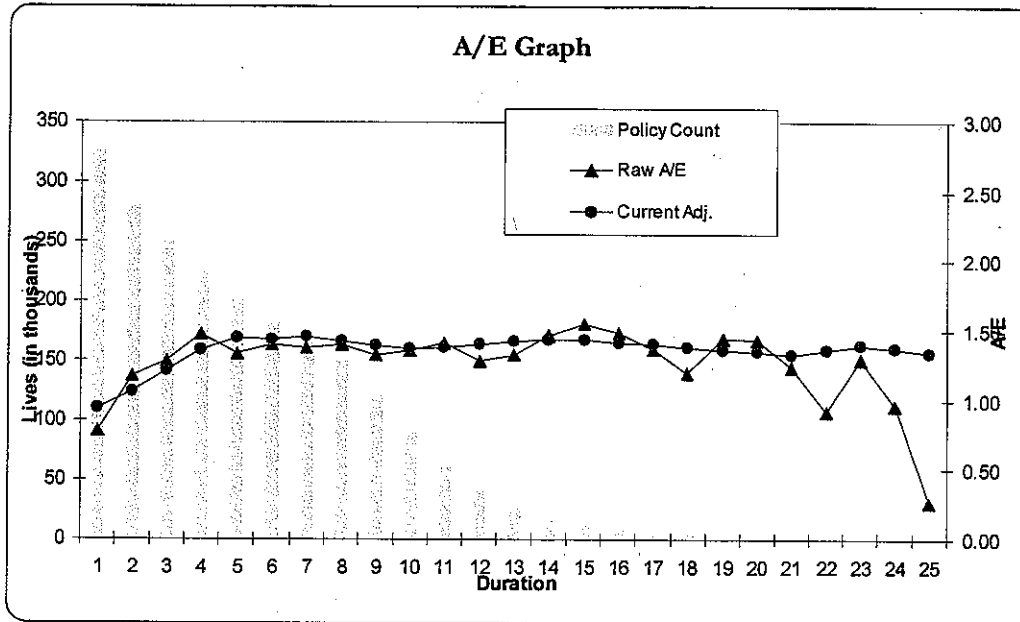


- Discount Rates and Net Investment Income Rates** – The discount rates used in the two scenarios to calculate the gross premium reserve were based on the projected net investment income rates (“NIER”). These are within the range of observed LTC industry practice and observed life insurance practice with similar investments in performing these types of calculations.
- Claim Costs** – The most significant difference in the two scenarios was the projected incurred claims costs by attained age. The difference resulted from how Milliman fit historical data and because Scenario B was based upon later, more adverse experience than the experience base for Scenario A.

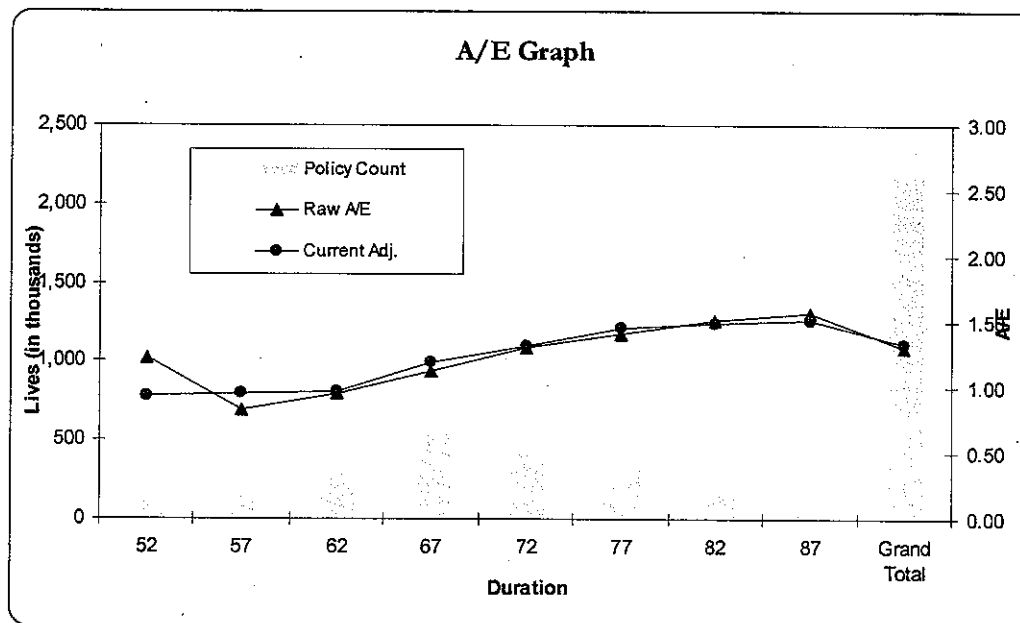
Overall, we found the approach used to derive the incurred claim assumptions was similar to how other LTC carriers derive them for these types of projections. In other words, it is common for companies to base them on their own historical experience.



- Historical fit – Milliman used an internally-developed model to fit the Company’s historical incurred claims to a variety of different policy characteristics. The resulting factors were then used in the projections to calculate the incurred claims. We analyzed the model and found it to be more detailed and sophisticated than models other LTC carriers we are familiar with use to fit historical experience. Shown below is an example from the model. This graph shows the incurred claim fit by policy duration. The fits were reasonably close for the durations with large experience. The “Raw A/E” line was computed by taking the ratio of the actual incurred claims to the expected incurred claims which were based on assumptions in just the base claim costs. The “Current Adj” line was computed based on the developed fit factors.



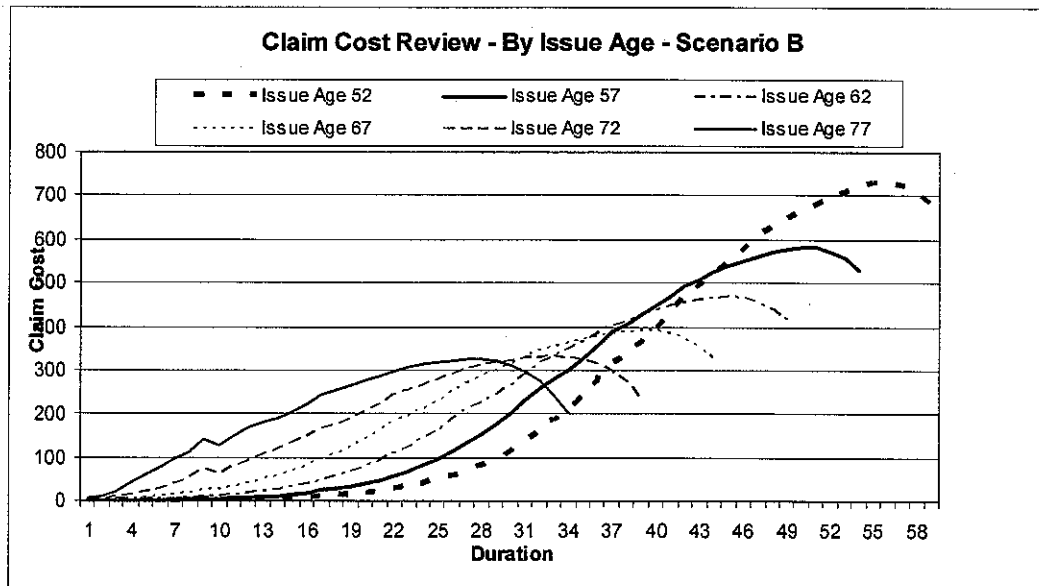
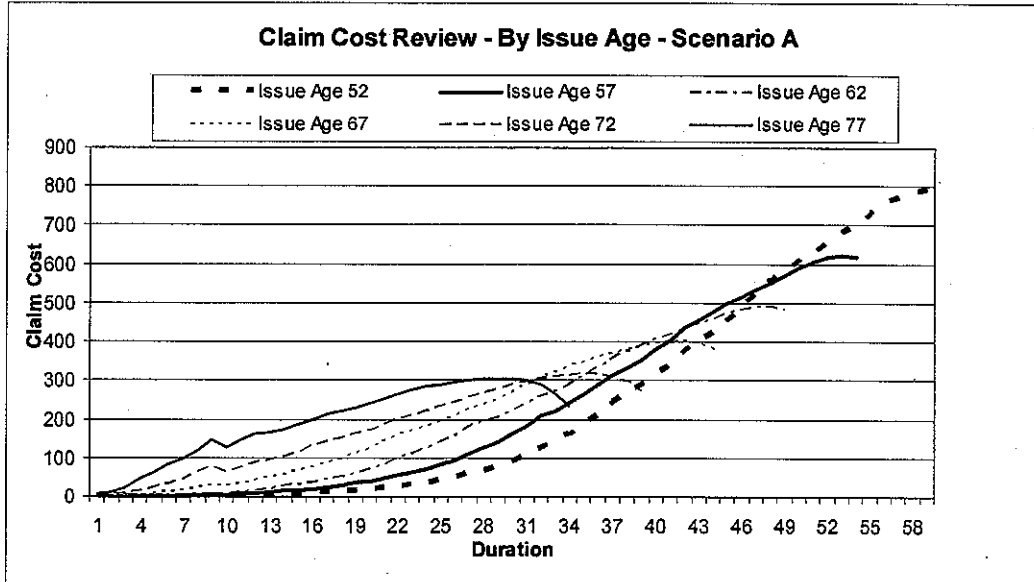
We also analyzed the fit factors based on the different quinquennial issue ages – see graph below.



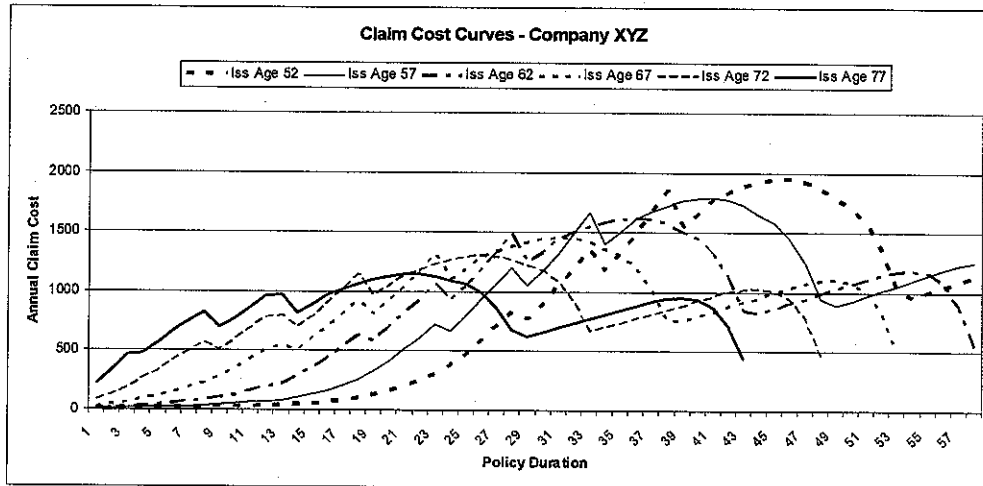
- *Morbidity improvement* – Both scenarios included morbidity improvement. For Scenario A, the amount of improvement was approximately 1.2% per year and for Scenario B, the amount of improvement was 1.5% for the first ten years of the

projection and 1.0% thereafter. Including this adjustment was based on US population trend data which has shown an annual decline in LTC events of approximately 1.7% from 1982 to 1999 and a 2.2% annual decline from 1999 to 2004; however, the study also stated that continued improvement would have to be generated by advancements in the treatment of functional disability and cognitive impairment that have not yet been developed and implemented. The morbidity improvement assumptions were within the range of observed industry practice.

- *Mortality Improvement* – In recognition of the morbidity improvement, the Company also assumed mortality would improve in the future, which slightly offset the reduction to the incurred claims caused by the morbidity improvement. We are aware of other LTC carriers who incorporate morbidity improvement accompanied by mortality improvement in projecting their LTC blocks.
- *Wellness Improvement* – Scenario A included a Wellness Improvement assumption. This assumption reduced projected incurred claims by 6% over six years in recognition of active management of claims through Brain Fitness and similar programs. The expectation is that these programs will delay the onset of claims and/or reduce the claim severity. The actual effectiveness of these programs has not been shown. We are not aware of other LTC carriers which include a specific reduction to future incurred claims for these programs. The effect of adding this assumption is a reduction in future claims and an increase in projected earnings. Scenario B did not include such an assumption, which was partly responsible for the differential in claims noted above.
- *J-prime exposure adjustment* – Because the MG-ALFA program did not differentiate between policies which were active and not on claim versus those that were active and on claim, an adjustment factor was applied in the projections to reduce the incurred claims for those policies which are already on claim so that the incurred claims were not overstated. This factor was referred to by Milliman as the “J-prime exposure adjustment.” We analyzed sample claim costs from a selection of audit cells from both scenarios which had the same characteristics except for the issue age and compared them to each other. The relationship of the curves showed that for most policy durations, the older the issue age, the higher the claim costs are. This is typical of most LTC products. The curves begin to decline in the later policy durations because there are fewer active policyholders who are not already on claim and because the benefit periods are shortened by lapses and mortality.

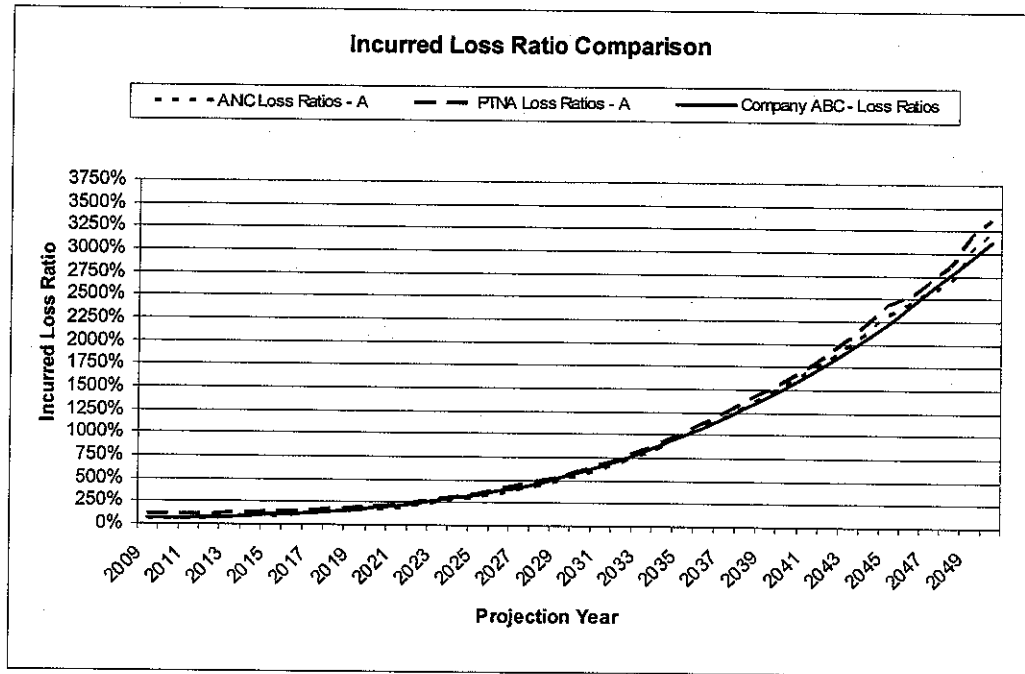


We developed a similar set of claim costs using data from Company XYZ. As shown below, the shapes of the curves and the relationship among the different issues ages were similar. However, Company XYZ's curves were much more erratic.



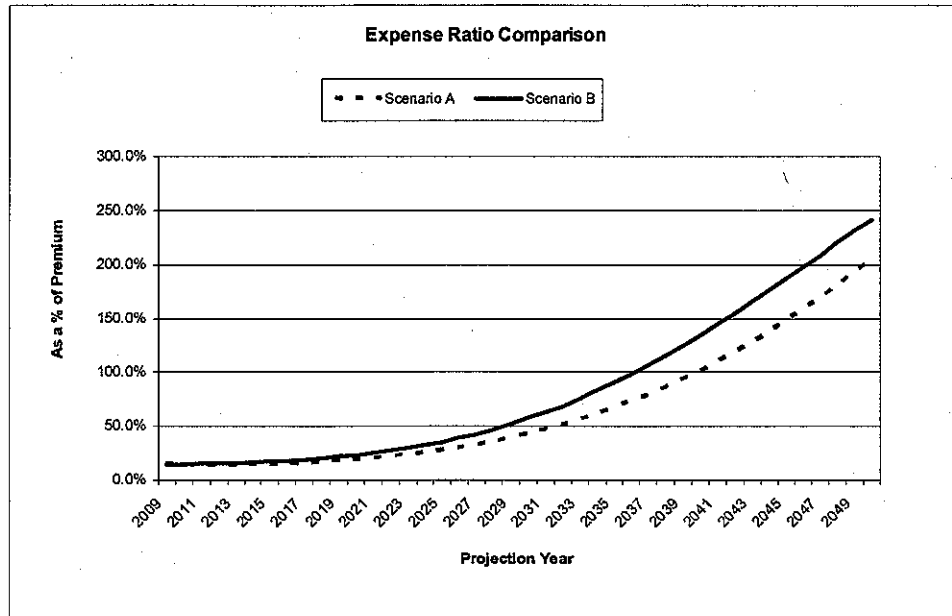
- **Incurred Loss Ratios** – We compared the incurred loss ratios based on the more optimistic Scenario A claim cost assumptions to those of Company ABC. Overall, the projected ratios were quite similar between all three blocks (PTNA – scenario A; ANIC – scenario A; Company ABC). The increasing slope is typical as LTC blocks age. Note: Future rate increases were assumed in both Scenario A and in Company ABC's projections. The former had increases of 60% to 65% in total, while the latter had increases of 15% to 17%. If these were removed entirely, the Scenario A curves would have somewhat higher loss ratios than Company ABC.





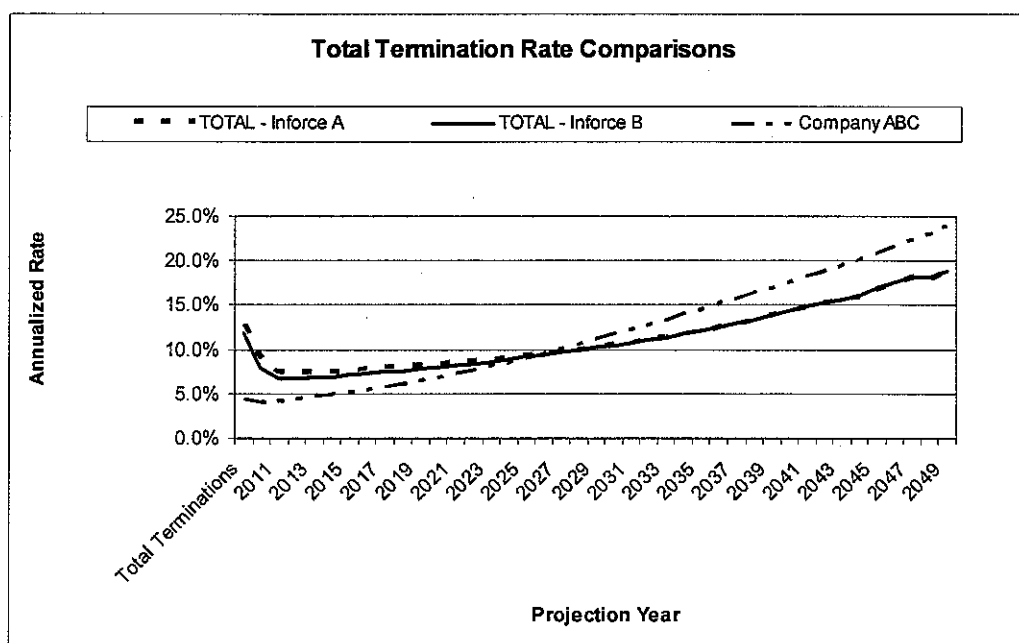
- **Commissions** – To improve financial results, the Company’s management made the assumption it would receive court approval to discontinue paying all renewal commissions starting in 2010. We analyzed the projections and found that no renewal commissions were included after 2009.
- **Expenses** – Maintenance expenses were 5.7% of premium, premium taxes were approximately 2.8% of premium for PTNA and 1.4% for ANIC, and claims administration expenses were 7.0% of incurred claims. These assumption were based on 2009 budgets provide by the Company’s management. We compared these to the expense assumptions of Company ABC and found that they are somewhat higher for the Company in each category. No explicit inflation was included in projecting the expenses; however, the total expense ratio increased as the incurred claims increased, which would be expected for LTC. The lack of an explicit inflation assumption for maintenance expense is optimistic, but the effect on the overall projection result is not material.

We analyzed the projected expense cash flows. With respect to percentage of premium, the expenses increased over time as the costs to adjudicate claims increased while premium decreased. We compared Scenario A’s expenses with Scenario B’s expenses in relation to the former’s lower incurred claims. The graph below shows this relationship:



- **Total Termination** – The Company chose voluntary lapse, shock lapse and mortality rates to determine how policies would persist during the projections.
  - **Voluntary Lapses** – These assumptions were based on PTNA's and ANIC's experience. The set used for Scenario A were approximately 1% higher than the set used for Scenario B. The differences in these sets were based on the observation period used to calculate the rates. Scenario A was based on experience from 2004 through 2006, while Scenario B was based on experience from 2007 through 2008. Because lapse experience has been higher during 2009, the decision was made to use the higher lapse rates in the 2006 set of lapse assumptions for Scenario A. LTC projections are sensitive to the lapse assumption. The higher the lapse rates, the lower the calculated reserve with all other assumptions being the same.
  - **Shock Lapses** – The Company included shock lapses for several different events: new business moving to other carriers, in reaction to the downturn in the financial markets during 2008, in reaction of the rehabilitation announcement and, as discussed above, in reaction to a new round of rate increases. While such events are likely to cause some policyholders to lapse, quantifying the impact is difficult. A sensitivity test was performed on the shock lapse assumption. The assumptions associated with the rehabilitation announcement and the rate increases were removed from the projections which used the Scenario A assumption set. This caused the surplus to decrease by approximately \$193 million for PTNA and by \$17 million for ANIC. This is to be expected for lapse-supported products like LTC.

- Active Life Mortality – Mortality was based on the sex-distinct Annuity 2000 Mortality Table, a commonly used industry table. The factors were adjusted to fit the table to the observed experience.
- Total Termination – We compared the total termination rates for Scenario A and Scenario B to those of Company ABC. As seen in the graph below, the Company's total termination rates are higher in the earlier projection periods primarily because of the shock lapse assumptions. In the later durations, Company ABC's total termination rates are higher based on the combination of the voluntary lapses and mortality table used and the wear-off of the shock lapses. Note: Company ABC used the 1983 individual annuitant mortality table which is less conservative than the 2000 Annuity mortality table. Based on these comparisons, the total termination rates for the Company appear to be within the range of observed industry practice once the shock lapses wear-off.



We also compared the total termination rates at the start of the projection to results from the SOA's 2006 LTC Persistency Report. The total termination rate for the 2002 to 2004 experience in the SOA's report was 5.9%, which is slightly higher than the initial 4.4% rate for Company ABC and much lower than the initial rates for Scenarios A and B; which are impacted by the anticipated shock lapses.

**Analysis of MG-ALFA Input and Summary Worksheets**

- *Inventory* – To check the inventory (units of daily benefit and annualized premium) of the inforce block as of June 30, 2009, we compared the projected output for the three companies and the OldCo and NewCo segments for each to the June 30 statutory reserve exhibits.

These exhibits showed these items in addition to all of the other reserves. We noted a few differences in the starting units of daily benefits, which were higher in the projections. The reason for this was that the daily benefit totals in the reserve exhibit reflected the originally issued units of daily benefit, while the projections reflected the inflated units of coverage for those policies which elected an "inflation freeze" rider. Consequently, the units in the projections were slightly higher. It is our understanding that the reported statutory reserve balances were based on the correct units of coverage.

- *Premium Rate Increases* – We analyzed the premium rate increase tables in the projection model and found they agreed with those in the documentation. As noted previously, the projected premium in Scenario A is slightly higher than Scenario B given the higher rate increases assumed.
- *Incurred Claims* – Our findings are summarized above.
- *Commissions* – Our findings are summarized above
- *Maintenance and Loss Adjustment Expenses and Premium Taxes* – Our findings are summarized above.
- *Worksheet formulas* – We analyzed the formulas to calculate the after-tax distributable earnings and the gross premium valuation reserve balances.

### Recommendations

- We had recommended that the Company perform a series of sensitivity tests on the model. These were carried out by the Company and are presented above.
- No other recommendations.

### Restrictions on the use of our report

This Report and the actuarial analysis included herein (the "Report") are intended solely for the information and use of the Company's management. Except as set forth in the engagement letter, or where compelled by legal process, the Company may not disclose, orally or in writing, the Report or any portion, abstract or summary thereof, or make any reference to EY in connection therewith, to any third party (other than the Company's external legal advisors who need to know the contents of the Report in order to assist the Company with its permitted use of the Report and who have agreed to be bound by the terms and conditions of the engagement letter relating to restrictions on use and distribution) without obtaining (a) prior written consent of EY and (b) an executed access letter in a form acceptable to EY from such party.

Notwithstanding the foregoing, however, the Company may disclose EY's Report to (i) the Company's affiliates, provided that such affiliates have agreed to be bound by all of the terms of the engagement letter to the same extent as the Company; (ii) its advisor, Milliman, subject to the agreement of Penn Treaty and Milliman that none of the Report nor any portion thereof shall be

further disclosed to any other person or entity and that neither of them shall make any claims against EY arising out of or in connection with the Report; (iii) insurance regulators in the Commonwealth of Pennsylvania and in any other state where Penn Treaty is registered, provided the Company seeks confidential treatment of the Report; and (iv) the Company's external independent auditor, subject to the auditor's agreement that none of the Report or any portion thereof shall be further disclosed to any other person or entity except as required by law or professional obligation, and that it shall not make any claims against EY arising out of, or in connection with the Report.

### Reliances and Limitations

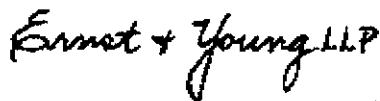
As outlined in our engagement letter, our actuarial analysis is based on inquiries of, and discussions with, Penn Treaty's management and employees and Milliman, Inc. In the course of our analysis, Ernst & Young reviewed the data provided for reasonableness but the data were not independently audited or otherwise verified. Any inaccuracies or inconsistencies in the data could have a significant effect on our results. We are not responsible for any subsequent event or its impact.

Our analysis does not anticipate any changes in the legal, regulatory, social or economic environments that could affect the ultimate outcome of cash flows, or the emergence of cash flows from causes not currently recognized in the historical data. Such extraordinary changes may impact the financial projections reviewed in ways that are not presently quantifiable. Actual experience will differ from that assumed.

Our work has been limited in scope and time and we stress that more detailed procedures may reveal issues that this engagement has not. Our actuarial analysis does not constitute an audit or review in accordance with any generally accepted auditing or review standards.

We appreciate the cooperation and assistance provided to us during the course of our work. If you have any questions, please call David Minches at 215-448-5089 or Bob Hanes at 215-448-4132.

Very truly yours



Ernst & Young