SMALLER INSURANCE COMPANY SECTION
"A KNOWLEDGE COMMUNITY FOR THE SOCIETY OF ACTUARIES"

Small Talk

June 2006, Issue No. 26

Newsletter of the Smaller Insurance Company Section

Published in Schaumburg, IL by the Society of Actuaries

This issue includes:

Principles Based Valuation—Should Small Companies Be Steamed by This Steamroller?

By Norman E. Hill

Recently, the Principles Based Valuation approach (PBV) has enjoyed considerable support and momentum within the life and health insurance industry. Instead of prescribed methods, assumptions, and tables for statutory reserves, they would be computed based on actuarial judgment in accordance with standards of practice. A key requirement would be peer review of such reserves by another professional actuary, before reserves were officially released.

Many actuaries have already spent considerable hours of professional time in developing the framework for a viable valuation structure. Our primary trade association, the American Council of Life Insurers, endorsed the approach in late 2005. However, one regulator referred to the Principles Based Valuation support as a "steamroller." This should be the time for small insurers and others to voice their reservations about the entire Principles Based Valuation proposal. Strict opposition may not be appropriate, but key questions should be asked.

Reservations

These reservations include:

1. Is there a burning need for Principles Based Valuation? Supposedly, it would reduce redundancies inherent in current statutory reserve requirements. The three or four industry groups who seem most concerned with alleged redundant statutory reserve levels are: High amount competitive term writers (through requirements for deficiency reserves); universal life writers whose minimum guarantees result in policies that are defacto term (and who may not hold reserves at all, or possibly not even half the cost of insurance after account values have run out); term insurers who have designed policies creatively to lessen reserve requirements of Regulation XXX; and variable life and annuity writers who apparently believe the New York Insurance Department's standard scenario to cover minimum general account guarantees is too high a reserve basis. There may be insurers of other products also. Mostly, there are large companies, but small insurers may also be part of this constituency. However, do these industry groups represent a majority of insurance companies?
2. Would adoption of Principles Based Valuation lead to still lower statutory reserves, even without the above portions, and bring their prevailing levels closer to reserves under generally accepted accounting principles? Would this be desirable from a solvency viewpoint?
3. Some small companies are concerned about a "level playing field." Large companies, willing and able to pay for an actuarial peer review, could hold smaller statutory

continued on page 3

Small Talk
Issue Number 26 • June 2006

Published by the Smaller Insurance Company Section of the Society of Actuaries

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This newsletter is free to section members. A subscription is $15.00 for nonmembers. Current-year issues are available from the communications department. Back issues of section newsletters have been placed in the SOA library and on the SOA Web site: (*www.soa.org*). Photocopies of back issues may be requested for a nominal fee.

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Editorial

By James R. Thompson

There is a lot happening on the regulatory front. Ted Schlude attended the March meeting of the Life and Health Actuarial Task Force (LHATF) of the National Association of Insurance Commissioners (NAIC) this past March and has kindly summarized the developments. This is quite a long article because so much is going on. They discussed the C-3 Phase II and the Actuarial Guideline VACARVM, the Interim Valuation Proposal form the American Council of Life insurance (ACLI), the SOA Preferred Mortality Table, various issues related to the SVL II (principles-based approach to reserves), A&H issues related to LTC, Major Medical Claim Spiral and Premium Deficiency Reserves. And this is not a complete list!

Much of the LHATF agenda dealt with Principles Based Reserving. Because this issue is being pushed so quickly, we believe the smaller companies should focus on this. Thus the lead article is by Norm Hill, "Should Small Companies Be Steamed by This Steamroller?" This provides an in-depth critique and is thoughtful reading for anyone wishing to understand the implications of this proposal.

One reason some companies are supporting PBR is that they feel their current statutory reserves are too high on certain products. One possible relief for such companies would be the passage of a preferred underwriting valuation tables. This is currently being studied by the SOA. Roger Annin reports on this and the way it might relate to PBR. He also reports on the "mirror image" of this, the PreNeed Valuation Mortality Table. This is for products that have very substandard mortality.

In "A Quick Start to the Revision of the Valuation Law?", James Thompson discussed the ACLI proposal. This is a proposal to allow lapsation as an assumption for statutory valuation under certain circumstances. They also developed their own table of preferred underwriting valuation.

There are two other articles on themes not related to PBR. One is by Howell Pugh, "Avian Influenza—A Note on Reinsurance for Small Companies." Reinsurance is a classic tool to limit your risk to unlucky events. Chris Davis's article, "A Better Random Number Generator," discusses a practical method of handling this concept. Random numbers will become increasingly necessary as we move toward stochastic testing for reserves for such products as variable annuities.

Our next issue is due out in November. This means articles and letters are due to the editor by early September. I suspect discussion of Principles Based Reserves will be ongoing at that time. Your opinions about that as well as other subjects are welcome! ●

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continued from page 1

reserves under Principles Based Valuation. Would this provide them an unfair competitive advantage?

4. Statutory reserves under Principles Based Valuation need continued qualification for federal income tax purposes. Proposals so far have called for a cash value floor as a minimum reserve, in hope that this would protect tax qualified status. However, this floor would not apply to term life or health insurance reserves. Also, the Treasury has sometimes implied that they will not allow reserves that do not correspond to a table specifically mentioned in National Association of Insurance Commissioners regulations.

5. The New York Insurance Department recently proposed a model law and regulation to implement Principles Based Valuation. Some aspects of it may have merit. For example, it seems to require sufficient margins in reserves that would keep Principles Based Valuation liabilities more conservative than under generally accepted accounting principles (if not very close to current statutory levels). Also, the model law describes Principles Based Valuation as an option, while expressing no preference for formulaic versus stochastic calculations.

6. On the other hand, at least one objection could be raised to New York's proposal. For testing reserves with minimum reserve scenarios (gross premium reserves), they seem to propose that minimum test reserves use a Treasury rate of interest, regardless of the company's investing rate of return. New York had previously demanded that these minimum or best estimate reserves be increased by 7.5 percent as official tests. This latter seems sufficiently conservative. An additional requirement for a treasury rate of interest when a company is earning more than this (even in the current low interest environment) seems unrealistic.

7. Some regulators have expressed concern that, under Principles Based Valuation, small companies, left to their own devices, would hold unacceptably low reserves. If peer reviewing actuaries, for these purposes, are deemed agents of regulators, and their responsibilities are sufficiently defined, this could answer their concern.

8. Some proponents of Principles Based Valuation have referred to the recent bankruptcy of Equitable Life in the United Kingdom. They seem to claim that this demonstrates the need for Principles Based Valuation in the United States, so that actuaries can use all their professional judgment in setting sound reserves.
   This argument seems weak. For many years, in Britain and other countries, actuaries have been setting reserves under an equivalent of Principles Based Valuation. Peer reviews or adequate peer review standards may have been lacking. However, Britain seems to be backing away from Principles Based Valuation, so as to hold actuaries to very strict oversight from a government board. In effect, the entire actuarial profession in that country received a black eye (deserved or not) from existence of defacto Principles Based Valuation.

9. One implied argument for Principles Based Valuation, not so far explicitly stated, is that its adoption will raise the status of actuaries. This would come at a time when the profession is very concerned about its image, its status in the general field of risk management, and concern over inroads to actuarial prerogatives from other professions.

   First, reserve calculations have always been tied to unique actuarial expertise. Also, actuaries design current formulaic reserves and reserve standards. Society of Actuaries members, both from industry and Insurance Departments, have prepared new reserve tables as experience has evolved. Actuaries have designed guidelines and reserve standards for even more complex products.

   In other words, even before actuarial judgment and peer review have been emphasized in the new proposal, actuaries have always been intimately involved with statutory reserve developments of all sorts.

10. One primary concern over Principles Based Valuation is the belief of some actuaries that stochastic processing techniques should be used in all reserve calculations. They claim that stochastic is inherently superior to formulaic approaches, such that actuaries should be forced to justify why they don't choose the stochastic approach.

   The dictionary defines stochastic as "a process involving a randomly determined sequence of observations, each of which is considered as a sample of one element from a probability distribution." The key words here are "probability distribution." The distribution is chosen in advance and is itself an assumption. It may be based on statistical experience and professionally compiled, but it is still an assumption.

continued on page 4

continued from page 3

Proponents have stated that stochastic calculations can capture the outlying risks inherent in many coverage's *i.e.*, very low probabilities, but extremely damaging if actualized. Again, these low probabilities themselves are assumptions within an overall distribution.

All or almost all formulaic reserve scenarios call for alternative calculations. The greater the tail risk, the more likely that large numbers of alternative reserves are needed to capture the range of outcomes. This could well result in higher reserves. The more numerous the benefit options, and the more extensive the variety of policyholder behaviors that could affect results, the greater the number of alternative scenarios that should be tested. This involves sound actuarial judgment. In short, this does not seem to demonstrate the superiority of the stochastic approach.

11. A key element of the current stochastic approach is the Conditional Tail Expectation (CTE). It involves use of reserves based on the arithmetic average of the desired number of worst-case scenarios. In other words, "65CTE" uses the average of the 35 percent worst-case scenarios. An "80CTE" uses the average of the 20 percent worst-case scenarios. This means that "80CTE" would have worse results and higher reserves than "65CTE."

    However, these worst-case scenarios are themselves assumptions within the probability distribution. Many adverse scenarios, unless weighted by a probability, would mean insolvency of the company. It would only make sense to use them if so weighted. Actually, true worst-case scenarios involve:

    1. All policyholders dying.
    2. All policyholders under health insurance entering nursing homes for 20+ year stays.
    3. For variable coverage, the stock market tumbling to zero and all policyholders transferring to the general account and then dying.

    No one uses these scenarios, because they mean the breakdown of our society.

12. Some proponents of Principles Based Valuation have stated that small companies could request exemptions from stochastic processing requirements. However, as stated above, sufficient justification for the inherent superiority of this approach has not been provided. Only then could stochastic be touted as a required replacement for the traditional formulaic option.

13. It is a legitimate concern that these proponents could insert requirements for use of stochastic processing into Actuarial Standards of Practice.

14. In regard to the stochastic processing approach, some actuaries have stated, "If we don't do it, somebody else will." In other words, if actuaries don't uniformly adopt the stochastic approach, other statisticians or non-actuaries will replace the profession as those qualified to calculate reserves. One answer to this argument is that there are activities that no one should be doing. In other words, even today, stochastic processing will undoubtedly be used extensively in calculating or testing reserves for certain products. For it to become a uniform standard, though, it must be subjected to much more rigorous tests and critiques than employed so far.

Summary of Issues

Small companies should be aware of possible pluses, but also, significant pitfalls, from the Principles Based Valuation proposals. Pluses include:

1. Possibly lower statutory reserves, especially for a company writing certain types of products that generate large deficiency reserves or other types of reserves mentioned above.
2. Potential to enter into certain product lines where previous reserve requirements would have kept them out.

Minuses include:

1. Onerous expenses from peer review.
2. Onerous expenses from software and computer machine time involved in stochastic processing.

Possible Approaches for Small Companies

1. Oppose Principles Based Valuation across the board.
2. Lobby for Principles Based Valuation laws and regulations to be general and not require or in any way favor either the formulaic or stochastic approach.
3. Insist that either formulaic or stochastic approaches remain optional.
4. Actuaries for small insurers should remain watchful and oppose any attempt to mandate use of stochastic approaches in Actuarial Standards of Practice.
5. Lobby for Principles Based Valuation requirements for peer review and for margins that are "appropriate to the risk profile of the particular insurer." In other words, small companies with relatively simple portfolios of products and investments should be able to employ Principles Based Valuation with the least amount of additional expenses. ●

On the cover

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Comments from the Chair— On a Maddening March Day

By Philip A. Velazquez

It's a bleak March afternoon. The wind is blowing outside and the weatherman is predicting snow showers. However, for me it's still a good day because spring is right around the corner. I think that I've planned well for this month. Another exciting college basketball season is coming to a close, and many of my tournament pool picks are doing well (I'm presently watching a tournament game on the TV right next to my desk). I also planned early for the start of baseball season and was able to secure desirable game dates for my beloved Yankees. Finally, the reservations for our family vacation at the beach house have been completed. I'm starting to feel a real sense of accomplishment, until I realize that I promised to have this article completed by tomorrow and have yet to complete typing a single sentence. I thought 12 months would have been enough time to prepare my initial comments for "Small Talk" as section chairperson. I guess I should be grateful that April 15 is a Saturday this year.

I may be a procrastinator but I don't hesitate to state that I'm happy and proud to serve as the 2005–2006 Chairperson for the Smaller Insurance Company Section Council. Thanks to my eight fellow council members who have agreed to join me in serving the section membership during the remainder of this year. It is a very exciting period for the Society of Actuaries. A strategic plan has been developed around the vision that actuaries become recognized as the leading professionals in the modeling and management of financial risk and contingent events. The SOA has challenged each of the sections to provide thought leadership, grass roots environmental scanning, and a ready roster of volunteers. The members of the 2005–2006 section council are prepared for this challenge. During the past couple of months we've been busy planning for the year's upcoming meetings and events. Hopefully we've planned well and have come up with programs that you find to be relevant and interesting.

Planning is only the first phase as there is much work ahead of us. We need your help. We need panelists and program facilitators. We need you to author articles for future issues of "Small Talk." We need feedback from you about issues that impact you as an actuary/employee of a smaller insurance company, and also about concerns that you may have about the organization and the future of the actuarial profession.

Your 2005–2006 section council is prepared to build on the good work that was accomplished by our predecessors. I welcome the new section council members—Bill Sayre (Secretary/Treasurer), Rick Lassow and Wade Harrison. I also wish to thank the outgoing section council members—Julie Hunsinger, Arthur Verney and Susie Keisler-Munro—for your energy and hard work during your council terms. Susie has graciously agreed to serve as the section representative on the 2006 Annual Meeting Program Committee. The returning council members are Howell Pugh (Vice Chairperson), Terry Long (outgoing 2004–2005 Chairperson), Paul Carmody, Jeff Morris and Todd Sagmoe. I am especially blessed to have last year's outgoing section chairperson serving on the council for one more year. Terry has left big shoes to fill, and it's assuring knowing that he's there to step in when needed.

Last year in his initial " News from the Chair" article, Terry introduced the Friends of the Council concept that this section adopted. The Friends are section members who are invited to participate in the monthly council conference calls, receive the section minutes and volunteer to assist with section projects. Please consider joining our roster of Friends. You may contact any council member for more information.

Although we are a small section (pun intended) I am sure we are up to the challenges of the rest of the year. We may not have the numbers (in terms of members and budget) that some of the larger sections have, but we'll make up for it by our energy, teamwork and preparation—just like George Mason University that just destroyed one of my tournament brackets. ●

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Highlights of the March 2006 NAIC Life and Health Actuarial Task Force Meeting and Other NAIC Topics

By Ted Schlude

I attended the NAIC Spring Meeting held March 2–6, 2006 in Orlando, including meetings of the Life and Health Actuarial Task Force (LHATF) and selected meetings of the NAIC. Summarized below are the activities that took place at these meetings.

LIFE AND HEALTH ACTUARIAL TASK FORCE

The LHATF met on Thursday and Friday and discussed the following topics.

1. **C-3 Phase II and AG VACARVM:** The discussion focused first on reports from the American Academy of Actuaries related to its response to issues and recommendations on AG VACARVM. The following documents were discussed:

   – NAIC Draft AG VACARVM Jan. 25, 2006

   – Academy Response to Jan. 25, 2006 Draft

   Major issues discussed by the Academy are highlighted below.

   (i) CTE 65 vs. CTE 75 vs. CTE 80: The most recent NAIC draft moved from CTE 65 to CTE 75 (although New York had at one point proposed CTE 80). The Academy's comments with respect to this change included identification of several issues related to use of CTE 75:

   a. Reserve Levels vs. Capital Levels: Allocation between reserves and capital may be a problem because CTE75 (pre-tax) could exceed CTE 90, which is an after-tax amount.

   b. Academy vs. Canadian Approach: Further understanding of the relative risk level is required because the Academy approach discounts accumulated deficiencies (more conservative approach than the Canadian basis) whereas the Canadian valuation approach is to discount cash flows.

   c. Relative Level of Reserves vs. Other Products: There is perception that CTE 75 creates a higher base reserve standard for VA products than what is used for other products, yielding a mismatch by product category for relative capital and reserve levels.

   d. CTE 65: It was also pointed out that the decision to use CTE 65 had already been made by LHATF in a vote at a prior meeting.

   (ii) Principle 2 of AG VACARVM—Use of Additional Language "substantially cover risk associated with the tail:" The Academy is concerned that the wording change may push the reserve level significantly beyond CTE 75.

   (iii) Margin for Adverse Deviation with Respect to Prudent Best Estimate: The Academy finds certain phrases such as "over the span of economic cycles" and "over a plausible range of expected experience" are possibly confusing.

   (iv) Illustration of Modeling without Dynamic Hedging: This request for supplemental information requires a substantial amount of additional work.

   (v) Revenue Sharing: The Academy still feels its revenue sharing language is appropriate. It does not feel it is appropriate to possibly eliminate revenue sharing, but still require recognition of the associated expenses in the modeling. New York feels its language will result in forcing companies to secure revenue sharing contracts with fund managers and is also consistent with the Accounting Practices and Procedures Task Force reaction to the revenue recognition issues and what constitutes a valid admitted asset.

   (vi) Standard Scenario: The Academy feels that AG VACARVM should be rewritten with a focus on the intent of the Standard Scenario as a regulatory benchmark and minimum floor. It should not be complicated by an alternative Option Value calculation that will take several more years to develop. New York stated that there must be some safeguard against aggressive assumptions with respect to policyholder behavior, asset risk, etc.

(vii) Contractholder Behavior: The Academy feels there is enough guidance already in the AG with respect to contractholder behavior. The New York draft would require grading to the most efficient use of benefits on the policyholder's part in areas where actual experience is not available to establish assumptions.

Finally, regulators received comments from the ACLI that focused on practical aspects such as reporting capital once per year but reserves on a quarterly basis, level of reserves required and its desire to have the standard scenario be a simple floor on reserves that is tax friendly.

While there is still a significant amount of industry objection to AG VACARVM, a conference call will be scheduled in April to discuss the draft AG VACARVM further. New York intends to incorporate some of the Academy's comments, which it considers valid into a new draft. The goal of New York is to expose a new AG VACARVM in May 2006 with the possibility that it could be adopted at the June 2006 NAIC meeting and be in place as a reserving standard for Dec. 31, 2006.

2. **Interim Proposals Relative to New Valuation Standards from ACLI:** Paul Graham of the ACLI outlined the interim reserve proposal and supplemental information submitted to LHATF. This project would introduce preferred mortality tables to be used in valuation as an interim measure. It also includes a recommendation with respect to valuation of UL policies with secondary guarantees. Specific concerns of regulators were addressed including:

(i) Lapses: Are the lapses, which are contemplated in the UL secondary guarantee methodology allowed by the Standard Valuation Law? The ACLI report contains an opinion by Debevoise and Plimpton that regulators have discretion to allow use of lapse rates in valuation. The NAIC legal counsel is reviewing this opinion.

(ii) Mortality Table: Regulators were concerned that the preferred version of the 2001 CSO might not have received as much due diligence as one prepared directly by the Society of Actuaries. The ACLI responded that Michael Taht of Tillinghast who was asked to develop the preferred tables was also the one primarily responsible for the 2001 CSO Table developed by the SOA which was the main reason for using him to perform the split. Regulators were still concerned with issues related to selection wearoff and asked for the SOA to perform a peer review of the preferred tables.

Finally, the ACLI highlighted some testing performed by Milliman related to the impact of the preferred tables on overall reserve levels. For all risk classes combined, the reserves under the preferred table split were running 15–20 percent lower than the current 2001 CSO would generate, which was characterized as a nominal reduction. The ACLI is still in the process of completing the reserve studies, which are focused on issue ages 45 and 75 for Term and UL secondary guarantee products.

Regulatory discussion focused on the mortality table and lapses on UL products as expected. There was a general consensus on the part of regulators that lapse rates should not be allowed in valuation. The NAIC's legal counsel is also reviewing the lapse issue. Most regulators desired a peer review by the SOA of the preferred tables. Finally, there was some question on the part of LHATF as to why they were rushing such an interim solution when a new SOA mortality table update was underway with a somewhat similar timeline.

Life (A) Committee Update: Mike Batte, chair of LHATF, gave LHATF's report to the Life (A) Committee. Jim Poolman, chair of the Life (A) Committee, directed LHATF to come up with a solution to the UL secondary guarantee lapse issue if, in fact, LHATF could not support use of lapses in reserving. He also emphasized the urgency of receiving the SOA peer review of the preferred tables as soon as possible to keep progress on the interim solution moving forward.

3. **SOA Preferred Mortality Table Development:** Larry Gorski provided an update with respect to the SOA's preferred mortality table project. Key aspects related to the table development are described below.

– Participants: Forty-nine participating companies.

– Underwriting Algorithm: A history of companies' underwriting procedures is being used to develop an algorithm to sort the data into the various underwriting classes.

– Experience Analysis Team: This team, among other things, is working on preferred underwriting selection and wear off issues. Because preferred risk categories have only been around for 6–8 years, it is unclear whether or not or to what extent the selection effect will wear off over time.

Finally, LHATF gave the SOA a formal charge to review the preferred mortality tables, which were created as part of the ACLI's interim solution discussed previously. The goal of LHATF is to have a similar comfort level with the preferred tables as they have had with other SOA developed tables. LHATF will draft a formal charge for the SOA shortly.

continued on page 8 ▶▶▶

The real test of the process is whether all material risks in a product have been considered…

continued from page 7

4. **SVL II Subgroup of LHATF:** This subgroup is considering regulatory issues related to a principles-based approach (PBA) to reserves. LHATF received an update from Shirley Shao, chair of the Academy's Regulatory Issues, Governance and PBA Review Work Group. The structure of the PBA Review could be referenced in statutes, defined in regulations and actuarial guidelines, fleshed out in ASOPs and finally supplemented by state examination. The audit would include review of actuarial judgment, methods to develop assumptions and methods for model construction. The real test of the process is whether all material risks in a product have been considered appropriately in the reserving methodology. The review is not an opinion that the reserves are correct, rather that material risks have been considered, methods, models and assumptions are appropriate, margins have been appropriately reflected and laws and regulations have been complied with. The form would be a pre-release review, but sign-off would be after the work is completed.

   Items to be discussed include who can perform the review, who is the client (company or regulators), what qualifications are necessary for the reviewer, form of the reviewer's report, requirements for PBA reviewer, etc. The subgroup plans to schedule two conference calls to receive feedback from regulators with respect to the PBA reviewer. A white paper on the PBA review and governance will be prepared by the work group and will be available for review at the June 2006 NAIC meeting.

5. **AAA SVL II Work Group (Risk Management and Financial Soundness Committee):** LHATF next heard a presentation from the Academy SVL II Work Group on various initiatives related to SVL II. Donna Claire discussed the various committees and work groups involved in the SVL II/PBA project, as well as the frequent Webcasts, which have been sponsored by the Academy on PBA. Materials related to the current PBA project can be found at www.actuary.org/risk.asp.

   Functions of various work groups were also discussed including the Reinsurance Work Group (Sheldon Summers, Chair), Consistency Work Group (Bob DiRico, Chair), Annuity Reserve Work Group (Jim Lamson, Chair) and Life Reserve Work Group (David Neve and Tom Kalmbach, Co-chairs).

   The groups are still discussing application to new business only or retroactive application to all business. It was also pointed out that the ASB was planning a meeting to discuss implications of a principles-based approach to valuation on the various Actuarial Standards of Practice.

6. **Life Reserves Work Group ("LRWG"):** Presentations were given by co-chairs David Neve and Tom Kalmbach on principles-based valuation for life products. Also discussed was an Academy Comment Letter, which responds to certain New York concerns, and comments related to such a valuation framework. Most of the discussion focused on margin setting and the quantification process contemplated by the LRWG. Several points were made by the Academy relative to margin setting:

– Regulators need to determine the balance between prescribed standards and actuarial judgment.

– LRWG believes margins will vary by company to reflect:

  i. Risk characteristics of each company (no longer an industry-based margin such as a valuation mortality table designed to cover risk for all companies using the table).

  ii. Because assumptions are not locked in at issue, there is less need for provision for adverse deviation since assumptions can be revised as needed.

  iii. Implicit margins need to be considered such as blending an industry table with actual experience, ignoring mortality improvement, and the cash value floor.

  iv. Risk related to policyholder behavior is reflected directly in dynamic assumptions and/or sensitivity testing.

– The LRWG constructed an approach to measure the relative level of margin in all assumptions combined as defined below

$$Z = \frac{\text{Reserve Held – Best Estimate Liability}}{\text{Present Value of Capital Requirement}}$$

Where Z represents the amount that the pre-tax return on capital is expected to exceed the return on invested assets (i). Therefore,

$$ROC = Z + i(\text{pre-tax})$$

Tom Kalmbach presented results of modeling for a 20-year level premium term product. Z values under a PBA approach are about 5 percent (ROC = 10 percent = 5 percent (Z) + 5 percent (*i* pre-tax). Conclusions from the initial results of the Z-factor analysis indicate that margins in the 2001 CSO Table may be too high (with Z in the 20 percent range). The work group is also studying UL secondary guarantee products and will have preliminary results for consideration shortly.

Next, New York's comments related to PBA were discussed by Bill Carmello who highlighted major items contained in several letters submitted by New York in January and February. New York's comments at the meeting included:

– Federal Income Taxes: This is a major area of expense. Should FIT be ignored in reserving? New York asked the Academy to develop rationale for ignoring taxes in reserves.

– Use of Optimistic Assumptions: How will controls be set on the use of assumptions, which are characterized as best estimate, but fall on the optimistic end of the range?

– Projection Period: New York is concerned when profits in the tail are considered by the reserving mechanism. What controls will be placed on excessive profits in the tail?

– Use of Treasuries or Risk Free Rates for Discounting Rather than NIER: To discourage companies from using riskier investments to ratchet up the discount rate for reserves, New York would prefer Treasuries or Risk Free Rates be used.

– Modeling: Approach cannot simply be an aggregate approach for an entire block of business, but must also look at products and product lines to some extent.

– Experience Reporting Requirements: Requirements for submission of experience data and analysis need to be defined and are important in a principles-based approach.

– Credibility: New York would require use of an industry standard (with margins) when experience is not credible.

– Policyholder Behavior: New York would require use of a conservative assumption for policyholder behavior in situations where experience data is not fully credible.

– Seriatim vs. Aggregation: New York has concerns if a high level of aggregation is used in determining reserves.

Finally, Bill Carmello discussed the concept of penalty reserves in cases where reserves are understated due to overly optimistic assumptions similar to Basel requirements. It was suggested that three times the reserve understatement be established and required to be held for three years to keep companies from using overly optimistic assumptions in reserving under a principles-based approach.

The Academy discussed major issues of disagreement with New York's comments, which included the discount rate methodology, aggregation, federal income taxes and use of a VACARVM (worst point) or present value approach.

The ACLI expressed some concerns with respect to the Academy's approach preferring that focus be placed on the interim solution. Also, tax implications require that the principles-based approach be done carefully and correctly.

Other issues identified included: 1) small company issues under PBR, 2) application to new business only or inforce as well, and 3) dovetailing the reserve approach with capital requirements to ensure consistency in the regulatory framework.

7. **A&H Working Group:** LHATF received an update from Julia Philips, Chair, on activities of the A&H Working Group that included the following projects:

   – Finalized LTC Experience Reporting Forms

   – Individual Major Medical Market Claim Spiral Issues (ongoing)

   – Premium Deficiency Reserve Subgroup (continues to consider PDR calculation issues)

   LHATF adopted the report and forwarded the LTC experience reporting forms to the Blanks Task Force for its consideration.

8. **LHATF General Matters Meeting:** LHATF discussed and received updates related to various other projects described below.

   – LHATF/CADTF Subgroup Report: LHATF discussed various conference calls of the subgroup related to principles-based reserves and capital, governance issues and focus of the new Examiner's Handbook on risk focused examinations. The subgroup is now trying to get other groups involved in the process, other than actuaries, such as lawyers, accountants, etc., and is looking not only at what LHATF/CADTF has developed with respect to principles-based, but

continued on page 10

continued from page 9

also developments with respect to the Model Audit Rule and SOX as well as the Examiner's Handbook on risk focused examinations.

– Reinsurance Accounting and Reserving for Term Products: Sheldon Summers reviewed what he perceives as inconsistencies in credit for reinsurance with respect to term life products that are coinsured where the net premium exceeds the gross premium. This appears to be an issue of reflecting a full year's statutory reserve credit for annual mode reinsurance agreements. He believes reserve credit is overstated in cases where premiums are paid to the reinsurer annually, but the actual policy mode is other than annual. He believes this creates too high a reserve credit and the net retained reserve is too low.

  In the case of mean reserves, the ceding company takes a mean reserve credit for reinsurance, but because the reinsurance mode is annual, there is no reduction to the direct net deferred premium asset. In the case of mid-terminal plus NUEP reserves, he believes that a net unearned premium credit should not be allowed; rather, the credit should be capped at the gross unearned premium. He cites deprivation of surplus language in the reinsurance model regulation for his position.

  His proposed solution would be to require use of the lower of the gross premium or the net premium in the deferred premium or unearned premium calculations for both direct and reinsurance reserves in any cases where polices are reinsured.

  The ACLI will be responding to California's proposal, which was exposed for comment prior to the next NAIC meeting (45-day comment period). The proposal received support from several states during the discussion. A conference call will be held to discuss the comments and possibly forward the proposal to the SAPWG.

– Adoption of AG ABC: This actuarial guideline was adopted which defines projection of guaranteed non-forfeiture benefits under CARVM for deferred annuities subject to the new annuity non-forfeiture law which permits minimum guaranteed interest rates tied to an indexed rate that could be reset at a future point in time.

– Adopted Revisions to Model Variable Annuity Regulation: This model was refined to be consistent with other regulations coming from the Speed to Market and interstate compact initiative.

– Electronic Actuarial Opinions: LHATF continues to work on which actuarial opinions should automatically be part of the year-end annual statement filing requirements such as: basic reserve opinion, non guaranteed elements, dividends, etc. Certain opinions such as X-factor or RAAIS submissions need to be kept confidential, which will be the focus of the work going forward. A summary prepared by NAIC staff related to the various actuarial opinions that might be rendered under the laws, regulations and actuarial guidelines currently in place will be reviewed. The goal is to have all the publicly available opinions electronically filed directly with the NAIC.

– New Cancer Table: Work is continuing on a new Cancer Table for valuation. The SOA is contacting companies for participation and is in the process of sending out a data call.

CAPITAL ADEQUACY TASK FORCE (CADTF)

I attended two meetings of the CADTF.

1. **Life RBC Working Group:** The Life RBC Working Group discussed the following topics.

   – Expand C-3 Phase I: This proposal by Blaine Sheppard (Minnesota) would expand the requirements for C-3 Phase I interest rate scenario testing to all companies with $100 million of assets or more who perform cash flow testing. The proposal was exposed for a 45-day comment period in an attempt to be able to adopt in June for a 2006 year-end effective date. Bill Carmello (New York) asked if any consideration was being given to moving to a CTE based C-3 Phase I measure as opposed to a weighting approach that approximates the 95th percentile. The ACLI asked whether this proposal is trying to fix a problem in the existing framework that does not appear to have any problems.

   – Update on C-3 Phase III: Nancy Bennett, Chair of the AAA Life Capital Adequacy Subcommittee, provided an update on the work of the AAA Life Capital Work Group. Its charge is to consider C-3 capital for life products calculated on a principles-based methodology with a focus on the interest rate and market risk component. Work will take place in conjunction with the AAA Life Reserve Work Group, which is working on principles-based reserves. An interim report by the AAA will be provided at the June 2006 NAIC meeting.

– Modco Dividend Liability RBC Credit: CADTF received the Academy Modco Dividend Liability Recommendation, which would apply to all reinsurance, but does not address closed block issues. A reinsurer must be able to demonstrate control over and benefit from dividend changes to be accorded one-half credit in the Total Adjusted Capital (TAC) calculation, which would rarely occur. Ceding companies would lose credit for the portion of the dividend liability ceded to the extent that the ceding company cannot realize financial benefit associated with a dividend reduction on the portion of policies reinsured. The NAIC staff will develop RBC instructions to implement this recommendation by the end of March.

– C-3 Phase II Issues/Next Steps: The Life RBC Working Group briefly discussed the Q&A, which had been prepared on C-3 Phase II implementation issues. This Q&A will be incorporated into the 2006 RBC Instructions. This document can be found on the NAIC Web site with various other materials on C-3 Phase II (instructions, Academy reports, smoothing and transition rules, alternative methodology, prepackaged scenarios, etc.).

– 2005 Year-end Testing Results: NAIC staff prepared preliminary statistics related to RBC filings for 2005 year-end. Life companies continue to have very few problems with eight companies out of 908 having action levels triggered. A supplemental schedule on C-3 Phase I and C-3 Phase II was prepared that indicates that 90 companies did C 3 Phase I testing and 81 companies did C-3 Phase II testing and 36 companies did both C-3 Phase I and II testing. The industry-wide C-3 Phase I and C-3 Phase II capital requirements were $3.7 billion and $2.8 billion, respectively, before taxes and covariance effects.

2. **Capital Adequacy Task Force:** The following topics were discussed by the CADTF.

– C-3 Phase II Results Subgroup: Larry Bruning (Kansas) heads up this subgroup, which will be analyzing the results of C-3 Phase II testing, its effectiveness, and whether any refinements to the approach are needed. CADTF discussed a summary of company responses to the C-3 Phase II survey of the NAIC which identifies the number of companies with GMDBs and VAGLBs, methodology to be used, hedging, projection system used, peer review planned, etc.

The Academy is also in the process of requesting responses to its survey related to C 3 Phase II, the results of which were presented at a session in Chicago prior to the ERM Symposium in April 2006. The Academy will send the results of its survey to both the CADTF Results Subgroup as well as the Life RBC Working Group for their consideration.

A reinsurer must be able to demonstrate control over and benefit from dividend changes to be accorded one-half credit in the Total Adjusted Capital (TAC) calculation...

– LHATF/CADTF Joint Subgroup: This subgroup continues to have several conference calls per quarter related to governance requirements, peer review and PBA review processes.

– International Solvency Initiative: CADTF plans to have a conference call to discuss how it will respond to various solvency initiatives taking place at the international level.

EXECUTIVE/PLENARY SESSION

The Executive/Plenary (EX) Committee adopted various items of interest as described below.

– MGA Model Regulation Revisions: Modifications were made to achieve consistency with the new annuity non-forfeiture law and interstate compact states in Speed to Market initiatives.

– RBC Model Act Revision: Revisions were made to incorporate a trend test trigger based on the Combined Ratio and relative capital levels for P&C companies.

– AG 39 VAGLB Extension: Sunset date was extended from Jan. 1, 2006 to Jan. 1, 2008.

– U.S. Reinsurance Collateral White Paper: The EX Committee adopted the white paper and gave the Reinsurance Task Force a new charge to review collateral issues and develop standards for rating reinsurers' financial strength in the United States and abroad with a proposal to be provided for consideration by the December 2006 NAIC meeting.

– Life (A) Committee Charge: The EX Committee added a new charge for the Life (A) Committee to consider suitability related to consumer protection under all annuity transactions (not just annuity sales to seniors).

continued on page 12

It is not clear that a problem exists in this market; however, regulators want to remain proactive and many new companies are entering the marketplace…

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LIFE INSURANCE (A) COMMITTEE AND MARKET REGULATIONS & CONSUMER AFFAIRS (D) COMMITTEE

I attended a portion of a special joint Life (A) Committee and (D) Committee meeting intended to cover general matters and specific aspects of annuity suitability, indexed annuities and any other issues related to annuity sales.

– Life (A) Committee: Mike Batte, chair of LHATF, gave a report to the Life (A) Committee related to LHATF's work on the ACLI interim solution and problems LHATF was finding with use of lapse rates on UL secondary guarantees, as well as the need for a preferred valuation table that was "approved" by the SOA similar to other tables used by the NAIC for valuation. Jim Poolman, chair of the Life (A) Committee, indicated that it was LHATF's responsibility to come up with solutions to the problems they have identified with the proposal and keep to their commitment to have an interim solution by the September 2006 meeting for the Life (A) Committee to consider.

  The Life (A) Committee will also hold an interim meeting to consider Life Settlements and Insurable Interest Laws, Financing of Insurance Policies, and issues related to Investor Owned Life Insurance hosted by the New York Insurance Department.

  Finally, a subgroup of the Life (A) Committee will investigate use of travel criteria in the underwriting of life insurance policies.

– (A) and (D) Joint Meeting: The joint committee received a presentation by Jack Marrion, Advantage Compendium on the Indexed Annuity marketplace, followed by a presentation by the Iowa Insurance Department on Indexed Products and Market Regulation Issues. This issue was addressed in two phases: Phase I was a two-hour educational seminar by Noel Abkemeier (Milliman) and Jack Marrion held a day earlier. Regulators discussed the need for suitability criteria, producer training, parameters for product design and discussed various recommendations. Iowa and Minnesota sponsored the seminar because a significant portion of indexed annuities are sold by companies domiciled in their states. Iowa and Minnesota plan to develop various training materials, advertising and buyers' guides with a focus on indexed annuities by the June 2006 NAIC meeting.

  It is not clear that a problem exists in this market; however, regulators want to remain proactive and many new companies are entering the marketplace, as well as interests on the part of the federal government and NASD in sales practices of EIAs, which are also driving this project.

REINSURANCE TASK FORCE

The Reinsurance Task Force discussed various issues highlighted below.

– Reinsurance Intermediary Act: This act was amended to make it clear that reinsurance intermediaries must cooperate and provide relevant information requested in arbitration proceedings. There had been some issues raised relative to cooperation by reinsurance intermediaries in discovery proceedings when the client relationship had terminated or was strained.

– New York Department Life Company Attestation Proposal: New York proposed that life companies make attestations similar to those now required for P&C companies as a result of finite reinsurance problems in the P&C industry. Industry representatives indicated that disclosures for life companies already appear to be adequate in the form of Schedule S and the Notes to Financials. The Reinsurance Task Force asked New York to go back and determine whether there have been specific problems in the life industry that need to be corrected.

– Collateral Issue: It was noted that the regulators might be at the point where an alternative to the United States 100 percent collateralization requirement for foreign reinsurers might be considered given the regulatory framework that now exists at the IAIS. The Executive Committee will add a new charge for the Reinsurance Task Force to consider alternatives to the current framework, which might include a rating agency approach for international reinsurers to determine reasonable collateral requirements.

– Bermuda Insurance and Regulation Presentation: Brad Kading of the Association of

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Bermuda Insurers and Reinsurers gave a presentation on the Bermuda reinsurance marketplace. Bermuda makes up about 28 percent of the worldwide reinsurance capital and surplus ($44 billion out of $160 billion total) and raised $18 billion out of total capital raised of $21 billion.

TAX POLICY TASK FORCE

I attended a portion of this meeting which discussed: 1) tax deductibility of CAT reserves, 2) encouraging purchase of health insurance by individuals by according their premiums and medical expenses the same tax preferences as employer sponsored health plans, and 3) operation of State Workers Compensation Plans in the private workers compensation marketplace where preferred tax status is creating an unlevel playing field according to the industry.

RISK ASSESSMENT WORKING GROUP (RAWG)

The RAWG met in Chicago on March 20, 2006 to discuss comments on the revisions to the Examiner's Handbook to incorporate aspects of a risk focused examination. Regulators' primary concern is still in the area of training related to a risk-focused exam. It was noted that states would have to supplement NAIC sponsored training with their own training to a certain extent.

The intent is to receive comments on the Examiner's Handbook on March 20th, make revisions as necessary, and re-expose for 30 days. The intent is to adopt the revised Examiner's Handbook in June 2006.

It was noted that the AICPA has released eight papers on risk assessment, which the RAWG intends to review.

Mike Moriarty (New York) indicated that there will be bumps in the road, but the key is to get this risk focused examination process started, then refinements can be made as needed. Issues with the industry continue to be confidentiality, small/medium company issues, coordination with NAIC/AICPA SOX 404 agenda, training, deployment and coordination among the states during the transition from the existing examination framework to a risk focused examination. It appears that the risk focused examination will become an accreditation standard on Jan. 1, 2010.

ACCOUNTING PRACTICES AND PROCEDURES TASK FORCE

I attended several meetings of the working groups reporting to the Accounting Practices and Procedures Task Force and related accounting issues as discussed below.

1. **Statutory Accounting Principles Working Group:** SAPWG discussed the following items of interest.

   – Prescribed or Permitted Practices for Captives: The Risk Retention Group (E) Task Force has asked SAPWG to review the requirements for captive insurers where prescribed or permitted practices such as GAAP accounting might be permitted by the state of domicile. Questions include: 1) is GAAP allowed by the AP&P Manual? 2) is GAAP a permitted practice? and 3) is notice of a prescribed or permitted practice required to other states when the company is a captive operating only in its state of domicile? Virginia indicated that it would like to see a reconciliation from GAAP (permitted practices) to SAP for all captives. NAIC staff will review this issue, which will be considered in June 2006.

   – International Statutory Accounting Principles Subgroup Report (ISAP): ISAP is an interface between the IASWG and SAPWG. It was noted that an NAIC comment letter on "Measurement on Initial Recognition" will be drafted. IASB insurance contracts developments were highlighted and included the following: 1) focus on life insurance is current exit value and 2) future life premiums are not a contractual right of the insurer, but rather a customer relationship and intangible asset. Focus is not on current entry value because it was felt that indirect acquisition costs could be manipulated and earnings managed because of the following fundamental formula:

   Premium
– Acquisition Costs
– Liability Best Estimate
Risk Margin

   Regulators stated that the AP&P Manual (Codification) and RBC have been the main reason that insolvencies have decreased in the United States and regulators must be ready to react to any IASB/FASB developments that might arise or conflict with Codification or NAIC RBC. A conference call will be scheduled to discuss fair value issues.

2. **NAIC/AICPA Working Group:** Topics discussed at the NAIC/AICPA Working Group meeting are highlighted below.

   – AICPA Update: It was noted that the AICPA has released eight new auditing standards (SAS 104–111) for a risk-focused audit. These are effective for fiscal years beginning after December 15, 2006.

   – Model Audit Rule Revisions: Doug Stolte (Virginia) highlighted the changes made to incorporate provisions of SOX including changes to Title II—Auditor Independence (rotation, prohibited services, etc.), Title III—Governance (Audit Committee Membership, independent

continued on page 14

continued from page 13

members) and Title IV—Internal Controls over Financial Reporting (including the insurer self-assessment and CPA attestation). The document was exposed for a 45-day exposure period to be followed by a Financial (E) Committee hearing on the revisions.

Separately, the industry-interested parties will begin to assist in the development of an implementation guide and development of a comprehensive work plan to develop such a guide.

There are still objections to the audit rule's application by some mutual insurers, non-public companies, etc. as well as NCOIL (National Conference of Insurance Legislators) which believes that the Audit Rule Revisions should be authorized by the state legislatures, not through state administrative or regulatory procedures.

3. **International Solvency Initiatives Working Group**: This newly formed working group is responsible for responding to actuarial issues related to IAIS initiatives. The working group received a presentation by Rob Esson of the NAIC who is the chair of the IAIS Insurance Contracts Subcommittee. Also discussed were the following insurer solvency papers:

   – IAIS Cornerstones for Formulation of Regulatory Financial Requirements: October 2005 (Cornerstones Paper).

   – IAIS Roadmap for a Common Structure and Common Standards for Assessment of Insurer Solvency: Feb. 16, 2006 (Roadmap Paper).

   – The IAIS Common Structure for the Assessment of Insurer Solvency—Feb. 14, 2006 (Structure Paper—First Draft).

   Notes on Rob Esson's presentation are provided below.

   – International Accounting Standards (IASB) and International Solvency Standards (IAIS/EU Solvency II) will be monitored.

   – Esson is Chair of the IAIS Insurance Contracts Subcommittee.

   – IASB Phase I—did not consider insurance contracts, U.S. GAAP allowed.

   – IASB Phase II—Principles Based Valuation of Liabilities is underway. Two work groups:

     i. Financial Instruments Work Group.

     ii. Insurance Work Group—tentative conclusions include unbiased cash flow estimates, discounting (for life and P&C), margin for risk, life would write off expenses and not recognize future premium as an asset (intangible).

   – Solvency Framework for IAIS

     Total assets equal to:

     1) Best Estimate Liabilities
     2) Provision for Risk Margins
     3) Required Capital
     4) Excess Capital

     1) and 2) are referred to as technical provisions.

   – The ideal long-term result would be to use general accounting purpose liabilities as the driver for international solvency capital calculations and solvency assessment.

4. **International Accounting Standards Working Group:** The IASWG meeting discussion focused on activities of the IASB and convergence with FASB. Rob Esson of the NAIC summarized recent IASB Insurance Contracts Phase II developments.

   – Cost Based Models were rejected.

   – IASB prefers an exit value model to an entry value model.

   – Policyholder Premiums (not a contractual right of insurer, but rather option of the policyholder to pay). Tentative decision is that premiums are a form of customer relationship, therefore an intangible asset of sorts.

   It was also noted that the IASB and FASB renewed the objective of convergence in a Memorandum of Understanding (MOU) dated Feb. 27, 2006 with a goal for convergence by 2008. The NAIC is also in the process of commenting on several IASB discussion papers including Guidelines for MD&A as well as Measurement Basis for Initial Recognition. They are also commenting on the FASB Fair Value Option.

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The next NAIC meeting will be in June 2006 in Washington, DC. ●

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Update on Preferred and PreNeed Valuation Mortality Tables

By Roger K. Annin

Two committees continue work on experience studies that will provide a basis for new valuation mortality tables. The first committee is the Preferred Mortality Project Oversight Group and the second is the PreNeed Valuation Project Oversight Group. This article summarizes activity to date for these committees.

Preferred Mortality Project Oversight Group

This is a joint committee of the Society of Actuaries (SOA) and the American Academy of Actuaries. The committee was formed to respond to requests from the NAIC for the development of preferred mortality valuation tables. The need for such tables is actively supported by industry groups such as the ACLI and will form a foundation for Principle-Based Reserves (PBR).

A number of "teams" have been formed to address specific aspects of the project. The list includes:

- Data Validation Team—validates company contributions and resolves questions related to data quality.
- Underwriting Criteria Team—evaluate underwriting guidelines used by companies in determining preferred risk classifications.
- Experience Analysis Team—develop initial experience tables.
- Valuation Basic Tables Team—develop basic tables from experience analysis results.

Data Contribution. To date, approximately 50 companies have contributed data for this experience study. This compares to 21 contributing companies for the 2001 VBT. However, this project calls for more than just experience contributions. In order to evaluate experience by underwriting class, each contributing company is also asked to submit their underwriting criteria. The underwriting criteria team has developed an algorithm that will enable the POG to combine data for similarly classified policies. This effort requires a combination of data analysis and actuarial judgment. The algorithm will be tested initially against a subset of data, hopefully during April.

Funding and Timing. A project of this scope requires a dedicated effort on the part of many volunteers. It also requires funding to support hard costs for data tabulation and various levels of analysis.

The costs for this special study fall outside the SOA's normal life experience study budget. Therefore, a special assessment is needed to raise funds to complete the project. The POG has been actively involved with the SOA in addressing approaches to fund the cost. The objective is to spread the cost across the industry in a fashion that reflects the benefits companies will realize from the new tables. For example, this implies a higher expectation for writers of term insurance and universal life where preferred classes are more common.

The project timeline will undoubtedly undergo revisions as the project moves forward. However, the goal is to present results and recommendations to LHATF in the last quarter of 2006, with expected adoption of the tables in 2007.

ACLI Interim Proposal. Because of the time needed to formulate, present and adopt new preferred risk valuation tables, the ACLI has offered an interim proposal. Although not directly linked to the POG's efforts, it is interesting to examine the ACLI proposal. This proposal was initially presented to LHATF in December and LHATF has referred the proposed factors recommended by the ACLI to the SOA for review.

Under the ACLI proposal, there would be three Nonsmoker valuation classes—Super Preferred, Preferred and Standard. There would be two classes for Smokers, Preferred and Standard. The table below provides a brief overview of the mortality ratios proposed by the ACLI.

Preferred Mortality Ratios ACLI Proposed to 2001 VBT, ANB, Select/Ultimate

Super Preferred Male Nonsmoker

Age	Dur 1	Dur 5	Dur 10	Dur 15	Dur 20
25	51%	51%	50%	50%	50%
35	52%	51%	50%	50%	53%
45	50%	50%	50%	50%	50%
55	50%	50%	50%	50%	55%

Preferred Male Nonsmoker

Age	Dur 1	Dur 5	Dur 10	Dur 15	Dur 20
25	71%	70%	70%	70%	70%
35	71%	70%	70%	70%	72%
45	70%	70%	70%	70%	70%
55	70%	70%	70%	70%	73%

continued on page 16

It might be noted that one goal of the ACLI proposal is to apply factors to the 2001 Table so that effectively, the preferred tables will not represent a new valuation table…

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Residual Standard Male Nonsmoker

Age	Dur 1	Dur 5	Dur 10	Dur 15	Dur 20
25	117%	117%	117%	117%	117%
35	116%	118%	117%	117%	116%
45	117%	117%	117%	117%	117%
55	117%	117%	117%	117%	116%

Ratios for female lives are very similar to males for Nonsmokers. Smoker ratios are about 70 percent for all durations for preferred risks and 113 percent for residual standard.

It might be noted that one goal of the ACLI proposal is to apply factors to the 2001 Table so that effectively, the preferred tables will not represent a new valuation table, but rather a breakdown of the existing table. Under the ACLI proposal, super preferred risks are assumed to account for 15 percent of business, preferred risks account for 15 percent and standard account for 70 percent. Mathematically, these ratios applied to the table ratios above add back to 100 percent of the 2001 Table.

PreNeed Valuation Table

A PreNeed Valuation Table Project Oversight Group also exists to examine mortality experience of companies in this market. PreNeed plans are sold as funding vehicles for prepaid funeral arrangements. Policies in this market are sold directly through funeral homes and have very limited underwriting. Most business is single premium, but some multi-pay plans exist as well.

Concern exists that the 2001 Table does not adequately represent experience for this market. In fact, most company studies show the 2001 Table mortality falling well below levels seen in the PreNeed market. In addition, the slope of the mortality curve for PreNeed business may be quite different from underwritten business. A reverse select period has been identified in preliminary data analyzed by the POG.

Data Contributions. In this study, 10 companies have contributed data with adequate deaths to provide credibility. Credibility is more easily obtained for this market due to the high average issue age and higher frequency rates experienced.

The POG is currently tabulating and reviewing data and expects to make a formal report to LHATF at their June meeting. It is anticipated that a proposed valuation table may be offered as early as the September LHATF meeting for this market.

Coordination with Principle-Based Reserves

As stated earlier, these new valuation tables will provide a foundation for PBR. As such, the co-chair of the American Academy of Actuaries Life Reserves Working Group has discussed with the Preferred Mortality POG expectations of that group in regard to new valuation tables.

The general philosophy is that under PBR, companies will look to their own mortality experience, but then blend such experience with industry (NAIC approved) tables to gain credibility. Under this approach, industry tables will need to reflect the mortality expectations for the risk class. As such, industry tables will need to span a range of mortality experience based on underwriting and market guidelines. Tables that are both more aggressive and more conservative than current tables will be needed.

Companies would not be limited to a specific valuation table. Multiple tables might be used depending on the spread of risk and markets addressed by the company's products. Indications from the LRWG are that as many as 10 tables may be needed to properly address the spread of risks envisioned. This implies multiple levels of preferred underwriting and more conservative tables for simplified issue and PreNeed markets.

Summary

Work is moving forward at a fairly rapid pace in the valuation area. Substantial time at LHATF meetings is devoted to PBR and the mortality tables needed to form a foundation for more dynamic reserves.

Over the remainder of this year, we expect to see experience data from both the Preferred Mortality study and the PreNeed Mortality study. Undoubtedly, the ACLI proposal will continue to garner attention as an interim solution to conservative valuation mortality for the preferred risk classifications.

Much of the activity of these groups can be easily tracked through *www.soa.org* and *www.actuary.org*. ●

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ACLI Valuation Proposal: A Quick Start to the Revision of the Valuation Law?

By James R. Thompson

Introduction:

The regulatory community is considering revising the Standard Valuation Law (SVL) significantly to create a less formulaic approach that will be tied to company or industry experience assumptions. The name adopted for this approach is Principles Based Reserving (PBR). The law incorporating this will be the SVL II. Even though this is going on, at the December meeting of the Life and Health Actuarial Task Force (LHATF) prior to the NAIC meeting, the ACLI proposed some quick changes to the current SVL. Many issues are involved, so they continued their discussion in a conference call on Feb. 3. This article will discuss this and what its implications are.

Current Valuation Principles

To summarize the current state of valuation, we have a formulaic SVL that specifies the mortality, interest and method (CRVM). The interest rate is updated annually by a formulaic approach that qualitatively sets longer term guarantees at lower rates. The mortality table was recently updated from the 1980 CSO to the 2001 CSO with a mandatory applicability of Jan.1, 2009.

The only way experience assumptions get into valuation is through the asset adequacy analysis in the Actuarial Opinion and Memorandum Regulation (AOMR). There are two versions of this. The older one allows some companies, based on size in net admitted assets and passing certain other tests, to be exempt from the asset adequacy analysis. Others must perform such analysis. A newer version, which has passed in only a handful of states, mandates the analysis annually for all. On Jan.1, 2009, when all companies must issue policies on the 2001 CSO, asset adequacy analysis will be required in connection with that. Knowledge of this may be slowing passage of the newer AOMR.

Although the margins in the 2001 CSO mortality are less than in the 1980 CSO, this table only has distinctions by sex and smoking status. Many companies in the better underwritten markets use one or more grades of preferred mortality and find both the 1980 and 2001 CSO tables to be too conservative. This is especially so for products which must be reserved under XXX. These include the popular reentry term (with and without the Return of Premiums Rider). These have level periods which are usually fully guaranteed from 10–30 years.

Another type of policy is the universal life with a secondary guarantee. This means that, so long as a minimum premium is paid, the policy will not lapse. This is written by some large stock companies, and they feel that the Actuarial Guideline 38, which regulates this, creates too high reserves. That the reserves are too high can be considered by cash flow testing or GAAP. There appears to be no way to lower reserves under current statutory methodology.

ACLI Mortality Study

Mike Taht, an actuary from Tillinghast, was largely responsible for the creation of the 2001 Valuation Basic Table(VBT), which is the mortality table underlying the 2001 CSO. The ACLI hired him to come up with a table that could be used to value preferred mortality. He presented this at the December NAIC meeting. Significantly, if adopted, this table would be the first to be created by a source outside the Society of Actuaries official committee structure. This can be found as Appendix A (133 pages) for the Feb. 3 conference call.

In essence he estimated the ratio of preferred to aggregate mortality, the prevalence of preferred products underlying the 1990–95 experience and then using the principle of conservation of deaths to estimate the residual standard mortality. There were two preferred categories for nonsmokers and one for smokers.

In essence, the ACLI proposal is to allow lapse to be considered in calculating a net single premium in one step of the reserving method in AG 38. This issue presented to the law firm was whether such a revision was permitted under the Standard Valuation Law.

continued from page 17

Since the definition of preferred mortality has varied, one challenge was to develop a valuation assumption for the level of preferred mortality. The level of early duration preferred risk mortality and the persistence of differentials were important issues. To obtain the level, he used the Tillinghast Old Age Mortality Study (TOAMS) (for years 2000–2002) and the SOA Preferred Underwriting Survey.

Although there is no published late duration experience for insured preferred risk lives, the TOAMS provided credible preferred nonsmoker mortality up to duration 15. To demonstrate the possibility of persistence beyond duration 15, several analogous situations for such persistence were cited (studies of alcoholism, cholesterol and blood pressure, urine anomalies and diabetes). He went on to discuss the changing prevalence of preferred risk in the insurance industry.

Lapse, the Standard Valuation Law and AG 38

The secondary guarantee UL policies have statutory reserves which are considered overly conservative. There appears to be no way around this. The ACLI obtained from a law firm a position paper entitled "Proposed Revision to the Actuarial Guideline XXXVIII." In essence, the ACLI proposal is to allow lapse to be considered in calculating a net single premium in one step of the reserving method in AG 38. The issue presented to the law firm was whether such a revision was permitted under the Standard Valuation Law.

They qualify the situation as one where a state has passed the Regulation XXX and the NAIC UL Model Regulation and that the NAIC Accounting Practices and Procedures Manual has been adopted as the state's codification of statutory accounting and that amendments to it become operative without further action by the commission as long as they are not inconsistent with state law or regulations. Further, they assumed that AG 38 is operative in that state upon its adoption by the NAIC without the need for the insurance commissioner to adopt it as a regulation and that there is no prescribed statutory accounting practice inconsistent with the ACLI's proposed revision to AG 38.

The firm concludes that "Notwithstanding the absence of clear legal guidance… using lapse assumptions for reserves for secondary guarantees does not violate the express terms of" or principles underlying the SVL or Regulation XXX and the UL model regulation and that, although the SVL does not expressly permit the use of lapse for UL with secondary guarantees, the SVL does provide state regulators the discretion to allow lapse so long as that practice can be "demonstrated to be appropriate, as an actuarial matter, in light of the benefits and the pattern of premiums."

They quote Section 9 of the SVL dealing with indeterminate premium plans where reserves held must be "appropriate in relation to the benefit and the pattern of premiums" and be "computed by a method that is consistent with the principles of the Standard Valuation Law, as determined by regulations promulgated by the Commissioner."

They also quote the AOMR in dealing with reserves in light of the asset held and consideration to be received.

Discussion on Feb. 7

The ACLI proposal was to introduce the preferred mortality rates, the use of lapse rates for calculating reserves for UL with Secondary guarantees and allowing non-premium paying UL contracts with secondary guarantees to use the surrender charge offset to the additional reserve calculation. They briefly discussed the mortality table and the legal opinion.

In the conference call, the regulators discussed the proposal. William Carmello of N.Y. produced a memo earlier with some comments on it. In essence, he supported giving relief to preferred business as a general concept but did not accept the proposed tables. One point he did not support is the use of preferred underwriting to age 95 regardless of issue age and would want a grading to ultimate. He also wanted the new nonsmoker table to tie in the aggregate to 100 percent of the 2001 CSO nonsmoker. The ACLI proposal would tie to about 77 percent. Mike Taht said this 77 percent reflected more modern proportions of preferred.

Carmello also opposed the changes to AG 38. He believed that a change in the SVL is needed to permit the use of lapse. He also did not want to change the surrender charge offset for the non-premium paying UL. It was noted that the proposed mortality table had not come from an SOA committee and that the SOA was considering producing one.

One issue discussed was timeliness. How long would it take to revise the SVL to explicitly allow lapse? How long would it take for the SOA to publish a table? Finally, a vote was taken on whether to expose the ALCI proposal. There was some discussion whether exposing it would be considered an endorsement. In the end, some who voted for exposing it said they did not support it but would let it be discussed anyway. Further discussion of this will occur at the March NAIC meeting.

Update From Spring LHATF Meeting March 2

Ted Schlude's article discusses what happened at the LHATF meeting. The NAIC legal counsel is reviewing the legal opinion regarding allowing lapsation for the UL secondary guarantee. Regulators want the SOA to do a peer review on the ACLI preferred mortality tables. There was some question as to why the ALCI was rushing into such an interim solution when the SOA mortality table update was underway with completion expected soon.

My Comments

This is a serious issue with some strong support. Now that it is exposed, it can be voted up or down. Since we have all been taught that valuation is based on mortality, interest and reserve method, introducing lapse seems wrong. The way the ACLI's law firm approached it has subtleties. It sets a highly qualified precedent to allow lapse and it does this by allowing the commissioner of a state the discretion to use it in a limited sense.

As with much other law in our society, not just in insurance, sometimes a little precedent is expanded into something much larger. I think many regulators understand this and will be reluctant to allow this. Because many insurers (and their reinsurers) feel that the reserves required under AG38 are excessive, there will be pressure to lower them somehow. Thus, this is a tempting area for setting a precedent.

Concerning the mortality, I agree with Carmello that, from the valuation point of view, we should not have the effects of preferred underwriting lasting to age 95 regardless of issue age. Mike Taht used a reasonable approach in citing industry studies of various diseases for ongoing mortality differentials but applying it to preferred underwriting is a projection. Valuation should be conservative.

This is an interesting proposal, and I commend it to the members of the Smaller Insurance Company Section to follow and comment on. The Principles Based Reserving (PBR) is being pushed. Whether this succeeds is another matter. Is the ACLI proposal really necessary? What if it passes but PBR does not and gets bogged down? Then it will be used for years.

As a smaller company, are you in any way more affected by the ACLI proposal? Do you write UL with secondary guarantees? Do you need the preferred mortality table? Do you use reinsurance heavily for such products? Will this help your reinsurer? If reserves were less, would you retain more? Give this serious consideration. We welcome your thoughts. ●

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A Better Random Number Generator

By Chris Davis

Random numbers are too important to be left to chance. –R.R. Coveyou

Random numbers should not be generated with a method chosen at random. –Donald Knuth

With the adoption of the C-3 Phase 2 Project of the American Academy of Actuaries, it is now required that stochastic scenarios be developed for establishing reserves for variable annuities. This project has led to the idea of Principle-Based Reserving (PBR) where many of the same techniques will be used to set life insurance reserves. A critical item in stochastic testing is the choice of a Random Number Generator (RNG) to develop the random scenarios.

There are two kinds of RNGs—the hardware kind, which are truly random, and the software kind, which are pseudo-random. A hardware random number generator is an electronic device that plugs into a computer and produces genuine random numbers. They are used for generating keys for encryption, winning numbers for lotteries, selecting experimental designs and occasionally for statistical simulations.[1] Hardware generators look to physical processes with random qualities. Examples of these physical processes include decay times of a radioactive material and thermal noise resulting from random electron behavior within a resistor. An example of a hardware generator is a digital noise generator, which can take digital music files and randomly generate a stream of numbers based on the music being played. However, for use in generating random numbers for interest scenarios for cash flow testing or other similar projects, hardware generators can be difficult to use, inefficient for the tasks at hand, too expensive and too slow for routine use in statistical simulations. The remainder of this article is devoted to software generators and the development of a reliable, efficient random number generator.

Most RNGs used in financial applications are of the software kind and produce pseudo-random numbers. "The aim of pseudo random number generators is to implement an imitation of the abstract mathematical concept of mutually independent random variables uniformly distributed over the interval [0,1]."[2] They are called pseudo-random because their output can be predicted since they are based on deterministic computations. The use of pseudo-random numbers in security applications can compromise the application, so hardware RNGs should be used for these types of applications. Similarly, a pseudo-random number generator would not be appropriate for the selection of lottery numbers.

The appointed actuary's results and conclusions must be based on reliable, accurate stochastic testing. The results are only as good as the pseudo-random number generator used in the models. At the same time, an RNG must be easy to use, efficient and cost effective. There have been many articles written about some of the easily available RNGs that do not provide points that are sufficiently random. "The built-in random number generators of proprietary spreadsheets are often not suitable for a large number of simulations or for complex problems."[3] "Do not trust the random number generators provided in popular commercial software such as Excel, Visual Basic, etc., for serious applications. Some of these RNGs give totally wrong answers."[4]

The properties of a good RNG are that it should:[5]

- Provide a very good approximation to the uniform distribution
- Be computationally fast
- Be as close to independent in output in more than just one dimension
- Have a very long period
- Be repeatable, given the starting point

There are some basic mathematical properties to consider when choosing an RNG. The period (p) of an RNG is the number of values generated before the sequence repeats. The period should be as large as reasonably possible. Leading authorities differ on the maximum number (n) of values to be generated. Donald E. Knuth of Stanford University states that n should be at most p/1000. Brian D. Ripley of the University of Oxford has a much more stringent requirement that n is much less than $(p/200)^{0.5}$.

Using Ripley's criteria, an RNG with a period of 16,777,216 (the period of the Rnd function in Visual Basic) should be used only when substantially less than 290 random numbers are required! This is because the discrepancy from true randomness increases as *n* approaches *p*. Substantially less, of course, can be interpreted to be different amounts to different people, but it is obvious that for stochastic modeling purposes, the period will need to be very large. Many commercially available RNGs do not have a sufficiently large period.

Most of the RNGs in use today are linear congruential. That is they use a form of the function:

> $x(i) = (a * x(i-1) + c) \text{ Mod } m$
> where $0 <= x(i) < m$, a and c are constants and m is a positive integer.
> The final step is to divide $x(i)$ by m to get a number in (0,1).

Linear congruential RNGs are inadequate when more than one stochastic variable is being tested. Example stochastic variables include interest rates, various portfolio performances, lapse rates, mortality rates and policyholder behaviors. The numbers generated by linear congruential RNGs are not randomly spread throughout multi-dimensional space, but instead reside on parallel hyperplanes. Thus many points are not available and randomness is greatly impaired when more than one stochastic variable is present.

One RNG that overcomes these shortcomings is the Mersenne Twister. Marin Mersenne was a French monk and mathematician of the early 17th century who focused on numbers of the form $2^p - 1$, especially prime numbers of this form. Two Japanese mathematicians and computer scientists, Makoto Matsumoto and Takuji Nishimura, developed the Mersenne Twister in 1997. The period for this algorithm is $2^{19937}-1$, which is the prime number $4.315 * 10^{6001}$. It uses an algorithm that is a twisted generalized feedback shifter. The "twist" is a transformation, which assures equidistribution of the generated numbers in 623 dimensions.[6] There is much less correlation between successive values. It is a fast and efficient algorithm. As with all pseudorandom number generators, the Mersenne Twister should not be used in areas of cryptology. But it is a reliable generator for use in stochastic modeling.

To be considered a generator of worth, it is generally subjected to a series of statistical tests. One of the most stringent sets of tests is the Diehard Battery of Randomness Tests, developed by George Masaglia at Florida State University and first published in 1995[7]. This is a battery of 15 statistical tests (some with very colorful, descriptive names) used to measure the quality of a set of random numbers. The values generated from the Mersenne Twister pass the Diehard tests.

The Mersenne Twister is quickly becoming the RNG of choice for many applications. The prepackaged scenarios developed for the Academy's C-3 Phase 2 work used a

There is substantial discussion in the statistical literature that emphasizes the use of a quality random number generator.

robust RNG which was a variant of the Mersenne Twister. There is substantial discussion in the statistical literature that emphasizes the use of a quality random number generator. A thorough audit of stochastic testing should address the underlying RNG. "An expensive house built on shaky foundations is a shaky house. This applies to expensive simulations as well."[8] At Lewis & Ellis, we have implemented the Mersenne Twister as an Excel add-in and as a DLL.

* * * * * *

1 Robert Davies, "Hardware Random Number Generators," October 14, 2000 accessed Dec. 29, 2005 from <http://www.robertnz.net/hwrng.htm>.

2 Brian D. Ripley, "Thoughts on pseudorandom number generators," Journal of Computational and Applied Mathematics, 31, 153–163.

3 Mary Hardy FSA FIA PhD, *Investment Guarantees: Modeling and Risk Management for Equity-Linked Life Insurance*, Mary Hardy, (Hoboken: Wiley, 2003) 104.

4 Pierre L'Ecuyer, "Software for Uniform Random Number Generation: Distinguishing the Good and the Bad," accessed Jan. 16, 2006 from <http://www.iro.umontreal.ca/~lecuyer/myftp/papers/wsc01rng.pdf>.

5 Ibid.

6 "Mersenne Twister," *Wikipedia*, accessed Jan. 16, 2006 from <http://en.wikipedia.org/wiki/Mersenne_twister>.

7 Ibid.

8 Pierre L'Ecuyer, "Software for Uniform Random Number Generation: Distinguishing the Good and the Bad," accessed Jan. 16, 2006 from *<http://www.iro.umontreal.ca/~lecuyer/myftp/papers/wsc01rng.pdf>*. ●

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Avian Influenza— A Note on Reinsurance for Small Companies

By Howell Pugh

Why is there concern?

There is one fact that keeps me concerned about the spread of avian influenza and the possibility of conversion into human influenza. It appears to have the same mortality pattern that is associated with pandemic influenza.

Normal seasonal flu is deadly to infants and elderly. Pandemic influenza is deadly to young adults in the prime of life. Ironically, it is those with the strongest immune systems who have the higher relative death rates. Doctors believe that the new strain of flu causes the immune system to kick into overdrive in an attempt to expel the virus. This is called a "cytokine storm," which can lead to immune cells attacking body systems and flooding the lungs with blood.

The two graphs on below point to this as a possible concern.

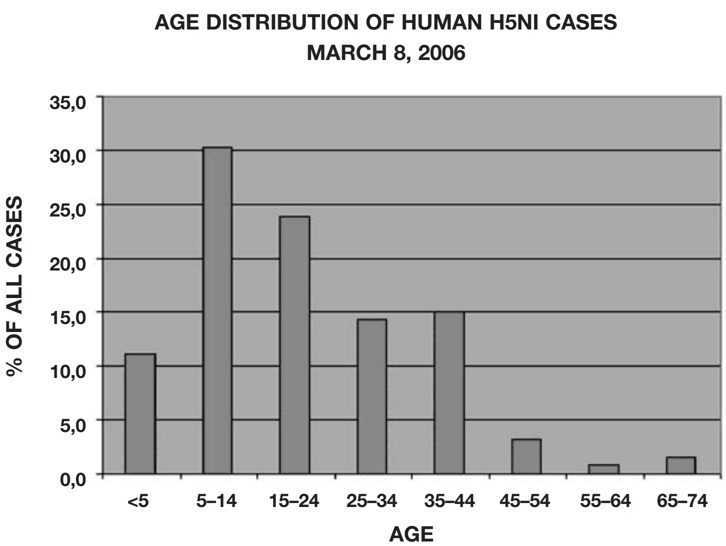
What are the options for small companies?

Larger insurance enterprises that are looking at their risk management can take some credit against their overall capital needs by relying on a diversification of the risk elements. Smaller companies do not have as much leeway because they are generally relying on fewer lines of business.

Instead they are reliant on reinsurers who take on the role of aggregating risks to achieve the law of large numbers. I think that small companies need to begin a dialogue with their reinsurers about

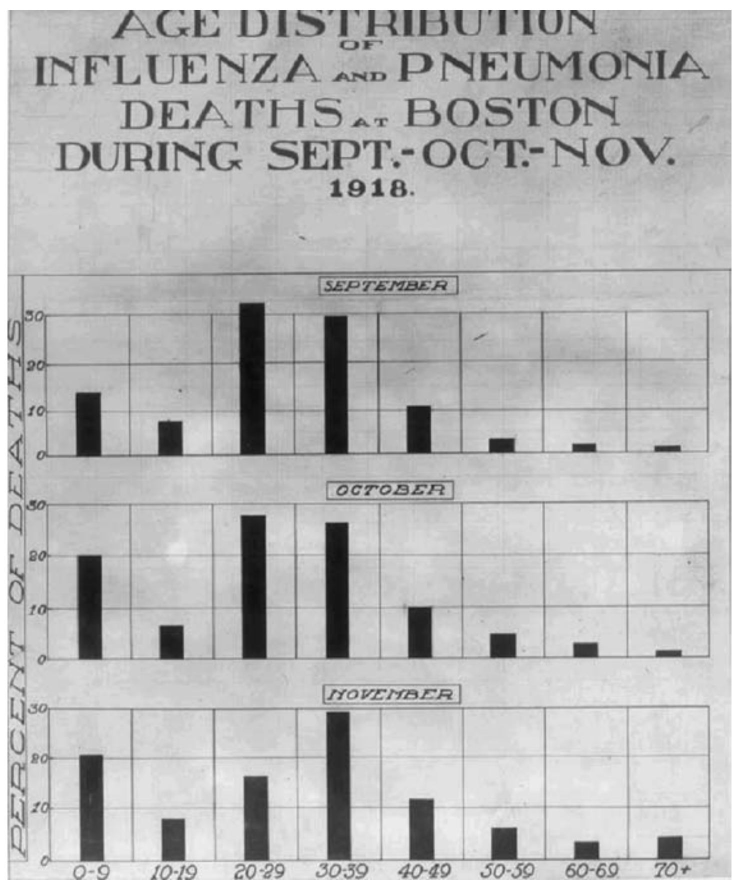
Data from Today

An analysis of demographic data published by WHO shows the following age distribution of human H5N1 influenza cases (n=126). Fifty percent of cases were 17 years or younger; 75 percent of cases were 29 years or younger; 90 percent of cases were 39 years or younger. Most patients were born after 1968.



Source: influenzareports.com/ir/figures/ad060310.htm

Data from Yesterday



the level of safety versus risk that the reinsurers are providing in the case of avian influenza pandemic.

I suggest that the small company actuary begin with a letter to each of their reinsurers:

Dear Reinsurer,

I would like to open a dialogue with you regarding your company's ability to provide an assured payment of death and health claims in the event of an avian influenza pandemic. The World Health Organization reports that avian influenza H5N1 has now been found on three continents, over 35 countries, and has caused over 100 human deaths since 1996. There is concern that the flu virus will acquire the ability to transmit from human to human, which will lead to an influenza epidemic, and some believe a worldwide pandemic.

There were two major flu epidemics in the twentieth century—1918 and 1957—along with a milder episode in 1968. Excess mortality per 1000 has been estimated as follows:

	1918	1957
Below age 65	5.46	0.15
Age 65 and up	1.66	2.73

Source: Simenson, L, Clarke, M, et al, "Pandemic versus Epidemic Influenza Mortality: a Pattern of Changing Age Distribution" Jour. of Infectious Diseases, 1998; 178:53–60.

The CDC reports in the Federal Government Pandemic Plan that estimated deaths will be 1, 903,000 Americans based on 1918 mortality.

My concern is whether your company will be able to meet its obligations if we see an outbreak at a level equal to the 1918–19 pandemic. This is due to the heavy concentration of term insurance that the reinsurance industry has taken on in the recent past.

I know that your corporate risk people have already taken a look at this possibility. What are their conclusions? How much of 1918 excess mortality can your company withstand?

As I am assessing my company's ability to withstand shock mortality, I would like to know how much reliance I can put on the expected payoff from reinsurance that I should put into my model.

Your Reinsurance Client Actuary. ●

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Small Talk is published quarterly as follows:

Publication Date	Submission Deadline
September 2006	July 15, 2006

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