

A PUBLIC POLICY PRACTICE NOTE

**Common Practices of Examining Actuaries
Involved in Statutory Financial Solvency Examinations
of Life and Health Insurers**

Including Considerations for Principle-Based Reserves

April 2019

Developed by
The Life Practice Council's
Principle-Based Reserve Review Procedures Work Group



AMERICAN ACADEMY *of* ACTUARIES

Objective. Independent. Effective.™

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EXPOSURE DRAFT

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This public policy practice note is not a promulgation of the Actuarial Standards Board, is not an actuarial standard of practice, is not binding upon any actuary and is not a definitive statement as to what constitutes generally accepted practice in the area under discussion. Events occurring subsequent to this publication of the practice note may make the practices described in this practice note irrelevant or obsolete. This was developed by the Principle-Based Reserve Review Procedures Work Group of the American Academy of Actuaries.

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The American Academy of Actuaries is a 19,500-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policy makers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

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Background

Actuaries are an important part of examination teams involved in U.S. statutory financial solvency examinations. Coordination between the Examiner in Charge (EIC) and the examining actuary is critical for a successful examination. Since the National Association of Insurance Commissioners (NAIC) has adopted a risk-focused approach to financial examinations of insurance companies, there have been numerous challenges throughout the nation integrating the actuarial and non-actuarial portions of the examinations.

This practice note is intended to provide an outline of how an actuary might approach risk-focused examinations. Although it is not intended to be a prescription or requirement of how actuaries conduct examinations, it was designed to provide actuaries practical insight into the various phases of a financial solvency examination. Principle-based reserving (PBR) is established on a risk-focused approach, and the actuary's examination processes under PBR is expected to dovetail with the risk-focused examination methods presented in the NAIC's Financial Condition Examiners Handbook ("Examiners Handbook").

In the United States, regulators monitor the solvency of insurers through financial analyses and financial examinations. A financial analysis is a continuous, high-level review of the status and condition of a company and usually involves a dedicated analyst's review of a company's periodic submissions and discussions with the company's management. Financial examinations are in-depth looks at a company's financial condition. General financial condition examinations are typically conducted every three to five years. Targeted financial condition examinations may be conducted at any time to assess a company's situation in a specific area or areas identified as a concern through regulatory financial analysis or for other reasons determined by the regulatory authority.

In 2006, the NAIC adopted the Annual Financial Reporting Regulation, also known as the Model Audit Rule or "MAR." Together with changes in the Financial Condition Examiners Handbook, this changed the way insurance companies were examined from a quantitative approach of checklists used to ensure correct amounts were reported to a qualitative approach considering a more comprehensive view of the current and ongoing operation of the business enterprise. A Risk-focused Financial Condition Examination ("risk-focused examination" or "RFE") is outlined in detail in the Examiners Handbook and has the primary purpose of reviewing and evaluating an insurer's business processes and controls to assist in assessing its current and prospective solvency. Although a risk-focused examination does not dispense with verification of the balance sheet, it places selective emphasis on what is contained in the balance sheet and uses reliance on external audit work, where applicable. The risk-focused approach, which was required to be effective for examinations after January 1, 2010, includes prospective risks as well as balance sheet risks. Instead of verifying that every reported item is correct, risk-focused examinations identify and focus on areas where there is moderate or high risk of a systemic or material error. The internal controls and risk mitigation strategies are considered before determining the needed level of reserve review. Reserves, pricing, liquidity, reinsurance, and solvency are considered in the context of appropriateness for the prospective condition of the company.

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Three key efficiencies of the RFE for examining actuaries are:

- Only systemic or material risks need to be considered,
- The way a company controls its risks drives the depth of examination required, and
- Examiners (including examining actuaries) can rely on the work of outside auditors.

The RFE process is an integral part of the ongoing surveillance of a company's operations and solvency.

References

Professionalism requirements are provided in the actuarial standards of practice (ASOPs). Information on common practices of actuaries can be found in practice notes, white papers, and public policy overviews published by the American Academy of Actuaries. The NAIC also produces some reference sources that offer guidance useful for an examining actuary. A list of some key reference sources is provided in **Appendix A**.

Purpose

This document is intended primarily to assist examining actuaries in coordinating with the EICs and in effectively conducting risk-focused examinations. The approach described in this overview is based on an examining actuary being an integral member of the examination team. There are circumstances where actuaries are employed or retained for examinations and only provide limited-scope technical expertise. In those circumstances, the actuary is usually expected to provide the documentation and information as required in the scope of services agreement.

Secondary purpose: A basic understanding of the risk-focused examination approach related to actuarial services can help actuaries fulfill their roles in an examination. Additionally, company actuaries, peer reviewers, and internal and outside auditors can benefit from understanding the examination process and what is required of examiners. The considerations contained herein are based on broad generalizations and are not intended to describe or establish any type of requirements. Each examination is evaluated on the basis of its own circumstances. The budget, time allocation, resources, desires of the Department of Insurance, preferences of the EIC, and other issues are considerations for an actuary participating in a risk-focused examination.

In order to help facilitate clarity of what is being described, illustrative examples are occasionally provided. In a typical examination, the information in work papers would flow from one work paper to the next. The examples presented in the appendices are illustrative of work papers. The examples are independent of one another and do not follow the same examination results through the process. In preparing examination work papers, examining actuaries may wish to review Actuarial Standard of Practice No. 41, *Actuarial Communications*, and be mindful of the practices it describes.

The Examiners Handbook has been under constant review by regulators and the NAIC staff support. It is generally published with revisions each year. Future examination processes may be impacted by changes in the Examiners Handbook. Significant changes in the Examiners

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Handbook, related to principle-based reserves, are anticipated between the time this practice note was prepared and 2020, when all non-exempt life insurance products will be subject to VM-20, in states where PBR has been adopted.

Definitions of Key Terms

Some key terms used in financial condition examinations that are used in this public policy practice note are defined below.

Terms Used in the Financial Condition Examiners Handbook

The following terms used in this Public Policy Practice Note are from the Financial Condition Examiners Handbook. Some of these terms might not be referenced directly in this document, but they are frequently used in communications with examiners.

Branded Risks—The nine prescribed risk categories to which insurance company activities are assigned by examiners. The nine branded risks, as specified in the Examiners Handbook are: credit, market, pricing/underwriting, reserving, liquidity, operational, legal, strategic, and reputational. More than one risk brand may be assigned to an activity. Examining actuaries usually address activities in the reserving risk category but may be asked to participate in assessing other risks such as pricing or liquidity.

Control—Any documented means performed by a company to mitigate a risk. Controls may be manual, automated, or a combination of the two. Controls may be designed to prevent, detect, or correct a risk.

- **Manual controls** are safeguards that depend on human actions, such as a review or approval signoff.
- **Automated controls** are safeguards that are designed to occur independent of human action. Examples include computer system password protections and reports generated automatically.
- **Preventive controls** are designed to prevent a risky situation from occurring in the future. Examples include risk retention limits, password protections, reinsurance, and underwriting. Preventive controls are intended to avoid the need for actions to correct a risk.
- **Detective controls** are designed to identify when a risk situation has occurred in the past or is occurring in the present. Examples would be error reports, reconciliations, and reviews of historical experience to determine if current assumptions are reasonable. Detective controls usually require additional actions to mitigate a risk situation.

Automated, preventive controls are usually considered more favorably than manual, detective controls, because they are designed to automatically prevent a risky situation rather than relying on human action to determine if a risky situation has already occurred. Password protection of access to changing valuation assumptions in the valuation system

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is an example of an automated, preventive control. Management review and signoff on historical actual-to-expected loss experience is an example of a manual detective control.

Examination Phases—The seven systematic steps of a risk-focused examination. This practice note describes the actuarial portion of these steps or phases.

Examination Team—The examination team includes the examination manager (called exam facilitator in a group examination in the Financial Condition Examiners Handbook Glossary), examiner-in-charge, and participating examiners. Those participating may be accountants (financial examiners), information technology personnel (IT examiners), actuaries (actuarial examiners, also called examining actuaries), or other specialists.

Exception—A significant discrepancy between what a company has reported or was required to do and what was found in the course of an examination. Exceptions are addressed through the Examination Report, through a management letter or through consultation with management.

Financial Analysis—An ongoing high-level review of an insurance company's operations and solvency based on information provided by the company to the Department of Insurance. Financial analysis is intended to monitor a company's ongoing operations for compliance, financial risks, and solvency.

Financial Examination—An in-depth review of an insurance company's financial operations and reporting to ensure compliance, solvency, and safe operations.

Finding—Technically any reportable item determined through an examination process; however, many examiners and auditors use the term "finding" as being synonymous with "exception."

I-Site—A website for insurance regulators, maintained by the NAIC, that allows regulators to obtain electronically filed information on insurance companies. For example: financial statements, actuarial filings, analytical reports, complaints, and actions taken against companies.

Inherent Risk—The risk that an activity would pose if no controls or mitigating factors were in place. An example of an inherent risk would be that reserves are misstated because the amounts reported are not the amounts computed and attested by the appointed actuary.

Jumpstart Report—A report of the reinsurance ceded or assumed by an insurance company with comparisons of the amounts reported to the NAIC by the counterparties. This is not a commercial product, but a type of NAIC-generated, regulatory report.

Key Functional Activity—A significant business activity of the insurer, such as pricing, underwriting, reserving or valuation, claims handling, investment management, risk management, financial reporting, and reinsurance.

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Management Letter—A letter provided by the chief insurance regulator of the jurisdiction (e.g., commissioner of insurance) to an insurance company, which is intended to provide supervisory guidance, direction, or relevant findings to the management of the insurance company. A management letter is more formal than verbal suggestions and requires a response from the insurance company on the findings and recommendations it provides. A management letter is often used to address issues that do not rise to the level of exceptions that are included in the examination report. A management letter is generally not a public document, but examination reports are generally public documents. An example of an item that might be included in a management letter would be the identification of a process that produces an error that is below examination materiality.

Prospective Risk—The significant risk associated with whether an insurer's current condition, activities, products, or processes provide indications of future solvency concerns.

Residual Risk—The risk that an activity poses after consideration of controls and mitigating factors.

Risk Matrix—A spreadsheet in a standardized format provided in the Examiners Handbook that contains the specific risks considered under a key functional activity and a synopsis of the results of each phase of the examination.

Substantive Testing—Testing performed for the purpose of arriving at a conclusion about an account balance or set of transactions.

Terms Not Used in the Financial Condition Examiners Handbook

The following terms are used in this practice note but are **not** used in the Financial Condition Examiners Handbook.

Actuarial Addendum—A non-prescribed written actuarial communication related to the results and recommendations of the portions of the examination for which the examining actuary was responsible. This is sometimes referred to as an actuarial report or Appendix I of the Examination Report. The actuarial addendum is usually considered a work paper and not part of the publicly available examination report.

Actuarial Follow-Up List—A document used to track open actuarial items requiring additional action on the part of the examining actuary during the examination. If needed information is not yet known or a response to a request is incomplete, an open item exists. An Actuarial Follow-Up List is used to maintain a list of open items until they are closed through positive resolution or as an exception.

Actuarial Risk—A risk that is within the scope of the examination work of the examining actuaries.

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Actuarial Risk Accumulation Table—A document used to list and subsequently group and remove duplicates of potential inherent actuarial risks identified during the familiarization of the company. Financial examiners maintain a matrix of all risks identified during the examination, referred to in the Examiners Handbook as “Exhibit CC Issue/Risk Tracking Template,” or simply “Exhibit CC” or “CC.” The Actuarial Risk Accumulation Table is the actuarial examiner’s subset of risks, which are listed in the examination’s Exhibit CC.

Hard Stop—A pause that may occur in an examination, where no additional examination work is completed until appropriate approval to proceed is granted. The key approvals are the scope of the actuary’s work, the inherent risks to be considered, and the residual risks and substantive testing to be performed.

Inherent Actuarial Risk Assessment Table—A work paper used to document the justifications of likelihood and impact of identified inherent risks. This work paper is not required by statutory examination processes but can be very useful to provide justification of particular inherent risk assessments, which can be subjective.

Non-Actuarial Risks—Risks outside the scope of the actuarial addendum. These would include items such as market conduct items and financial reporting items that are not of an actuarial nature.

Scoping Memo—A document that details the areas of responsibility of the examining actuary during a particular financial examination. This is usually provided prior to the beginning of the examination.

Statutory Examination Request (SER)—An official request for information or access made by an examiner to the company being examined.

Target Examination—A limited-scope examination intended to provide the commissioner of insurance specific information based on one or more concerns. Target examinations are not usually periodically recurring, but may be part of a follow-up to a financial examination or items identified by the financial analyst or departmental actuary to address the concerns or to ensure directed actions have been taken.

Work Paper—A document obtained or created by an examiner and used to support the findings of the examination or to show what examination work was performed. Work papers are usually the property of the Department of Insurance and are often legally protected, such as being exempt from access through subpoenas.

Overview of the Phases of a Risk-focused Examination

A risk-focused examination is performed in four groupings, consisting of seven phases. The examining actuary’s participation in each phase is detailed in subsequent sections of this practice note. Brief descriptions of the phases are here to provide an overview of the RFE process.

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Planning Work

Phase 1—Understand the Company and Identify Key Functional Activities to Be Reviewed

Phase 2—Identify and Assess Inherent Risk in Activities

Risk Mitigation and Control Reviews

Phase 3—Identify and Evaluate Risk Mitigation Strategies/Controls

Phase 4—Determine Residual Risk

Substantive Testing

Phase 5—Establish/Conduct Detailed Examination Procedures

Summarizing Results and Wrap-Up

Phase 6—Update Prioritization and Supervisory Plan

Phase 7—Draft Examination Report and Management Letter

Conducting the Actuarial Portion of a Risk-Focused Examination

Preliminary—Communication between the actuary, the EIC and the rest of the examination team throughout the entire process helps facilitate an effective and efficient risk-focused examination. Prior to beginning the examination, the actuary may consider consulting with the EIC to address the following issues:

- A preliminary indication of the amount of time and/or funding to be allocated to the actuarial portion of the examination;
- The anticipated scope of the actuarial portion of the examination (ideally this would include the page and line numbers from the annual statement);
- An indication of the expected level of involvement of the actuary in assessing and testing risk controls and mitigation;
- An indication of the level of documentation required—particularly, whether the actuary will be submitting work papers and a report, or if the actuary will be entering all work into the state’s software program (the NAIC’s supported examination software program is TeamMate);
- An approximate date by which the actuarial work is expected to be completed;
- Any constraints or issues, such as those related to travel and expenses;
- Any communication protocols between the examining actuary and the company or other parties to the examination;
- Any special items the EIC or the Department of Insurance wants the actuary to review during the examination;
- Access to the examination software, I-site, and other systems that may be needed; and
- An understanding of the actuary’s availability for examination work.

The actuary may wish to review the company’s filings, such as the Statement of Actuarial Opinion, Asset Adequacy Analysis Actuarial Memorandum, the A.M. Best Report, Management’s Discussion and Analysis, Annual Statement and the Own Risk Solvency Assessment (ORSA) to obtain a general idea of the company’s operations. If available, the

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actuary may wish to review the actuarial portion of the prior examination. The actuary can then use the information from this general review to allocate time available, prepare an initial information request, and to submit the initial information request through the examination protocols established for the examination.

Risk-focused surveillance examinations are conducted in seven phases, as outlined in the Examiners Handbook. The phases are described below but are often referred to by examiners using the phase number. An examining actuary may find familiarity with descriptions and contents of the phases of the examination very useful in communicating with examiners and regulators.

Ideally, the actuarial work will be completed in concert with the examination team's progress through the phases. Often the actuaries can complete phases 1 through 4 along with the examination team, but due to delays in obtaining actuarial information, Phase 5, where the substantive testing occurs—such as validating reserves—may take longer for the actuarial team to complete. This has sometimes resulted in financial examiners being ready to leave the field, write the management letter, and prepare the examination report before the actuarial portion of the examination is completed. Some ways to help address this potential problem are discussed below, including improvements in communication and organization. This is an area where early and frequent communication with the EIC regarding expectations can be extremely helpful. Frequently, actuaries will be permitted to request information, such as a data extract, early in the examination process to facilitate reserve validation.

The Examiners Handbook requires work papers produced by any examiner, including an examining actuary, to be dated and identify the examiner who produced the work paper. Often work papers have a stated purpose (why the work paper was produced), scope (what portion of the examination is addressed in the work paper) and conclusions (findings and exceptions from the examination work performed) specifically included or attached to them. Some EICs require these three sections be included on all work papers. Other sections may be added, such as notes, results, synopsis, risks addressed, and/or follow-up items identified.

A shell of an actuarial addendum to the examination report can be set up in advance to fill in items as the exam progresses. Writing the addendum throughout the examination reduces the chance of omitting important information and of duplicating work. The sections with the actuary's identity, the purpose of the actuarial portion of the examination, and any other common verbiage can be drafted in advance.

For a risk-focused examination, the actuarial addendum may have a format prescribed by state regulation or desired by the state regulatory authority, but frequently has a format determined by the examining actuary and includes some or all of the following:

- Identification of the examining actuary, his/her qualifications and a description of the assignment;
- A listing of Annual Statement items reviewed (scope) with recommended adjustments to amounts reported;
- A statement of impact on surplus of recommended adjustments, if any;
- A statement of reliance, if appropriate;

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- An overview of Phase 1 and the actuarial inherent risks considered;
- For each examined risk, a brief description of the processes used to assess and test the risk, the outcome of the test and the final disposition of the risk [Note: The addendum may be ordered by actuarial asset or liability with the associated risks, adjustments and impact on surplus detailed.];
- A statement of opinion of the compliance of the proposed adjustments and accepted amounts;
- A description of any recommended changes to company operations and regulatory overview;
- Any necessary disclaimers; and
- Signature of the actuary and the date the report was completed.

Example:

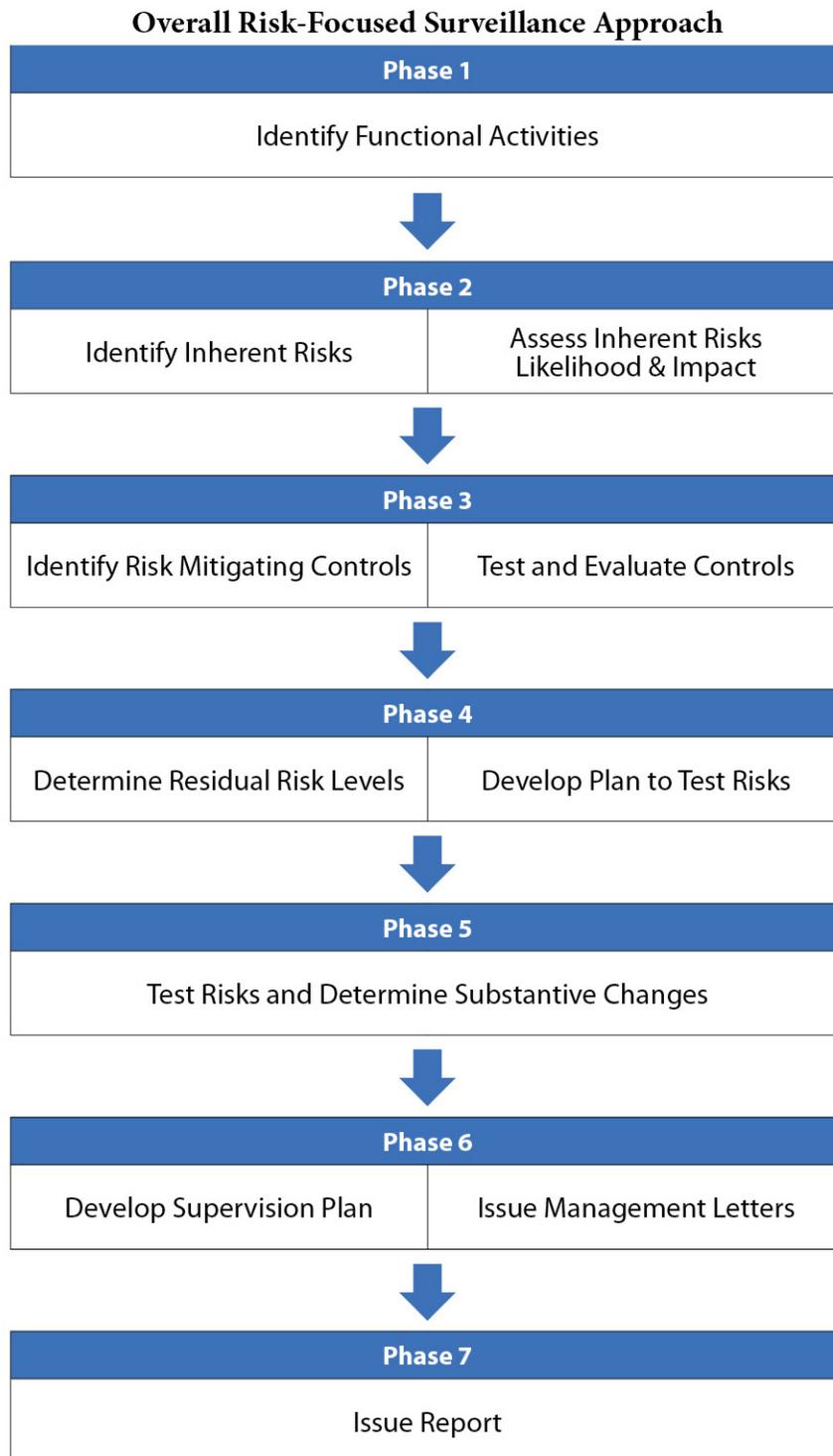
Anne Actuary, FSA, MAAA, is assigned as the examining actuary for Experimental Life Insurance Company. She discussed the examination process with the Examiner-in-Charge, who indicated the analyst had expressed some concerns about the company's mortality assumptions. The EIC indicated that formal requests were to be communicated using a form for an SER (Statutory Examination Request) prescribed by the Department of Insurance and would be routed through him. The schedule for the examination was presented and the names of key persons at the company, including the compliance officer and appointed actuary, were provided with their contact information. The EIC told Anne she could contact the appointed actuary directly and only needed to inform him of key issues from such communications. Anne was told there was no IT examiner assigned for the examination, so she would be called upon to select data and policy samples to test the accuracy and completeness of the company's database; however, the financial examiners would conduct the actual testing. The EIC said he would provide Anne with the Annual Statements and actuarial filings the company had submitted. The Actuarial Memorandum had already been requested and would be sent to Anne when the company provided it. The departmental actuary said he had no particular concerns with the company other than the mortality experience diverging from assumptions and provided Anne with the annual actuarial compliance reviews of Experimental Life.

Considerations: The examining actuary often refers to guidance provided in applicable actuarial standards of practice during the examination process and discloses any deviations from them and documents the reasons for the deviations. If at any time during the examination a material error or problem is discovered, the actuary would usually notify the EIC immediately. The detail and amount of work papers will be affected by the time allocated to the actuarial portion of the examination. It is therefore advisable to determine the amount of detail desired from the EIC and to customize the project to fit within the time constraints and still supply what the EIC desires. If this is not possible, the actuary may want to notify the EIC that the detail will be less than desired or additional time will be required. The amount of documentation, editing, providing hyperlink connections, meeting participation, testing of actuarial controls, participation in the risk mitigation analyses, examination software submissions, etc. will affect the time required to complete the actuarial portion of the examination. Understanding his/her responsibilities in these areas can help the examining actuary estimate the time required for the actuarial portion of the examination. The NAIC requires that examinations be completed within eighteen (18)

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months of the end of the final year of the examination period. This can result in time pressures related to the examination. Failure to perform all actuarial work adequately can adversely impact the state's department of insurance during the NAIC accreditation review.

Overall Risk-Focused Surveillance Approach



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Phase 1—Understanding the Company and Identify Key Functional Activities to Be Reviewed

During this phase the objective is to become familiar with the company and to identify potential material risks. This is a period for the examining actuary to establish communication with the remainder of the examination team, the persons in the insurance department responsible for oversight of the examining actuary, the company's compliance personnel, the company's appointed actuary, and the company's chief actuary. Numerous company documents are reviewed and interviews are conducted. Typically, the examining actuary will participate in the interviews related to reserving risks, such as interviews of the appointed actuary, chief actuary, chief risk officer, and chief financial officer. The examining actuary may also be invited to other interviews and walk-throughs, such as those involving marketing, distribution, finance, claims, underwriting, reinsurance, information technology (IT), and investments. Some of the documents the examining actuary may consider reviewing are:

- Prior examination report(s), particularly the actuarial addendum;
- Prior examination supervisory plan and management letters;
- Actuarial opinions, summaries, reports, and memoranda for the period under examination;
- All applicable Valuation Manual reports;
- Any applicable risk management documents, such as an ORSA report or Model Audit Rule report;
- Pre-exam survey, if applicable (this is a questionnaire that may be completed by the company in advance of the examination; it is designed to assist the examination team in gathering information and understanding the company);
- Audit work papers, both internal and external, and including those related to Sarbanes-Oxley compliance;
- Board of Directors or Audit Committee meeting minutes, reviewed for evidence of presentation of actuarial reports and any adoptions of recommendations;
- Documentation supporting qualifications of the company's actuaries;
- A description of the business, including any recent material changes (e.g., Management's Discussion and Analysis);
- A description of the insurance business written, ceded, and assumed, together with any recent material changes;
- A description of the company's distribution of business—methods of sales, demographic distribution, geographic distribution, etc.;
- A description of any changes in claims handling, reserving methods, or reserving platforms;
- A description of any limitations on risks, such as retention limits or underwriting practices;
- A description of any products in development, the pricing process, and the marketing plans; and
- A description of the company's governance process and assignments of governance responsibilities for actuarial risks.

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The examining actuary may consider:

- Maintaining a communication log to demonstrate what information was shared, when it was shared, and that communication and coordination was effective. Evidence of communication and coordination between the EIC and the actuary for an examination is an area often reviewed during states' accreditation reviews.
- Obtaining knowledge about the appointed actuary, such as qualifications, stability of the position, whether the appointed actuary is an employee or consultant, company influences on reserves and opinions, additional responsibilities, actuarial support available, interaction with the auditors, and access to the Board of Directors. This is often done during the interview process.
- Conducting a high-level analytical review of actuarial information in the Annual Statement to determine whether it appears reasonable and consistent.
- Participating in or conducting senior management interviews: chief actuary, chief risk officer, chief executive officer, managers of key functional units, chief underwriter, chief claims officer, qualified actuary and appointed actuary. The examining actuary may also review the examination team's interview notes.

To document the reviews and interviews, an analysis document is usually prepared and included as examination work papers. In these documents, the examining actuary typically includes the following:

- A title describing what was reviewed
- The company name
- The name of the examiner/actuary conducting the review
- The date of the review
- A statement of the purpose of reviewing the documents or conducting the interview
- A statement of the scope of the review—i.e., the documents (or portions of the document) reviewed or individuals interviewed
- An observations or notes section if deemed appropriate
- A section outlining the conclusions, which may have one or more subsections:
 - A conclusions subsection outlining notes and/or the analytical results of the review of each item listed in the scoping section, including any significant information likely to apply to the examination, and any items which affect risks and mitigations or avoidance of risks;
 - A conclusions subsection listing the inherent risks identified—these may be divided between risks which are of actuarial nature and risks which are to be referred to the EIC; and
 - A conclusions subsection listing outstanding issues requiring follow-up—each item in the follow up section may require an additional review, an information request, or an interview following the document review.
- If appropriate, additional sections for follow-up, recommendations, or a description of identified risks may be included.

A sample Phase 1 document is contained in **Appendix B**.

The examining actuary would usually communicate with the examination team to obtain an understanding of the examination team's assessment of the internal and external audit functions.

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The examination actuary may participate in the evaluation of the actuarial portion of the audit to assess its reliability and usefulness. Understanding the actuarial scope of the audit and the actuarial work performed by the auditors will be important in evaluating controls and reliance on the work of others to avoid duplication of work already performed by the auditors. [Note: Audits are conducted to provide the company's ownership and management a reasonable basis for reliance on the company's financial statements and representations. Examinations are conducted to provide the regulators a reasonable basis for reliance on the company's financial statements, operations, and representations.]

The EIC selects Key Functional Activities. This is often done after discussing the activities with the examining actuary. Some Key Functional Activities the examining actuary may consider discussing with the EIC include, but are not limited to, reserving, reinsurance, asset adequacy, financial reporting, and claims handling. For each actuarial Key Functional Activity selected by the EIC, the examining actuary would usually consider related prospective risks. High-level prospective risks that are not associated with a particular Key Functional Activity are typically documented and addressed using an exhibit (e.g., Exhibit V) from the Examiners Handbook. Prospective risks associated with a particular key activity are addressed in the key activity's risk matrix. The examining actuary usually has significant input on sub-activities selected for review in areas which rely on actuarial processes. For life insurers, reserving and claims handling are usually chosen as Key Functional Activities. One or more line items from the Annual Statement Blank are normally associated with Key Functional Activities.

The following are some sub-activities the examining actuary may want to consider:

- Data quality (accuracy and completeness)
- Reserving assumptions
- Reserving methodologies
- Accuracy of computations
- Reporting of computed amounts
- Statutory compliance
- New products issued or developed since the last examination
- Experience studies
- Other items, when applicable—such as asset adequacy, pricing, dividend payments on participating policies, non-guaranteed elements, reinsurance, catastrophic exposure, liquidity, premium deficiency reserves, etc.

Within key areas, risks related to items' adequacy, completeness, accuracy, and compliance would usually be considered. For example, the data used to compute reserves for a line of business could lack important elements needed to correctly determine reserves, it could be missing records, it could have errors, it could contain personally identifiable information and not have required security, or the appointed actuary may not have complied with the data quality actuarial standard of practice (ASOP No. 23). The examining actuary may perform analytical review procedures and review organizational charts to identify key personnel and processes for material accounts under a Key Functional Activity to help identify sub-activities.

Items requiring follow-up may be put into an Actuarial Follow-Up List, which can be used to make sure all follow-up items are addressed without duplication. Once all follow-ups have been

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addressed through deletions (decided it was not appropriate to follow up), combined with other follow-up items, referrals, transfers to the Actuarial Risk Accumulation Table, or through requests for additional information, the Actuarial Follow-Up List can be completed as a work paper. This is not a required work paper, but may prove useful in organizing the examining actuary's work.

A sample Actuarial Follow-Up List is contained in **Appendix C**.

Inquiries to the company to obtain additional information are sent as Statutory Examination Requests (SERs). These are routed according to the examination protocols. These may be formal documents, emails, or informal requests.

The risks identified can be compiled in a manner that follows the Examiners Handbook. This can be done with a spreadsheet containing the accumulated risks, which are referred to herein as an Actuarial Risk Accumulation Table. A way of assembling this list is to produce an Actuarial Risk Accumulation Table listing each risk identified, the destination (e.g., actuary, EIC, deleted), a reason for the destination, if needed (e.g., outside actuarial scope, deemed immaterial, inspection showed risk has been addressed, etc.) and a note or link to source or document(s) prepared in Phase 1 where the risk was identified. The list of accumulated risks can be assembled as the documents are reviewed.

A sample Actuarial Risk Accumulation Table is contained in **Appendix D**.

The actuarial portion of Phase 1 is complete when the examining actuary believes he/she has an understanding of the operations of the company, all of the risks identified in the reviews have been listed (e.g., added to the Actuarial Risk Accumulation Table), and the EIC has been advised of any non-actuarial risks identified by the examining actuary. Typically, all inquiries related to follow-up items identified in Phase 1 have also been sent to the company via SERs.

At the conclusion of Phase 1, a section of the actuarial addendum listing documents reviewed and interviews conducted can be completed. The identified inherent risks section can be populated. A description of the company's operations (e.g., company profile) can be completed in the actuarial addendum.

The primary products of the actuarial portion of Phase 1 are the list of actuarial risks identified (Actuarial Risk Accumulation Table) and a message (usually an email) to the EIC that identifies and refers the non-actuarial risks identified by the actuary.

Principle-Based Reserving Considerations

The following items are examples of specific considerations for principle-based reserves that the examining actuary may consider as he or she becomes familiar with the company and its products.

A review of the VM reports may provide information about the application of PBR:

- Did the company elect to defer during the transition period?
- Does the company write lines of business subject to PBR?

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- Has the company requested any PBR exemptions for products?
- Does the VM-31 Report (PBR) provide an overview of the company's PBR status (Executive Summary), exclusions (Stochastic Exclusions and Deterministic Exclusions), material risks considered, and assumptions used?
- Does the AG-43 Memoranda, or its successor, address the testing and results for variable annuity products under various economic scenarios and provide an overview of risks and risk mitigation strategies for these products?
- How does the company comply with VM-G in its governance?

Interviews with the qualified actuaries may provide information about the company's implementation and utilization of PBR and the assignment of actuaries for PBR projects and their qualifications for the assignments.

Example:

While reviewing the Annual Statement and accompanying filings, Anne Actuary noticed the company had some universal life reserves based on the 2001 CSO with X-factors and some reserves are under PBR with the 2017 CSO and a preferred class structure. She inquired about the qualifications of the actuaries involved. The Annual Statement indicated the net death benefits paid were materially equal to the reserves released from death plus the tabular cost. During the interview with the appointed actuary, he stated the universal life policies have secondary guarantees, which state that if the sum of premiums paid is equal to or greater than the total of target premiums to age 85, the policy will pay a death benefit equal to the face amount, even if the policy account value is zero. The appointed actuary also stated that the tabular mortality charges for policies was set to equal the actual mortality and the difference was applied to the reserve for the secondary guarantees, and that although this was not the NAIC-prescribed minimum reserving method, it had historically produced reserves greater than the minimum statutory requirements. He also indicated the PBR valuation platform had been developed in-house by an actuarial student under his supervision. The examining actuary recorded this information in work papers for Phase 1.

Considerations: The Examiners Handbook states that all risks should be considered; however, typically only risks that are highly likely or reasonably likely to have a material impact are referred to the EIC. It may be prudent to keep in mind the purpose of a financial solvency examination is to determine whether there is a material overstatement of assets, a material understatement of liabilities, or other prospective risks that may in time impact solvency. If time allocated does not permit the production of review work papers, the actuary would typically at least list the items reviewed in the actuarial addendum and compile a list of actuarial risks identified. Using notes from other examiners of documents they have reviewed can also save time but requires more coordination between the actuary and the examination team.

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Phase 2—Identify and Assess Inherent Risk in Activities

During this phase, the objective is to identify and assess risks from the familiarity obtained in Phase 1 and from the follow-up process. A review of the documents prepared and obtained in Phase 1 is usually used to develop a list of inherent risks. If used, the Actuarial Risk Accumulation Table could provide the list.

Risks evaluated in this phase come from four primary sources:

- Actuarial Risk Accumulation Table from Phase 1,
- Actuarial Risks identified through follow-up items,
- Risks assigned to the examining actuary by the EIC, and
- Risk assigned to the examining actuary by the Department of Insurance.

An Actuarial Inherent Risk Assessment Table is not required but can provide a concise, well-documented risk assessment for Phase 2. After all Phase 1 reviews have been documented in the examination work papers, the EIC is sent a notification of the list of actuarial risks for modification, incorporation, and approval. The notification could include non-actuarial risks identified in the review, which the EIC may wish to assign to other members of the examination team. This notification can be combined with the Phase 1 risk notice.

The actuary would usually exclude risks that have virtually no chance of occurring or that would be so catastrophic as to make the solvency of the company irrelevant (e.g., a large meteor striking the earth.)

The Actuarial Inherent Risk Assessment Table may be prepared with the proposed likelihood and impact of each inherent risk assigned. A justification of the assessed likelihood and impact may be provided, but is not required. The standards of assessing inherent risk are provided in the Examiners Handbook and are outlined below:

Likelihood Assessments

Likelihood assessments are based on the expected frequency of the risk event occurring relative to the company and its operations.

High: The risk event is expected to occur most of the time (probability is greater than 50 percent).

Moderate-high: The risk event will probably occur at some time.

Moderate-low: The risk event could occur at some time.

Low: The risk event may only occur in rare occasions.

Managing Expectations: The determination of the likelihood can be subjective, based on the examiner's judgment, based on probabilistic standards, or some combination of these. Some actuaries would determine the likelihood as follows:

- *High—They believe the event is more likely than not currently occurring or was occurring at the time of the examination.*

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- *Moderate-High—They believe the event will more likely than not occur during a five-year period, which is the historical period covered in the Annual Statement, the maximum length of time between financial examinations, and the approximate duration of a typical business cycle.*
- *Moderate-Low—They think the event is more likely than not to occur while the current business, including renewals, remains in force.*
- *Low—They believe the event is not likely to occur while the current business, including renewals, remains in force, but could occur sometime in the company's operational future.*

These are possible break-points in the likelihood assessments, others may be percentages, such as 50%, 20%, 5% and 1%. However, the assessment may be based on the professional judgment of the examining actuary.

Although documentation of the justification of assessments is not required, the inclusion of justifications in the examination work papers can be useful in communicating with the EIC and providing a record to rely upon later, if questions arise.

Impact Assessments

Impact assessments are based on the expected impact on the company if the risk event occurs. These assessments may be based on supporting computations or based on the assessing examiner's subjective opinion, or a combination of both. Impact assessments are based on the greatest magnitude of impact based on the financial impact, public concerns, and the level of company involvement.

Magnitudes of impact assessments are provided in the Examiners Handbook and summarized below.

Threatening

> 5% of surplus
Serious financial solvency concerns
Material rating agency downgrade

Severe

3% to 5% of surplus
Serious impact on reputation and shareholder value with adverse publicity
Events and problems will require board and senior management attention

Moderate

1% to 3% of surplus
Shareholder value and/or reputation will be affected in the short term
The event will require senior and middle management attention

Immaterial

< 1% of surplus
No potential impact on shareholder value

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No impact on reputation
Issues would be delegated to junior management and staff to resolve.

After assessing both the likelihood and impact of each identified inherent risk, the overall inherent risk level is evaluated. Again, the Examiners Handbook provides direction for determining the level of inherent risk.

Overall Inherent Risk Rating Scale

Likelihood ↓ Impact →	Threatening	Severe	Moderate	Immaterial
High	High	High	High	Moderate
Moderate-High	High	High	Moderate	Moderate
Moderate-Low	High	Moderate	Moderate	Low
Low	Moderate	Moderate	Low	Low

In the Examiners Handbook, risks are branded as one of the following nine risk classifications:

1. *Pricing/Underwriting*—Pricing and underwriting practices are inadequate to provide for risks assumed;
2. *Reserving*—Actual losses or other contractual payments reflected in reported reserves or other liabilities will be greater than estimated;
3. *Operational*—Operational problems such as inadequate information systems, breaches in internal controls, fraud, or unforeseen catastrophes will result in unexpected losses;
4. *Strategic*—Inability to implement appropriate business plans, to make decisions, to allocate resources or to adapt to changes in the business environment will adversely affect competitive position and financial condition;
5. *Credit*—Amounts collected or collectible are less than those contractually due;
6. *Market*—Movement in market rates or prices such as interest rates, foreign exchange rates, or equity prices adversely affect the reported and/or market value of investments;
7. *Liquidity*—Inability to meet contractual obligations as they become due because of an inability to liquidate assets or obtain adequate funding without incurring unacceptable losses;
8. *Legal*—Nonconformance with laws, rules, regulations, prescribed practices, or ethical standards in any jurisdiction in which the entity operates will result in a disruption in business and financial loss; and
9. *Reputational*—Negative publicity, whether true or not, causes a decline in the customer base, costly litigation, and/or revenue reductions.

Assessing and testing of risk controls and risk mitigation strategies are done by the examination team, occasionally including the examining actuary, based on the brands of risks. Often a risk can be considered under more than one brand. In this case, the examining actuary may select one or more brands which seem most appropriate for risks assigned to him or her. Examining actuaries often use “reserving risk” as the default brand of risk for any risk reviewed in the actuarial portion of the examination when the risk brand is not clearly another brand.

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After assessing the inherent risks, which can be done by completing of the Actuarial Inherent Risk Assessment Matrix, a list of moderate and high inherent actuarial risks is provided to the EIC. A notice of all the identified actuarial risks and their inherent risk assessments may be requested by the EIC. Once the risks have been approved, all approved inherent risks are to be incorporated into the examination risk matrix. The risk approval process may include review by senior personnel at the department of insurance or the department's actuary. Sometimes low inherent risks are considered, but this is unusual. For example, public interest in race-based premiums often resulted in a review of this risk, although the inherent risk for many companies was low.

The primary products of Phase 2 are the inherent risk determinations and the list of risks to be considered for the examination, which is submitted to the EIC for approval and/or modification.

A sample Actuarial Inherent Risk Assessment Matrix is contained in **Appendix E**.

Principle-Based Reserving Considerations

PBR-related risks the examining actuary may consider during Phase 2 include, but are not limited to, PBR Implementation Risk (including Blocks/Aggregation Risk and Reinsurance Risk – Counterparty Risk); Compliance Risk (e.g., Exclusion Testing Risk, Exclusion Risk, and Experience Reporting Risk); Governance Risk (BOD involvement, qualifications of actuaries, and documentation of assumptions and methods); Assumption Risk (Prudent Estimation Risk, Margin Risk, and appropriate use of Credibility); Modeling Risk; Competition Risk; and Policy Design Risk (Pricing Risk).

Example:

When considering the mortality information related to the secondary guarantees on universal life, Anne Actuary identified the following inherent risks:

- Mortality assumptions used for reserves are inadequate.

With the mortality assumptions appearing to be aggressive and the reported tabular cost plus reserves released from death are equal to the net death benefits paid, it is probable that the mortality will be inadequate at some time, so the likelihood for this risk was set at moderate-high. Anne Actuary estimated the mortality could impact reserves by 2 percent of surplus, indicating a moderate impact; however, she also noted that changing the reserve methodology required approval from the board of directors and involved the company's senior management. A 2 percent of surplus change would not likely result in a rating downgrade, so it was not threatening. The impact for this inherent risk was set at severe. The overall inherent risk was determined to be high.

- Reserves for secondary guarantees are computed using methods that produce reserves less than the statutory minimum.

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With the secondary guarantees computed in a non-prescribed manner and not floored by the prescribed manner, they are likely to be below the statutory minimum at some time. The actuary stating they were higher indicates it is probably not the current situation. Although reserves are computed on a policy basis, they are reported in aggregate, so the likelihood of the aggregate reserve being less than the statutory minimum was assessed as moderate-low. [Note: Due to the subjective nature of the risk assessment, a different examining actuary may have assessed the risk likelihood at a different level.] Although the financial impact may be low, the involvement of the board of directors and senior management gives this risk a severe impact. The overall inherent risk was determined to be moderate.

- PBR reserves are not computed in accordance with the Valuation Manual.

Given the newness of PBR, the in-house development of the reserving platform, and the development of the reserving platform by an actuarial student, Anne Actuary believes the PBR reserves are probably not computed in accordance with the Valuation Manual. This resulted in the likelihood of this risk being assessed as high. The PBR reserves were minimal, and with the company only adopting PBR the prior year and having relatively little business reserved under PBR, the financial impact was estimated to be immaterial. Any fix to the PBR reserving platform would be handled by the developer and the appointed actuary, who is considered a mid-level manager, so the impact of this risk was deemed to be immaterial. [Note: Again, based on the subjective nature of this risk assessment, a different examining actuary could have different risk assessments for this item.] The overall inherent risk was determined to be moderate.

- Analysis of Increase in Reserves (Page 7) reported amounts in the Annual Statement are not reported in accordance with the NAIC instructions.

It appears that Analysis of Increase in Reserves page of the Annual Statement does not have correctly reported tabular costs, difference in charged and tabular costs, and change in reserves. The likelihood is set at high. There is no financial impact of an error in this part of financial reporting; however, correction would require mid-level management action, so the impact was set at moderate. The overall inherent risk assessment was determined to be high.

- The X-factors are not established in accordance with Regulation XXX.

A visual review of the X-factors used indicated they are increasing and appear to essentially convert the 2001 CSO mortality to the pricing mortality, which is the 1975-1980 SOA Experience. From this information, Anne Actuary believes the X-factors are probably adequate, but basing them on the pricing assumption is more likely than not to produce an error at some time in the future, so she set the likelihood at moderate-low. Anne Actuary estimated the likely error, if an error exists in the X-factors, to be about 2 percent of surplus. This is a matter which could be addressed by the appointed actuary, who is considered a mid-level manager at this company, so the impact was deemed to be moderate. The overall inherent risk of this risk was deemed to be moderate.

- The company uses inappropriate mortality tables.

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The mortality tables used were the American Experience Table, 1958 CSO, 1980 CSO, 2001 CSO, and 2017 CSO. It appears the tables were not used prior to their adoption, so the likelihood of this risk was determined to be low. An error in the mortality table would require correction by mid-level management, because the board had approved mortality tables to be used in accordance with statutes as they were adopted. The impact was determined to be moderate. The overall inherent risk was determined to be low, so this risk will not require additional action unless the department or EIC specifically ask that it be considered. This risk would normally not be included in the risk matrix.

After completing her inherent risk identification and assessment process, Anne Actuary sent a memorandum of the actuarial risks and their assessments to the Department of Insurance through the EIC for approval.

Managing Expectations: If time allocated is not sufficient to complete this phase as outlined above, some of the time-saving options that may be considered are: 1) not to document the justifications of the likelihood and severity of the inherent risks, because this is not required by the Examiners Handbook; 2) not to consider non-actuarial risks in the review, limiting the risks considered, documents reviewed, and interviews to those related to actuarial items; 3) to have the EIC accept responsibility for entering information in the examination software; and 4) to have the EIC assess the likelihood and magnitude of impact of the risks identified.

HARD STOP—The actuary usually obtains approval of the list of inherent actuarial risks to be considered in the financial examination before finalizing documentation for any later phases. In order to progress while awaiting approval of the risks to be examined, the actuary may consider only working on risks that are almost certain to be approved by the EIC and the Department of Insurance and assigned to the actuarial examiner. Work on later phases of a risk would ideally be deferred until Phase 1 and Phase 2 have been documented in the examination work papers. Likewise, work on later phases of a risk would usually be deferred until it has been incorporated into the risk matrix. During this portion of the examination, the EIC is developing a work plan. This is a time to discuss and resolve with the EIC any time allocation, budgetary, deadline, or other issues. It is also a time to incorporate the examination into the actuary's planning schedule. Beyond this point in the examination, the actuary does not usually add or remove any risk from the risk matrix without approval from the Department through the EIC.

During this time the scoping section of the actuarial addendum may be populated with items to be examined. Also the risks to be evaluated may be listed in the review section(s) of the addendum. Between phases 2 and 3, the initial scope of the actuarial portion of the examination may be modified, with potential reallocation of examination resources. Completing work for later phases before approval to proceed could result in accreditation issues, if noted by a subsequent NAIC accreditation review team.

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This is a sample of the Reserving Risk Matrix completed through Phase 2 with the risks from the above example. The portions completed in Phases 1 and 2 are bolded.

Reserving Risk Matrix

Calculated Cell Do Not Enter Data		Prompts															
1a - Key Activity		Reserve Adequacy															
1b - Overall Risk Statement		Reserves are reviewed and opined to annual by the Company's appointed actuary. The examination actuary, Anne Actuary, FSA, MAAA, will perform the review of reserve adequacy.															
1c - Analytical Assessment		A&H Reserves have steadily decreased each year due to change in business plan focusing in writing more term and universal life business and assuming blocks of traditional life insurance business through various reinsurance treaties.															
		PHASE TWO						PHASE THREE			PHASE FOUR			PHASE FIVE	PHASE SIX	PHASE SEVEN	
		2a	2b	2c	2d	2e	2f	2g	3a	3b	3c	4a	4b	4c	5	6	7
Risk Identification		Inherent Risk Assessment						Risk Mitigation/Control Assessment			Residual Risk Assessment						
Identified Risk Number	Identified Risks	Branded Risk(s)	Exam Assertion(s)	Critical Risk Category	Likelihood	Impact	Overall Inherent Risk Assessment	Risk Mitigation Strategy	Evidence and Document Testing Controls	Overall Risk Mitigation Strategy Assessment	Calculated Residual Risk	Judgmental Residual Risk	Overall Residual Risk Assessment	Examination Procedures/Findings	Prioritization Results/Supervisory Plan	Report Findings and Management Letter Comments	
Risks Other than Financial Reporting																	
1.1	The board of directors (or committee thereof) is not involved in establishing and/or reviewing the insurer's overall reserve practices.	OP RV ST		RA	Moderate-Low	Severe	Moderate	1. Appointed Actuary presents reserves to board annually per actuarial interview.	1. Board minutes reviewed and found that board approved reserves as recommended by actuary for prior year-end at March meeting including a \$2 million increase in reserves due.	Strong Risk Controls	Low or Moderate	Low	Low	No further testing required due to low residential risk assessment.	N/A	N/A	
Financial Reporting Risks																	
Data Quality																	
2.1	The data used to compute reserves is materially inaccurate or incomplete.	OP RV	AC CO	RD	Moderate-Low	Threatening	High	1. Actuary performs trend testing monthly. 2. Admin system automatically links policies to reserving system.	1. Internal audit checks claims and premiums to admin database. (See InternalAudit_chkdlst.xls) 2. CPAs validated 50 policy forms to the database for inclusion and accuracy. (See CPANotWorkPaper_DBValid.pdf) 3. Examination team checked 15 of	Strong Risk Controls	Moderate or High	Moderate	Moderate				
Assumptions & Methodologies																	
3.1	The assumptions and methodologies used by the insurer for life, A&H and deposit-type contracts are not accurate or appropriate.	RV	AC VA PD	RA	Moderate-High	Moderate	Moderate	1. Actuary checks regulatory requirements annually for compliance and attests to them.	1. Signed actuarial opinion. (See SAO.pdf).	Moderate Risk Controls	Moderate	High	High	Recalculated reserves using statutory minimum requirements for policies and contracts for selected plans representing 23% of reserves and 33% of in force using probability proportional to size sampling. The only error noted was the interest rate used for 2005 was 0.25% greater than the amount required by statute. This resulted in an understatement of reserves of	No net adjustment but recommended operational charges.	See ActMgtLtr.doc	
3.2	The life, A&H and deposit-type reserve and IBNR contract claim liability computations are not performed correctly or the selected estimates are unreasonable.	OP RV	VA AC	RA	Moderate-Low	Severe	Moderate				#N/A	N/A					
3.3	The initial reserves calculated by the actuary do not adequately reflect reserve liabilities.	OP RV	VA	RA	Moderate-High	Severe	High				#N/A	N/A					
Reporting																	
4.1	Management books reserves that are materially different than the actuary's best estimate.	OP ST LG	VA PD	RA	Low	Severe	Moderate				#N/A	N/A					

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Phase 3—Identify and Evaluate Risk Mitigation Strategies/Controls

During this phase the objective is to assess and test risk controls and risk mitigation strategies of the company. For each actuarial risk, a member of the examination team is required to consider the company's governance and controls relative to the risk. The consideration relates to:

- Existence of controls
- Documentation of controls
- Appropriateness of controls
- Effectiveness of controls
- Existing tests of controls

Based on these considerations the examination team may determine its level of reliance on the company's controls.

The EIC is responsible for assigning and coordinating examination team members in the assessing and testing of risk controls and risk mitigation strategies. The level of involvement of the examining actuary in this phase varies greatly between EICs and examinations. Sometimes the non-actuarial members of the examination team do all of the risk control and mitigation assessments and testing. Most commonly, the actuary is assigned only reserving risks. The actuary can be a valuable asset to the examination team in the evaluation of risk controls and designing efficient tests for controls.

This phase of the examination is an essential part of the risk-focused surveillance approach. The value can be seen in the change of how reserves have been examined. Before the risk-focused surveillance approach, the objective was to determine whether the reserves were at least as great as the statutory minimums. The risk-focused approach investigates the process of determining reserves to ensure it will produce final reserves at least as great as the statutory minimums. The controls relative to reserve calculations and reporting are the processes the company has in place to ensure the reserves are correctly or conservatively determined and reported. Controls are documented for examinations. Controls are documented company processes that are used to reduce, transfer, or manage its risks. Documentation includes, but is not limited to, written procedures. If the process is verifiable, it can be documented by the examiner, CPA, or company personnel. Examples related to reserves would include the documented processes used to ensure that the data used to compute reserves is accurate and complete, the assumptions used are appropriate, the methodologies used are appropriate, the calculations are performed correctly, and the amounts computed are properly used to determine the amounts reported. Controls may be used to prevent or to detect potential problems. Controls may be automated or they may be performed manually. Manual controls are usually certified by the person who performed the control.

Risk mitigation review is how a risk-focused examination adds value to the financial solvency of a company. Although the numbers in the annual statement may be correct, there could be a lack of controls, which could produce a future error. This portion of the examination is vital to preventing future problems, even if no adjustments are recommended. The intent is to address issues before they become a problem. Although the data may be completely correct, that does not mean the company has adequate controls in place to ensure the data is accurate and complete.

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Phase 3 includes the identification of the controls used by the company to reduce the likelihood and/or impact of an uncertain adverse event. It also includes an evaluation of the adequacy and effectiveness of the controls used by the company. The evaluation may rely upon work performed by others, including internal and external auditors.

If assigned risks for Phase 3, the actuary would usually review the associated documents from Phase 1 to assess the company's risk avoidance and risk mitigation strategies. The actuary may identify other sources of possible information related to risk mitigations, including interviews with key persons and internal/external audit documents. For any risk, two issues are important for mitigation: 1) whether the company has a documented, adequate process in place to address the risk, and 2) whether the company's processes are effective. In order to determine effectiveness of and rely upon a risk mitigation process, the process is normally tested per the Examiners Handbook. This may be applied in different measures. It may be incorporated into substantive testing related to the risk. When the company or its auditors have performed tests to assess the effectiveness of a control, the examiners may rely on the documented tests previously performed, may review a portion of the testing previously performed, may test the controls independently, or may choose not to rely upon the company's controls.

The actuary may prepare a separate work paper for actuarial risk mitigation, which lists each risk assigned to the actuarial examiner and notes who is responsible for reviewing the adequacy of controls and testing the effectiveness of controls. However, this information is usually entered directly into the Reserving Risk Matrix, which requires a description of the controls found, the source of the controls, results of the reviews, results of any testing of controls, and an assessment of the strength of the controls based on these results.

Although many controls may apply to both the GAAP and statutory accounting principles, some controls may not. The examining actuary may wish to verify that the applicable controls and the controls reviewed by auditors address statutory considerations and are not limited to GAAP considerations. The examining actuary may also consider the quality of work and qualifications of auditors to assist in determining the level of reliance to place on CPA and auditor work papers.

Risk Control Assessments

Strong—Management effectively identifies and controls all material types of risk posed by the relevant activity.

Moderate—The risk controls are largely effective but may be lacking in some modest degree.

Weak—The risk management processes are lacking in important ways.

It is very important to coordinate the risk mitigation review with the EIC. The EIC will assign personnel to review and test various controls. Failure to coordinate can result in duplication of efforts or a failure to properly review or test a relevant risk control activity.

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Much of the control testing is conducted by the examiners. Sometimes the actuarial examiner is asked to assist in the testing of some controls or comment on the adequacy of mitigation strategies.

The primary products of Phase 3 are population of the examination Reserving Risk Matrix with inherent risks rated moderate or high and an assessment of the company's controls of the risks. These risk matrices are usually found preformatted in the examiner software or provided to the examining actuary by the EIC. The actuary is often assigned a separate portion of the risk matrix, and it may be labeled as the Reserving Risk Matrix or Claims and Reserving Risk Matrix (See **Appendix F** for an example)

Principle-Based Reserving Considerations

Some Phase 3 considerations related to principle-based reserves include:

- Company's implementation process and documentation of the approvals and implementation steps, including approvals at the appropriate levels of corporate leadership and risk identification process under PBR;
- Identification of controls used to ensure PBR implementation is effected as directed by the company's Board of Directors;
- Documentation of processes and assumptions used in PBR;
- Peer review process, if any;
- Consideration of how the company is poised to prevent and detect problems related to PBR and its implementation;
- Level of automation used in the controls;
- Processes used to calibrate assumptions used in PBR, including uses of credibility and the selection of a relevant data;
- How PBR models are validated regarding their design, verification and version control;
- How policies are inventoried for inclusion or exclusion from PBR;
- How reinsurance is used and modeled;
- How policies are designed and priced in the PBR environment; and
- Any changes in the involvement of individuals and the insights and expertise they bring to the process.

The American Academy of Actuaries Model Governance Checklist and Practice Note can also be valuable references for an examining actuary during Phase 3.

Example:

Anne Actuary received approval from the Department of Insurance to proceed with the inherent risks she had identified and assessed in Phase 2. The Department asked that she also include the risk of concentration of mortality exposure on a single life. Experimental Life has a retention limit of \$100,000 per life, established in accordance with the Department's policies and the surplus level of the company. Anne Actuary added the following risk to the inherent risks:

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- The company has mortality concentration risk exceeding the \$100,000 per life retention limit.

The Department's concern indicated the risk was something it thought could occur at some time, so its likelihood was assessed as moderate-low. To correct this would require senior-level management's involvement, so the impact was assessed as severe. **The overall inherent risk assessment was determined to be moderate. The risk was added to the reserving risk matrix.**

Anne Actuary received a listing of Sarbanes-Oxley controls and CPA work papers related to the reserving risks addressed by the company. She reviewed them and also made inquiries with company personnel and other members of the examination team to determine the company's controls and if they had been tested for each moderate or high inherent risk. The results were as follows:

- The company has mortality concentration risk from exceeding the \$100,000 per life retention limit.

The company has a facultative reinsurance treaty in place to cover all mortality risk in any policy that is above \$100,000. The company has a computer-generated report that lists each policy issued in excess of \$100,000. This is used by the administrative and accounting departments to ensure these policies are reinsured and the report is reconciled by the accounting department, then reviewed and signed by the treasurer. The list is also provided to the claims department to ensure claims reserves are properly accounted. The CPA firm reviewed two of the prior year's monthly reports and found no exceptions. Anne noted there was no cross-checking for multiple policies on a single life and deemed the control was a combination of automated and manual, and was designed to detect a problem. Although the facultative reinsurance treaty could mitigate mortality concentration risk, it was not a preventive control and was based on policies issued rather than lives insured. **She determined the control was inadequate and deemed it to be weak.**

- Mortality assumptions used for reserves are inadequate.

The appointed actuary showed Anne how the reserving system automatically checks the mortality tables used to make sure they are permitted by statute on the issue date and in the state of issue. Changes to the checking routine are documented with the board's approval of the use of the mortality table, the change made, and a test of the change being performed and then reviewed and signed by the appointed actuary and the chief actuary. Each year the company performs an overall mortality study to determine the underwriting gains and losses. The mortality experience is mapped to plan codes and to insurance producers and individual underwriters, whose bonuses are linked in part to the amount of business approved and overall mortality experience. The CPA had verified the change of mortality assumption reports and found no exceptions. Anne reviewed the most recent CPA report review and determined it appeared to be an adequate review. She checked a few of the CPA items to become comfortable that the CPA work was actually performed. The CPA did not review the annual mortality study, so Anne reviewed it by comparing the results of three plan codes with mortality results that appeared questionable. She

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found the results matched with the reported experience. The financial examiners tracked several of the related claims to the company's ledger with only one exception noted. The exception was a contested claim, which the mortality study carried at the full face amount and the company had settled for 50 percent of the death benefit. Anne determined the system control was automated and preventive, adequate, and effective. She also determined the mortality study was a detective control, which was a hybrid manual and automated control. She determined the control to be adequate and effective. Although the mortality study slightly overstated the actual experience, due to the handling of the contested claim, the results were conservative. **She deemed the overall control of the risk to be strong.**

- Reserves for secondary guarantees are computed using methods that produce reserves less than the statutory minimum.

Given the reserving method is not the method prescribed by statute for establishing minimum reserves, the appointed actuary had only indicated these reserves had been greater than the statutory reserves, and there was no actual comparison of the current reserving method with the statutory minimum reserve requirements, **Anne Actuary decided to not rely on the company's controls to mitigate this risk.**

- PBR reserves are not computed in accordance with the Valuation Manual.

Anne Actuary found the PBR reserves were reviewed internally with the review documented and several items manually verified. An actuary very familiar with PBR had reviewed and validated each phase of the reserving platform developed by the actuarial student. The reviews were documented and approved by the chief actuary. Additionally Experimental Life had retained a consulting actuary to review the PBR results and had provided the NAIC with results of reserves for NAIC-provided sample policy types and received notification from the NAIC that the reserves were reasonable. Anne determined the controls involved both automated and manual components and both detective and preventive components. Anne did not note any area where the process could be improved based on what is currently available. **She decided the controls for the PBR reserves were strong.**

- Analysis of Increase in Reserves (page 7) reported amounts in the Annual Statement are not reported in accordance with the NAIC instructions.

Anne Actuary inquired about the preparation and construction of the Analysis of Increase in Reserves (page 7). This section was apparently prepared by the finance department without review by anyone in the actuarial section. She asked the financial examiners to review the preparation performed by the finance department. The financial examiners reported to her that the process was one designed to get the amounts to match a few items, and estimates for net premiums, interest credited, and several other items had been entered without documentation of the source. There was a spreadsheet with the numbers used, but the source of the numbers was not determined. **Anne decided the controls of the reporting of Analysis of Increase in Reserves were inadequate and ineffective and were weak.**

- The X-factors are not established in accordance with Regulation XXX.

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Anne reviewed the X-factor memorandum and found the testing to be performed in accordance with Regulation XXX and ASOP No. 40. Only one of the 40 groupings failed the testing, and the confidence level used for testing was set at 90 percent. The X-factors entries are checked by software that ensures the X-factors comply with the NAIC Valuation of Life Insurance Policies Model Regulation (Regulation XXX). **Anne determined the controls for establishing X-factors were adequate and effective and deemed them strong.**

Managing Expectations: When a reporting error is known to exist, the examining actuary may design a test to quantify the error before testing the controls. However, the lack of or failure of controls that produced the reporting error may need to be determined to assist in the regulation of the company. If time constraints are a concern, the EIC may accept responsibility for determining the adequacy and testing the effectiveness of controls. In fact, as a matter of efficiency, the EIC and the financial examiners sometimes perform most or all of the control review and testing, because the controls are often documented together and the financial examiners have familiarity with the company's control structure. The examining actuary could discuss the division and coordination of this responsibility with the EIC to improve the efficiency of the examination procedures.

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Phase 4—Determine Residual Risk

During this phase the inherent risks are considered in conjunction with the assessment of risk controls to determine residual risk levels. This is a simple but important phase of the examination. The examining actuary or an assigned examiner determines the residual risk level based on the assessment of controls from Phase 3. The recommended residual risks based on inherent risk level and strength of controls are provided by the Examiners Handbook, as detailed in the table below (including the footnote).

Residual Risk Determination

Inherent Risk↓ Controls→	Strong	Moderate	Weak
High	Moderate or High	Moderate or High	High
Moderate	Low or Moderate	Moderate	Moderate*
Low	Low	Low	Low*

* If, based on an assessment of weak risk controls, the examiner feels that the residual risk assessment should be higher than the calculated result, the examiner may consider revising the initial assessment of inherent risk and then recalculating residual risk.

If the controls for any risk are weak or the residual risk is moderate or high, substantive testing will be conducted in Phase 5. Substantive testing increases with the level of residual risk and decreases with the strength of the controls for the risk. For example, if the company has introduced a new product line without adequate risk controls, the impact may be immaterial and the inherent risk low, but the weak controls could result in a future problem and may need to be addressed immediately.

Examiner judgment on determining the residual risk is permitted, but if there is any deviation from the recommended residual risk levels above, the reason would usually be documented in the examination work papers and the deviation approved by the EIC.

The actuary or designated examiner will record the residual risks for items assigned to the actuarial examiner in the Reserving Risk Matrix. Typically the actuary will notify the EIC overseeing the examination of the residual risks he or she intends to test and provide a description of the suggested testing to be conducted.

For each item with high or moderate residual risk, the actuary or a designated examiner will develop a method of testing the risk. Often actuarial portions of examination testing involve sample selections. Section 5 of the Examiners Handbook provides guidance on examination sampling, including circumstances when sampling is not appropriate and how to document substantive testing. Steps are provided for the various types of sampling. The Examiners Handbook lists three general conditions that must be met to utilize examination sampling:

- 1) Less than 100 percent of the population is examined.
- 2) The sample results must be projectable to the population represented.
- 3) The projection must be used to assess controls or to reach a conclusion on the characteristics of a financial statement account or class of transactions.

Sampling is usually conducted in one of two ways:

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- 1) Non-statistical sampling is often appropriate when moderate risks are involved. Often only significant items or unusual items are tested. Sampling risk cannot be quantified when non-statistical sampling is used. This is often used when examining attributes of a population and how they affect reserves. An example of non-statistical sampling would be to examine the four largest contested claims.
- 2) Statistical sampling is used to test a subset of the population.
 - a. *Attribute sampling*—estimates the rate of occurrence of a specific attribute in a population.
 - b. *Discovery sampling*—used when a single error would call for intensive investigation (examples: testing for fraud, avoidance of controls, critical performance, or quality control).
 - c. *Variables sampling*—used for substantive testing when dollar or quantitative conclusions about a population are desired.
 - d. *Probability proportional to size sampling* (PPS sampling)—statistical sampling based on a proportional weighting of probability of selection for a sample to the size of the member of the population. For example, sampling where the likelihood of a claim being reviewed is proportional to the premium paid, benefit paid, original claim amount, policy reserve, net amount at risk, or other measure of size.

The actuary may submit the testing plan for each risk to the EIC for approval. The impact on surplus is the primary concern for testing, and with this in mind, the examining actuary may base the sampling and testing on the total liabilities of a block of business, the net amount at risk of a block of business, or a combination of these and other factors. For term life products, the primary impact on surplus is often the mortality risk, which relates to the net amount at risk. For variable annuities, the primary impact on surplus is often the investment risk, which relates to the level of reserves and the assets supporting them. For universal life products, both the mortality risk on the net amount at risk and the investment risk associated with the level of account values and crediting rates are considerations.

Sample of a Testing Plan Document is found in **Appendix G**.

The primary products of Phase 4 are computation of the residual risks and their entry into the Reserving Risk Matrix, and the production of proposed substantive testing of residual risks that are moderate or high.

Principle-Based Reserving Considerations

PBR enhances an insurance company's ability to respond to changes in experience and also involves the blending of company experience and industry data. The risk considerations are not limited to the impact on the examined company; the risk's impact on the industry is also considered. Under PBR, the reserve calculation includes both modeled and formulaic methods, increased judgment in the determination of assumptions, as well as implementation of new regulation. This results in a greater number of risks to be controlled, increasing the likelihood of occurrence. PBR allows companies flexibility to make corrections relatively quickly. This tends to reduce the impact of the associated risks.

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Example:

Anne Actuary reviewed identified inherent risks and the control evaluations for each inherent risk. She then assessed the residual risk levels and developed a recommended testing plan.

- The company has mortality concentration risk exceeding the \$100,000 per life retention limit.

The inherent risk assessment was moderate and the control was determined to be weak. The table indicated the residual risk was moderate, the weak controls indicated the examiner may wish to reconsider the inherent risk level, Anne's judgment was the inherent risk remained moderate.

The residual risk was assessed as moderate. (Note: Another examining actuary may have reassessed the inherent risk as high and the residual risk would have then been high.) Anne planned to look for multiple policies on any individuals and determine whether the company exceeded the retention limit on any individual lives. Anne considered the likelihood and impact of the risk. The impact was not likely to have a significant impact, so she focused on the likelihood of errors. Desiring an error rate of less than 6 percent with an 80 percent confidence, using a Bernoulli distribution assumption, Anne decided to test 42 policies with death benefits in excess of the retention limit. If either there was only 1 error in the 42 tested or the first 27 tested had no errors, then the company would pass the testing.

- The company uses inappropriate mortality tables.

The inherent risk was deemed high. The controls were deemed to be strong. The residual risk from the table was to be assessed as moderate or high. Given the tables used and the strength of controls, **Anne judged the residual risk to be moderate.** (Note: Another examining actuary may have judged the risk to be high.) Anne considered the likelihood and impact of the risk and decided the impact was more critical than the likelihood of errors. Because the tolerable error of the examination was 1% of surplus, and life reserves represented 10 times the company's surplus, she set the tolerable error at 0.1% (1%/10) of reserves. She estimates this will require the testing of approximately 250 policies and decides to select them based on probability proportional to size.

- Reserves for secondary guarantees are computed using methods that produce reserves less than the statutory minimum.

The inherent risk was considered moderate and Anne did not rely on the company's controls, so she treated the controls as weak and **the residual risk assessment was deemed to be high.**

(Note: If the controls had not been relied upon due to existence but lack of documentation or the inability to evaluate them, she may have retained the inherent risk assessment for the residual risk assessment.) Because the amount of the secondary guarantees is not yet determined, Anne decided to randomly select 30 policies with secondary guarantees from each of the four plan codes that offer secondary guarantees and estimate the difference in the average amount of reserves for secondary guarantees from the method used and the reserves based on the statutory

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method. She decided to use a Student-t test of the difference of two means and will not consider an adjustment if the difference has a 95 percent confidence of being less than 2 percent of the reported reserves for secondary guarantees. Even if the results are conservative, she will comment on the company's variance from customary practice and how it could have a future impact.

- PBR reserves are not computed in accordance with the Valuation Manual.

With strong controls and high risk, Anne may use her professional judgment to decide whether the residual risk is high or moderate. Given the potential long-term impact of PBR, **Anne Actuary decided to assign a residual risk of high to the PBR reserve computations.** She planned to recompute the reserves for three policies from each of the plan codes where PBR reserves were calculated.

- Analysis of Increase in Reserves (Page 7) reported amounts in the Annual Statement are not reported in accordance with the NAIC instructions.

Given the high inherent risk and weak controls of this risk, **Anne Actuary assigned a high residual risk level to the analysis of increase in reserves.** She planned to recompute the amounts on page 7, using the starting and ending reserve amounts and information in the actuarial records of the company. As necessary, she would request the company perform recalculations.

- The X-factors are not established in accordance with Regulation XXX.

Given the moderate inherent risk and strong controls, Anne could use her professional judgment to assign a residual risk of moderate or low to this risk. **She deemed the residual risk of the appropriateness of the X-factors was low.** With the low residual risk, no substantive testing is needed for this risk. Anne discussed her residual risk assessment with the Examiner in Charge, who instructed her to remove the risk from the risk matrix, which she did. (Note: Some examiners would direct the examining actuary to leave the risk in the reserving matrix and note that no substantive testing was needed.)

Anne prepared a Phase 4 memorandum and submitted it to the Examiner in Charge. The Phase 4 memorandum included the assessment of the residual risks for the risks in the reserving risk matrix and the examining actuary's recommended testing plan for Phase 5.

Considerations: If time is a constraint, using the smallest sample permitted can minimize the time required. PPS sampling is very effective but can be time-consuming. Non-statistical sampling can also be used to reduce the time required for the examination, if appropriate. Sometimes testing can be conducted by simplified means—for example, checking the database to determine whether the premiums, policy count, and face amounts match amounts reported elsewhere is usually simpler than testing individual policies for database accuracy and completeness. Often the EIC will grant the examining actuary permission to conduct testing based on the actuary's professional judgment and not require the plan be approved prior to testing. This provides another way to reduce the time required by limiting the required

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documentation of the description of the testing process and combining the testing plan and testing results into one document.

Between phases 4 and 5, the scope of the actuarial portion of the examination may be modified in coordination with the EIC, with potential reallocation of examination resources.

At the conclusion of Phase 4, a synopsis of risk evaluations can be added to the actuarial addendum for each risk being considered. Also any recommendations on controls can be added in the conclusion section.

HARD STOP—Generally, the actuary will not begin testing of risks until the risks to be tested and the methods are approved by the EIC. The exception is when the actuary is reasonably certain a risk and method will be approved and expedience is a concern.

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Phase 5—Establish/Conduct Detailed Examination Procedures

The actuary or designated examiner will request needed information from the company or the appointed actuary in order to test moderate and high residual risks. The examining actuary or designated examiner will then test risks and document the testing and results. The documents would usually be included as examination work papers, and may be input into the examiner software as they are completed. The Phase 5 testing documents typically include:

- Company name
- Identification of the risk being tested
- Examiner/actuary conducting the test
- Date (completed and documented)
- Description of the testing method(s) used
- Results of the test(s)
- Conclusions

The Examiners Handbook contains requirements of what should be included in examination work papers. Documents may also include:

- Potential financial or operational impact (if applicable), with recommended financial adjustments. The recommended financial adjustments may need to be discussed with the Department's chief examiner, EIC or other Department of Insurance personnel, and may become part of the examination report or a management letter.
- References—Statutes, regulations, actuarial standards of practice (ASOPs), Statements of Statutory Accounting Principles (SSAPs), Actuarial Guidelines, etc. (particularly if claiming a violation).
- Recommendations—management notification, adjustments, monitoring, options.

Sample of a Phase 5 testing document is found in **Appendix H**.

The primary products of Phase 5 are the documentation of the testing and analysis of the results of the moderate and high residual risks.

PBR Considerations

Testing of PBR actuarial elements involve validation with respect to requirements as outlined in the SVL and related Valuation Manual. The examining actuary may first collect all available information from the company that documents the development of actuarial items under PBR review. Under PBR, VM-31 documentation and VM-G elements will direct the examining actuary to underlying calculations, assumptions and experience studies, including credibility testing. Documented items are usually compared to PBR requirements. Each material assumption should be well documented and supported in accordance with VM-31. The examining actuary may assess this information with respect to the requirements as contained in the SVL and Valuation Manual, and then proceed to review development of the elements under review by either a walkthrough of their specific development or by external recalculation/reconstruction.

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Several PBR references are available to the examining actuary:

[Life Principle-Based Reserves Under VM-20 Practice Note](#)

“The purpose of the practice note is to assist actuaries with implementation of the principle-based life reserve valuation approach adopted by the NAIC as detailed in the *Requirements for Principle-Based Reserves for Life Products—VM-20* dated Aug. 29, 2016, describing the proposed requirements for calculating minimum valuation standard statutory reserves for individual life insurance products.”

The American Academy of Actuaries [Model Governance Practice Note](#) and the Academy’s [Model Governance Checklist](#) are additional resources. The American Academy of Actuaries Life Practice Council has put together an extensive repository of [PBR materials](#).

Example:

Anne Actuary received an email from the Examiner-in-Charge directing her to proceed with the testing plan submitted. She saved the email as a work paper and conducted the testing as described in the Phase 4 memorandum.

- The company has mortality concentration risk exceeding the \$100,000 per life retention limit.

Anne found 31 individuals on the database with multiple policies and a total amount at risk in excess of \$100,000. Due to a small number of individuals, she performed a 100% validation rather than sample testing. Of these individuals, 10 of them had sufficient reinsurance in place to bring the net amount at risk below the company’s retention level and 21 did not. Anne noted this as an exception.

- The company uses inappropriate mortality tables.

Anne reviewed the dates of issue and mortality tables for the 250 policies based on a probability proportional to the size of the policies. One policy was issued in 2000 and used the 2001 CSO and two policies issued in the 1970s were reserved using the 1980 CSO. All other policies use mortality tables approved at the time the policies were issued. She investigated the exceptions further and found that all three policies had lapsed and been revived after the applied mortality table had been adopted. She looked at the historical number and coverage amounts of revivals of policies from the Exhibits of Life Insurance in Force and decided the adjustment was immaterial. She noted the practice as an exception.

- Reserves for secondary guarantees are computed using methods that produce reserves less than the statutory minimum.

Anne recomputed the NPR reserves for 30 policies from each of the four plan codes with secondary guarantees. For two of the plan codes, the statutory reserves were less than the

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reported reserves for every policy tested. For one of the plan codes, the statutory reserves were greater than the reported reserves for one policy; in this case the reported reserves for the secondary guarantee were missing. For the fourth plan code, 10 of the 30 policies had reported secondary guarantee reserves less than the statutory reserves. Considering the mean of the differences between the reported and statutory reserves for secondary guarantees for each plan code, Anne developed the following table:

Plan	Average Difference in Statutory and Reported Reserves for Secondary Guarantees	Standard Deviation of Differences	t-Statistic with 29 df	Prob (Difference < 2.0%)
A	-1.8%	0.5%	7.6	>99%
B	-24.2%	5.1%	5.1	>99%
C	-5.4%	1.1%	6.7	>99%
D	-1.5%	4.4%	0.795	79.4%
Total	-8.1% (impacted by size)	2.6%	3.885	>99%

Anne noted the exception, because reserves for life insurance policies are based on a policy-by-policy basis, but did not recommend an adjustment to the reserves, because the aggregate reported reserves of the sample were greater than the statutory aggregate reserves of the sample.

- PBR reserves are not computed in accordance with the Valuation Manual.

Anne recomputed the NPR reserves for three policies from each plan code where PBR was applied. She obtained the same answers within 2 percent on each policy reviewed. She accepted the company's computations.

- Analysis of Increase in Reserves (Page 7) reported amounts in the Annual Statement are not reported in accordance with the NAIC instructions.

Anne recomputed the amounts on page 7, using the starting and ending reserve amounts and information in the actuarial records of the company. The actuarial department provided her with the net premium amounts net of reinsurance, tabular costs, changes in reserves, and amounts of interest credited. She reconstructed the analysis of increase in reserves and produced results very different from what had been reported by the company.

- The X-factors are not established in accordance with Regulation XXX.

Because this risk had a low residual risk, it was not examined further.

Considerations: If time constraints are an issue, the EIC may accept responsibility for providing references and recommendations.

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Phase 6—Update Prioritization and Supervisory Plan

Phase 6 is described in the Examiners Handbook as:

Relevant and material findings resulting from the risk assessment effort and any other examination activities should be utilized and incorporated into determining (or validating) the priority of the insurer, as well as establishing the Supervisory Plan. The examination results and/or findings are key elements that should be considered when updating the insurer's prioritization or Supervisory Plan as the solvency or management conditions noted within these reports and within the financial analysis workpapers should drive the determination of future monitoring activities. As the financial analyst generally maintains the supervisory plan and tracks prioritization, a good means of communicating exam issues that may affect the supervisory plan or have implications on prioritization levels is through use of Exhibit AA – Summary Review Memorandum.

It is customary for an examining actuary who is a retained consultant to discuss draft recommendations for any ongoing monitoring that may be needed with the actuary from the Department of Insurance, if the department has an actuary reviewing the examining actuary's work, prior to officially reporting the recommendations to the EIC. Typically the examining actuary will provide advice and recommendations to the EIC or personnel at the Department of Insurance concerning the actuarial areas and the extent of ongoing monitoring needed. If performing Phase 6 work, the actuary would usually compile the recommendations from phases 4 and 5, together with reasons for the recommendations, into a document. Such a document would be provided to the EIC for review and eventual submission to the Department of Insurance. This is the primary product of Phase 6.

Some examples where recommendations for ongoing monitoring would be considered would include trends toward adverse changes in mortality, cash flow, lapse experience, policy reserve adequacy, claim reserve adequacy, compliance issues, etc.

Recommendations may be broken into two sections: recommended adjustments and recommended operational changes. If the actuarial addendum is being written as the examination proceeds, these recommendations can be incorporated into the addendum as they are developed and the notice to the EIC can be extracted from the draft of the actuarial addendum. Items which the examining actuary recommends, including recommended time periods for corrective actions, may be included in the management letter.

These recommendations will likely be included in the company's Supervisory Plan, which is used by the financial analyst to monitor the company.

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Principle-Based Reserving Considerations

Several Phase 6 considerations exist under PBR. These include making sure that a company that has invoked a PBR exemption and/or exclusion from PBR is still eligible for the exemption and/or exclusion. In such cases, results of related tests may be monitored to ensure that the company remains within the limits established by such tests. In other cases, a company may be in possession of a permitted practice from a particular state that allows for a variation to PBR requirements. The examining actuary typically verifies that the variations were permitted when they were used. Any such permitted practices are typically validated by the State of Domicile. Under PBR, actuarial methods, assumptions, and calculations fall under strict governance and controls. The examining actuary may consider monitoring and assessing any changes in these items, because they may have clear impact on a company's financial position and may adversely affect underlying risk levels associated with key processes such as development of statutory reserves.

Example:

Anne Actuary reviewed the actuarial examination findings with the Examiner-in-Charge and the actuary at the Department of Insurance. They decided to address the issues as follows:

- The company has mortality concentration risk exceeding the \$100,000 per life retention limit.

This exception would be addressed via a management letter with a follow-up review by the department's analyst.

- Mortality assumptions used for reserves are inadequate.

This exception would be addressed via a management letter with a follow-up review planned for the next examination.

- Reserves for secondary guarantees are computed using methods that produce reserves less than the statutory minimum.

Although the exception to the method used did not result in a recommended adjustment, the correction was considered important enough to include in the examination report. The issue would also be addressed through a management letter and the actuary for the Department of Insurance would check to ensure the changes were implemented with the next actuarial opinion.

- Analysis of Increase in Reserves (Page 7) reported amounts in the Annual Statement are not reported in accordance with the NAIC instructions.

This reporting exception was to be addressed via a management letter, with the Actuary from the Department of Insurance reviewing the next annual statement filing to verify corrective changes were implemented.

Phase 7—Draft Examination Report and Management Letter

Typically the examining actuary will write an actuarial addendum or actuarial report of work performed for the EIC to be used in writing the Examination Report prepared by the EIC. A list of potential contents of the actuarial addendum was provided at the beginning of this document. The Examination Report is the product of Phase 7.

The examining actuary commonly submits the addendum or report to a peer reviewing actuary, particularly if exceptions were found. After the peer review, if any, the completed actuarial addendum is signed and dated by the examining actuary and provided to the EIC.

The EIC commonly asks the examining actuary to provide or review verbiage related to the actuarial information contained in the Examination Report and/or Management Letter.

The Examination Report should only include significant findings of fact, as mentioned in the *Model Law on Examinations* (#390), and general information about the insurer and its financial condition. In a full-scope examination, the report will contain the standard information as set forth in the Examiners Handbook. In a limited-scope examination, the examination is limited to a review of specific financial statement items or risk areas and the same reporting process is followed. See additional guidance for creating a report on a limited-scope examination in Section 1, Part IX (letter H) of the Handbook.

A sample of a portion of an actuarial addendum to an examination report is contained in **Appendix I**.

The actuarial addendums for examinations vary greatly between examining actuaries, but they generally contain descriptions of what was examined, how it was examined, and the actuarial control environment. The addendum also typically includes any recommended changes to actuarial amounts reported by the company, together with their impact on surplus, and any recommendations for changes in the actuarial operations. The addendum is considered an examination work paper and is a confidential document. It is not part of the examination report and does not have a prescribed standard format. The Examiner-in-Charge often uses information in it to make adjustments reported in the examination report and it may be reviewed by the examining actuary during the next examination cycle.

Principle-Based Reserving Considerations

The actuarial addendum may comment on newly introduced PBR processes at the company. PBR process implementations and results are typically reviewed by the examining actuary. While the amount of business subject to PBR may be immaterial in the initial years following PBR adoption, implementation review during the transition period is important. The review verifies the establishment of proper PBR processes for the business reserved under PBR, which will become more material over time.

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To the extent included in the Actuarial Risk Accumulation Table or the Risk Matrix, the actuarial addendum may include comments on:

- VM-G compliance;
- Selection and implementation of PBR-based assumptions, including credibility considerations, sensitivity testing, margins, and prescribed assumptions;
- Company compliance with methods required by the SVL and the Valuation Manual;
- Documentation of exemptions and/or exclusions;
- Any findings or exceptions related to incomplete and/or incorrect implementation and/or documentation; and
- Recommended corrective actions.

Considerations: Commonly another actuary reviews the work of an examining actuary. The reviewer may be an actuary who works with the examining actuary, an independent actuary or an actuary from the Department of Insurance. The level of review can be influenced by many factors. Sometimes, the reviewing actuary performs a detailed review of all work papers during all of the phases, and at other times the reviewing actuary may limit the review to reading the draft addendum to ensure there are no questionable or unclear items. The examining actuary commonly advises the reviewing actuary, if any, of any questionable items or issues and of any actuarial results from the examination that materially differed from the company's results. The peer reviewing actuary reviews, at a minimum, the examining actuary's methods, findings, and conclusions.

Appendix A—Reference Sources

Professionalism requirements are provided in the actuarial standards of practice (ASOPs). Some of the ASOPs commonly relied upon during financial condition examinations of life insurance companies are:

- [*Nonguaranteed Charges or Benefits for Life Insurance Policies and Annuity Contracts*](#) (ASOP No. 2)
- [*Incurred Health and Disability Claims*](#) (ASOP No. 5)
- [*Analysis of Insurer Cash Flows*](#) (ASOP No. 7)
- [*Dividends for Individual Participating Policies*](#) (ASOP No. 15)
- [*Long Term Care Insurance*](#) (ASOP No. 18)
- [*Responding to or Assisting Auditors or Examiners*](#) (ASOP No. 21)
- [*Statements of Opinion Based on Asset Adequacy Analysis by Actuaries for Life or Health Insurers*](#) (ASOP No. 22)
- [*Data Quality*](#) (ASOP No. 23)
- [*Credibility Procedures*](#) (ASOP No. 25)
- [*Compliance with the NAIC Valuation of Life Insurance Policies Model Regulations with Respect to Deficiency Reserve Mortality*](#) (ASOP No. 40)
- [*Actuarial Communications*](#) (ASOP No. 41)
- [*Determining Health and Disability Liabilities Other Than Liabilities for Incurred Claims*](#) (ASOP No. 42)
- [*Principle-Based Reserves for Life Products Under the NAIC Valuation Manual*](#) (ASOP No. 52)

The ASOPs [Applicability Guidelines](#) may provide additional ASOPs for consideration.

PBR content from the Life Practice Council of the American Academy of Actuaries was provided in the link at the end of the Phase 5 section. Additional information on common practices of actuaries can be found under the Life tab in [Practice Notes](#) published by the American Academy of Actuaries. Some of the more commonly used practice notes and addendums, including exposure drafts, related to financial condition examinations for life insurance companies are:

- Credibility
- Compliance with Actuarial Guideline XLIX
- Asset Adequacy Analysis
- Scenario and Cell Model Reduction
- C-3 Phase II and Actuarial Guideline XLIII
- NAIC Model Regulation XXX
- Application of C-3 Phase II
- Application of Actuarial Guideline XXXIX
- Special Issues for Variable Annuities
- Model Governance Practice Note
- Model Governance Checklist

Additional information may be found in the following sources, which may require purchase:

- NAIC Financial Condition Examiners Handbook (Examiners Handbook, only available to regulators)
- NAIC Annual Financial Reporting Regulation or “Model Audit Rule” (MAR)
- NAIC’s Accounting Practices and Procedures Manual (APPM)
 - Actuarial Guidelines (Appendix C, which is also Appendix VM-C of the Valuation Manual)
 - Applicable SSAPs
- NAIC Annual Statement Instructions
- NAIC Valuation Manual
- AAA Life and Health Valuation Manual—State-specific requirements included

Appendix B—Sample Actuarial Phase 1 Document

Annual Statement Other Pages

Company: Experimental Life
Examiner: A. Actuary, MAAA, FSA
Date: July 13, 20XX

Overview

Purpose: Review portions of the annual statement to increase familiarity with the company and its inherent risks.

Scope: This review was limited to the following portions of the 20YY annual statement: state pages (page 24), IMR (page 28), AVR (page 29-35), Schedule F (page 36), Schedule H (pages 37-39) and Schedule S (pages 40-47)

Conclusions: The results of the analysis of each item in the scope are provided in the analytical results section. Issues requiring additional information are listed in the follow-up section. The significant inherent risks identified are in the risk section below.

Analytical Results

State Pages

A consolidation of the key items from the state pages (dollar amounts are in thousands) is in the table below:

	AR	LA	MS	SC	TN	Total
Life Premiums	\$220	\$15,037	\$3	-0-	\$1,177	\$16,438
Annuity Premiums	\$1	\$1,875	-0-	-0-	\$20	\$1,896
Death Benefits	\$89	\$7,263	-0-	-0-	\$862	\$8,213
Matured Endowments	-0-	\$18	-0-	-0-	-0-	\$18
Annuity Benefits	-0-	\$890	-0-	-0-	-0-	\$890
Surrender Benefits	\$14	\$895	-0-	-0-	\$110	\$1,018
Other Benefits	-0-	\$58	-0-	-0-	-0-	\$58
Death Claims Incurred	\$61	\$8,801	-0-	-0-	\$590	\$9,452
Death Claims Paid	\$61	\$8,810	-0-	-0-	\$590	\$9,461
Unpaid Death Claims	-0-	\$1,619	-0-	-0-	-0-	\$1,619
Amount In Force	\$10,841	\$916,753	\$279	-0-	\$63,912	\$991,785
Number of Lives Covered	843	168,263	17	-0-	7,643	176,766

Interest Maintenance Reserve (IMR)

The amortization of the IMR was visually inspected and determined to be unusual. A spreadsheet of the IMR computations was developed (*ExpLifeIMR.xls*) using the grouping method from the

20XX NAIC Annual Statement instructions (See *IMR 01.jpg* for a scan of this page). The losses in 20AA and 20BB and gain in 20CC recorded in the IMR are likely to be erroneous entries.

Asset Valuation Reserve (AVR)

The components of the AVR were reviewed. The following matters were determined from the AVR schedule:

- Low-quality and below-investment-grade bonds represent \$16.8 million of \$84.7 million (19.8%) of the bond portfolio.
- Overdue and foreclosed mortgages represent \$1.5 million of \$21.1 million (7.1%) of the mortgage portfolio.
- Investments in affiliates represent \$2.1 million of \$5.4 million (39.7%) of the common stock portfolio.
- Low, underperforming, or affiliated investments represent \$20,449,970, which is 12.2% of admitted assets and 285% of capital and surplus.

Schedule F

Less than 0.5% of the death claims in the past 2 years have been resisted. All of these are due to health history. The rate of resisted claims is not unusual; however, health history being the only reason for resisting claims is unusual.

Schedule H

The company does not report that it maintains any accident and health (A&H) business or A&H reserves. Schedule H appropriately had no entries.

Schedule S

Schedule S was reviewed to get an overview of the reinsurance ceded and assumed. The company did not report assuming any insurance, but only ceded business. Nothing unusual was noted in the review; however, a Jumpstart report can be used to compare reserves ceded and assumed to what the counterparties reported. The company reports that it ceded approximately \$406 million of insurance in force through yearly renewable term (YRT) treaties. The ceded reserves are \$2.8 million and premiums ceded totaled \$1.8 million. The premium-to-reserve ratio appears high for YRT.

Follow-Up

The items that require additional investigation, information requests, or interviews:

- How was the IMR amortization computed and by whom?
- Who on the examination team is to be tasked with validating the amortization of the IMR?
- Are the company's admitted assets such that there are enough liquid assets (cash equivalents) to discharge the liabilities not addressed in the cash flow testing, with the

remaining assets sufficient to cover the quantity and quality of assets used in the asset modeling for cash flow testing?

- What is the company doing to correct the problem with asset quality?
- Why is health history the only reason reported for resisted claims?
- Does the company have any A&H business? (It does not report any A&H business in the annual statement, although there are other indications—the company website—that it does sell A&H business.)
- Why is the ratio of reserve credit to premiums on the YRT reinsurance ceded so high? It is higher than the ratio of tabular to actual mortality: 156% vs. 133%.
- Does the Jumpstart report reflect the reserves, premiums, and insurance amounts ceded by the company were also assumed by the counterparties?

Significant Inherent Risks Identified

Actuarial Risks

The following items are issues identified as significant potential inherent actuarial risks from the review:

- The cash flow testing does not use available assets in the modeling of future asset performance.
- The company is overstating the reserve credit ceded through reinsurance.
- The company is failing to report A&H reserves.

Other Risks

The following potential inherent risks were noted but were outside the scope of the actuarial portion of the examination. They are to be referred to the EIC for disposition:

- The amortization of the IMR is incorrect. The IMR is not computed using the grouping method and the seriatim method is unlikely to produce the amortization schedule found in the annual statement. The IMR is likely incorrectly computed and amortized.
- Because health history is the only reason any claims are resisted, the company might be failing to adequately review claims or there could be an issue with underwriting. [Note: The rate of resisting claims was less than 0.5% for 20XX and 20YY. This is more likely to indicate a lax claim review process than an underwriting problem.]

Appendix C—Sample Actuarial Follow-Up List

	Experimental Life Insurance Company	<i>Matrix of Actuarial Follow-Up Items</i>		
	Examiner: A. Actuary, FSA, MAAA			
	Examination as of 12/31/20XX			
	State Insurance Department			
	<u>Item Description</u>	<u>Source</u>	<u>Disposition</u>	<u>Comments</u>
1	How was the IMR amortization computed and by whom?	ASOtherPages_kjk_XLIC.doc	Omitted	EIC will take responsibility for IMR. See #2
2	Who on the examination team is to be tasked with validating the amortization of the IMR?	ASOtherPages_kjk_XLIC.doc	Email_kjk_EIC_110714.jpg	
3	Are the company's admitted assets such that there are enough liquid assets (cash equivalents) to discharge the liabilities not addressed in the cash flow testing, with the remaining assets sufficient to cover the quantity and quality of assets used in the asset modeling for cash flow testing?	ASOtherPages_kjk_XLIC.doc	SER #44	
4	What is the company doing to correct the problem with asset quality?	ASOtherPages_kjk_XLIC.doc	SER #44	
5	Why is health history the only reason reported for resisted claims?	ASOtherPages_kjk_XLIC.doc	Email_kjk_EIC_110714.jpg	Not an actuarial issue. Referred to EIC.
6	Why are the reserve-to-face ratios on 5-7 year ratchets 0.20% and 3.12% for the two secondary guarantees?	AnnualStatement_kjk_XLIC.doc	SER #44	
7	Why is mortality experience barely profitable?	AnnualStatement_kjk_XLIC.doc	RiskAccumMtx_XLIC.xls	Moved to risk matrix, because was also identified in prior exam.
8	Ask the EIC if state requires dividends to be included in the NGE opinion.	Miscellaneous_kjk_XLIC.doc	Email_kjk_EIC_110714.jpg	
9	Why are the reserve-to-face ratios on 5-7 year ratchets 0.20% and 3.12% for the two secondary guarantees?	Miscellaneous_kjk_XLIC.doc	Combined with #6	

Appendix D—Sample Actuarial Risk Accumulation Table

Experimental Life Insurance Company				
Inherent Actuarial Risk Table				
Examination as of 12/31/20XX				
Examiner: A. Actuary, FSA, MAAA				
Description of Risk	Source (links)	Assignment of Risk	Destination of Risk	Comments—Reason for Disposition/Link
Company has adverse mortality experience	PriorExam_kjk_XLIC.doc	Actuary/EIC	InherentRiskCalc_kjk_XLIC.xls and RiskEmail_XLIC.pdf	Make sure issue does not continue to affect reserves. EIC to verify practice of writing policies to dying people has been stopped.
Actuary did not sign actuarial opinion	ActlOpinion_kjk_XLIC.doc	Actuary	Omitted, See comments	Original filed with department was signed, electronic version reviewed was unsigned.
Incorrect interest rates were used for computing reserves.	AnnlStmt_kjk_XLIC.doc	Actuary	InherentRiskCalc_kjk_XLIC.xls	
IMR was incorrectly amortized	AnnlStmt_kjk_XLIC.doc	EIC	RiskEmail_XLIC.pdf	Outside actuarial scope

Appendix E—Sample Inherent Actuarial Risk Assessment Table

Sample Inherent Actuarial Risk Assessment Table

Experimental Life Insurance Company
 Examination Date: 12/31/20XX
 Examiner: A. Actuary

High	> 50% likely	Threatening	>\$360,000
Moderate-High	10-50% likely	Severe	\$215,000-\$360,000
Moderate-Low	1-10% likely	Moderate	\$70,000-\$215,000
Low	<1% likely	Immaterial	<\$70,000

Risk	Likelihood	Justification	Severity	Justification	Inherent Risk	Comments	Branded Risk
Data Quality							
Administrative system does not feed all policies into the reserving system.	High	There were no policies on the reserving system with \$0 in reserves. Also the census on the reserving system indicates approximately 4% of the policies are missing.	Moderate	Most of the reserves are probably \$0, so the financial impact is probably immaterial. However, this requires managerial involvement.	High		Operational
Methods and Assumptions							
Inappropriate interest rates were used for discounting reserves.	Moderate-Low	Interest rates were missing for some plan codes in the annual statement.	Severe	A 0.25% interest rate change on the missing plan codes would have an estimated impact of \$250K.	Moderate		Reserving
Loss development for IBNR is incomplete.	Moderate-High	Company only reports claims filed for prior year as of the end of February (2 months).	Immaterial	Assuming 10% of annual claims were incurred but not reported (36 day delay in reporting), the total IBNR would be \$240K, but the company reported \$200K, so the difference would be \$40K.	Moderate		Reserving
Mortality is higher than assumed.	Moderate-Low	Prior exam.	Moderate	Prior exam impact was \$100K.	Moderate	Company found agent writing policies to people dying in hospital. - Subsequent events prior exam.	Pricing/ Underwriting
Computations							

Appendix F—Sample of a Partially Completed Reserving Risk Matrix

Reserving Risk Matrix

Calculated Call Do Not Enter Data		Prompts														
1a - Key Activity		Reserve Adequacy														
1b - Overall Risk Statement		Reserves are reviewed and opined to annual by the Company's appointed actuary. The examination actuary, Anne Actuary, FSA, MAAA, will perform the review of reserve adequacy.														
1c - Analytical Assessment		A&H Reserves have steadily decreased each year due to change in business plan focusing in writing more term and universal life business and assuming blocks of traditional life insurance business through various reinsurance treaties.														
		PHASE TWO					PHASE THREE			PHASE FOUR			PHASE FIVE	PHASE SIX	PHASE SEVEN	
Risk Identification		2b	2c	2d	2e	2f	2g	3a	3b	3c	4a	4b	4c	5	6	7
Identified Risk Number	Identified Risks	Branched Risk(s)	Exam Assertion(s)	Critical Risk Category	Likelihood	Impact	Overall Inherent Risk Assessment	Risk Mitigation Strategy	Evidence and Document Testing Controls	Overall Risk Mitigation Strategy Assessment	Calculated Residual Risk	Judgmental Residual Risk	Overall Residual Risk Assessment	Examination Procedures/Findings	Prioritization Results/Supervisory Plan	Report Findings and Management Letter Comments
Risks Other than Financial Reporting																
1.1	The board of directors (or committee thereof) is not involved in establishing and/or reviewing the insurer's overall reserve practices.	OP RV ST		RA	Moderate-Low	Severe	Moderate	1. Appointed Actuary presents reserves to board annually per actuarial interview.	1. Board minutes reviewed and found that board approved reserves as recommended by actuary for prior year-end at March meeting, including a \$2 million increase in reserves due.	Strong Risk Controls	Low or Moderate	Low	Low	No further testing required due to low residential risk assessment.	N/A	N/A
Financial Reporting Risks																
Data Quality																
2.1	The data used to compute reserves is materially inaccurate or incomplete.	OP RV	AC CO	RD	Moderate-Low	Threatening	High	1. Actuary performs trend testing monthly. 2. Admin system automatically links policies to reserving system.	1. Internal audit checks claims and premiums to admin database. (See InternalAudit_checkslist.xls) 2. CPAs validated 50 policy forms to the database for inclusion and accuracy. (See CPAWorkPaper_DIBvald.pdf) 3. Examination team checked 15 of	Strong Risk Controls	Moderate or High	Moderate	Moderate			
Assumptions & Methodologies																
3.1	The assumptions and methodologies used by the insurer for life, A&H and deposit-type contracts are not accurate or appropriate.	RV	AC VA PD	RA	Moderate-High	Moderate	Moderate	1. Actuary checks regulatory requirements annually for compliance and attests to them.	1. Signed actuarial opinion. (See SAO.pdf).	Moderate Risk Controls	Moderate	High	High	Recalculated reserves using statutory minimum requirements for policies and contracts for selected plans representing 23% of reserves and 33% of in force using probability proportional to size sampling. The only error noted was the interest rate used for 2005 was 0.29% greater than the amount required by statute. This resulted in an understatement of reserves of	No net adjustment but recommended operational charges.	See ActMgtLtr.doc
3.2	The life, A&H and deposit-type reserve and IBNR contract claim liability computations are not performed correctly or the selected estimates are unreasonable.	OP RV	VA AC	RA	Moderate-Low	Severe	Moderate				#N/A	N/A				
3.3	The initial reserves calculated by the actuary do not adequately reflect reserve liabilities.	OP RV	VA	RA	Moderate-High	Severe	High				#N/A	N/A				
Reporting																
4.1	Management books reserves that are materially different than the actuary's best estimate.	OP ST LG	VA PD	RA	Low	Severe	Moderate				#N/A	N/A				

Appendix G—Sample Actuarial Testing Plan Document

Method of Reserve Validation

Company: Experimental Life Insurance Company
Examiner: A. Actuary, MAAA, FSA
Date: August 21, 20XX

Purpose

Risk Addressed

Life insurance reserves are less than the statutorily required amounts.

Background

Reserves have residual risk and need to be verified. The company has approximately 800 different valuation plans. The average reserve for the company overall is about \$114 per \$1,000 of coverage. Given the mix and age of business, this seems low. Reserves for annuities were set to the account value, so they have no net amount at risk and were not considered in this review.

Scope

Test the reserves on a subset of life insurance policies which can be used to determine if the reserves are correctly reported. If reasonably possible, policies will be selected based on some measurable likelihood of their error or to provide a representative sample of the block of policies to which they belong.

Methodology

The metric for testing reserves is the net amount at risk. This is the difference between the face amount and the reserves. Testing will be by plan code. The entire plan code will be tested if selected. A review indicated some policies have reserves greater than face amount. One randomly selected plan code with reserves greater than face amount will be selected to be included in the review. The net amounts at risk were determined (see ReserveSample.xls). The total net amount at risk was computed to be \$839,692,042. [Note: Immaterial errors and rounding were accepted in the process, as correcting them would not be cost effective. The largest identified error was \$17.]

The level set for testing was 5% of the net amount at risk, or \$42 million (actual amount was \$41,984,602.10). This means that any plan code representing \$42 million or more of the net amount at risk will automatically be included. Any plan code with less than \$42 million of the net amount at risk will have the probability of being selected equal to that plan code's net amount at risk divided by \$42 million of the company total net amount at risk.

A number between \$0 and \$41,984,602.10 was randomly generated. The result was \$31,336,337.97, and was the initial threshold amount. The net amount at risk for plan codes (in the order provided in KLIC201012_1.pdf) was totaled until the total exceeded \$31,336,337.97. The plan code which resulted in the total crossing the threshold amount was selected for testing. The threshold amount was then increased by \$41,984,602.10 (or sufficient multiples of \$41,984,602.10 to exceed the sum through the selected plan code) and the process continued until the entire set of plan codes was considered for testing and the selected plan codes were identified. The spreadsheet where this was done is ReserveSample.xls.

There were 12 plans with reserves greater than face amount. These were increasing benefit plans. A number between 1 and 12 was randomly generated. The number generated was 11. The 11th plan in the list with negative net amount at risk was selected for testing. Similarly an industrial plan code was selected from \$3,295,954 million at risk (90 plan codes), because the sampling technique did not include any industrial policies. The number randomly generated was \$3,079,074.16. The plan code which moved the total over this threshold was P0228.

The 21 plan codes selected are provided in the chart below:

Plan	Face Amount	Reserve	Net Amount at Risk
91886 – IBWL 80CSOL IPC CRVM 4.5%	\$25,105	\$40,426	(\$15,321)
P0228 – WL AE FPT 4.0%	\$319,750	\$156,703	\$163,047
CT860 – CTR 80CSOL IPC CRVM 4.5%	\$27,425,034	\$10,973	\$27,414,061
90864 – WL 80CSOL IPC CRVM 5.0%	\$789,992	\$313,530	\$476,462
91865 - WL 80CSOL IPC CRVM 4.5%	\$2,218,316	\$876,535	\$1,341,781
92747 – 20PL 80CSOL IPC CRVM 4.5%	\$2,499,215	\$348,496	\$2,150,719
92915 - WL 80CSOL IPC CRVM 4.5%	\$590,000	\$39,835	\$550,165
90952A – IBT 80CSOL IPC CRVM 4.5%	\$1,163,540	\$3,038	\$1,160,502
91963A – Tm+ 80CSOL IPC CRVM 4.5%	\$2,237,727	\$6,667	\$2,231,060
92961A – Tm+ 80CSOL IPC CRVM 4.5%	\$13,636,000	\$34,601	\$13,601,399
92971C – 20YT-CAPP 80CSOL IPC CRVM 4.5%	\$100,000	\$482	\$99,518
06747 – 20PL 01CSO IPC CRVM 4.0%	\$3,375,533	\$125,052	\$3,250,481
06849 – LP@65 01CSO IPC CRVM 4.0%	\$7,000	\$174	\$6,826
06945 – 20PL 01CSO IPC CRVM 4.0%	\$14,511,615	\$291,980	\$14,219,635
06965 – T99 01CSO IPC CRVM 4.0%	\$15,165,000	\$61,758	\$15,103,242
06960D – T+ 01CSO IPC CRVM 4.0%	\$2,000,000	\$4,105	\$1,995,895
06962A – T+ 01CSO IPC CRVM 4.0%	\$13,917,500	\$52,341	\$13,864,159
06991C – 20YT-PBE 01CSO IPC CRVM 4.0%	\$710,000	\$5,804	\$704,196
400 (ETI) – 2001 CSO IPC NLP 4.0%	\$9,442,686	\$101,262	\$9,341,424
30 (PU) – AE NLP 4.0%	\$33,322,916	\$17,748,607	\$15,574,309
400 (PU) – 2001 CSO IPC NLP 4.0%	\$1,459,927	\$475,181	\$984,746
TOTAL	\$217,329,246	\$40,188,511	\$177,140,735
Percent of Company Totals	22.13%	28.23%	21.10%

Results of the testing will be included in RsvValResult_kjk_XLIC.

Appendix H—Sample Actuarial Phase 5 Document

Immediate Payment of Claims Substantive Testing

Company: Experimental Life Insurance Company

Examiner: A. Actuary, MAAA, FSA

Date: August 24, 20XX

Purpose

Risk Tested

The immediate payment of claims reserves is understated.

Background

Actuarial Guideline 32 provides guidance for establishing immediate payment of claims (IPC) reserves for life insurance policies which use curtate reserves. Curtate reserves assume premiums are paid at the beginning of the year and death benefits are paid at the end of the year. The immediate payment of claims reserve addresses the interest not earned on death benefits paid before the end of the year. AG 32 suggests an adjustment of the valuation interest rate divided by 3 times the policy reserve ($i/3 \times V$) for policies that do not pay interest on death benefits from date of death until the benefit is paid and an adjustment of the valuation interest rate divided by 2 times the policy reserve ($i/2 \times V$) for policies that do pay interest on death benefits from date of death until the benefit is paid.

Scope

Only life insurance policies with curtate reserves were tested. IPC is included in Exhibit 5 and is a portion of the reserves reported on Page 3, Line 1 of the annual statement. The methodology used for testing is provided in IPCVal_kjk_XLIC.doc.

Conclusions

Experimental Life pays interest on ordinary life policies from the date of death until the check is sent to the beneficiary (plus an additional 3 days of interest to allow for mail delivery). The company does not pay interest on death benefits for industrial policies. The valuation interest rates and reserves for plan codes with curate reserves together with the resulting IPC amounts are outlined in the table below:

Plan	Interest Paid on Death Benefits	Reserves	Valuation Interest Rate	Computed IPC per AG 32
P0228	No	\$3,256,669	4.0%	\$43,422
0311C	Yes	\$23,465,981	5.5%	\$645,341
1369M	Yes	\$7,333,785	4.5%	\$165,010
X2399	Yes	\$124,935,155	4.0%	\$2,498,703
Total				\$3,352,476

XLIC reported \$679,174 as IPC reserves. The recommended IPC reserve amount is \$3,352,476. This \$2,673,302 increase should have been included in the life insurance reserves reported in the annual statement on Page 3, Line 1. The effect of this change would be to decrease surplus by \$2,673,302.

Appendix I—Sample Partial Actuarial Addendum to Examination Report

ACTUARIAL ADDENDUM TO THE DECEMBER 31, 20XX EXPERIMENTAL LIFE INSURANCE COMPANY FINANCIAL EXAMINATION

BACKGROUND

I am Anne Actuary, MAAA, FSA, a consulting actuary from Regulatory Examination Services, Inc., contracted by the Office of the State Commissioner of Insurance to assist in the examination of Experimental Life Insurance Company as of December 31, 20XX. I have met the basic education and experience prerequisites and the continuing education requirements needed to issue this statement of actuarial opinion.

This examination was performed at a level of detail as I deemed professionally necessary to determine reasonableness. There may be individual parameters or assumptions which could be considered unreasonable by another actuary, and which could have or would have been discovered by employing an exhaustive, detailed study of the underlying data, formulas and assumptions. Such a study was beyond the scope of this examination.

I. SUMMARY

In my charge as actuary representing the Office of the State Commissioner of Insurance, I have reviewed the determination of the actuarial reserve liability and the deferred and uncollected premium asset as presented in the December 31, 20XX, Experimental Life Insurance Company NAIC Annual Statement. These items are as follows:

1. Page 3, line 1, aggregate life policy and life annuity reserve in the amount of \$152,553,669.
2. Page 3, line 2, aggregate accident and health policy reserve in the amount of \$84,337.
3. Page 3, line 4.1, life policy claims liability in the amount of \$1,535,350, including an incurred but unreported component of \$120,000.
4. Page 3, line 4.2, accident and health policy claims liability in the amount of \$2,000.
5. Page 3, line 6, provisions for estimated dividends and coupons payable in the following calendar year in the amount of \$217,393
6. Page 3, line 8, premiums and annuity considerations received in advance of \$78,448.
7. Page 2, line 15.1, uncollected life insurance premium in the amount of \$34,299.
8. Page 2, line 15.2, deferred life insurance premium in the amount of \$4,136,651.
9. Page 15, deposit accounts in the amount of \$-0-.

All of the above values were unchanged from the amounts originally reported, except as noted in the table below.

Item	Reported	Examination	Change in Surplus
Page 3, Line 6 Dividend Provision	\$84,654	\$217,393	(\$132,739)
TOTAL			(\$132,739)

The net effect of the recommended changes was to reduce surplus by \$132,739.

II. INTRODUCTION AND RELIANCE

A. Overview

This report details the results of an actuarial reserve liability review of Experimental Life Insurance Company (XLIC) as of December 31, 20XX. This review is performed in conjunction with the statutory examination of the company by the examiner in charge (EIC), A. Accountant, CFE. The purpose of this examination is to ensure that the company is in compliance with the insurance laws of the State including the standard valuation law, the standard non-forfeiture law and other such sections of the insurance code relevant to an actuarial examination. The last examination was conducted on the business as of December 31, 20YY.

B. Profile

XLIC is a medium-sized, multi-state life insurance company with approximately \$167 million in admitted assets. Many of their insurance policies are issued in support of their affiliated funeral home businesses; however, the company is expanding beyond a pre-need related insurance company and is addressing other insurance needs. As of December 31, 20XX, the company had approximately \$1 billion of direct insurance in-force, and approximately \$18 million of direct gross annual premiums. The company's original Certificate of Authority was issued in January, 19CC. The company is licensed as a life insurance company and is required to have minimum capital and surplus of \$1,000,000. The capital position of the company is reported as \$7.4 million. The company's surplus increased approximately \$1.2 million in 20XX due to favorable investment and mortality experience. Gains were reduced for management expenses exceeding the difference in gross and net premiums.

C. Scope

The actuarial portion of this exam was limited to a review of the actuarial reserve liability items and the due and deferred premium asset. The specific scope items are those listed in the summary, above. The EIC has taken responsibility for all other examination items.

D. Reliance

In conducting this examination we have relied on the valuation runs, the Statement of Actuarial Opinion, and the in-force policy database supplied by the company's appointed actuary, Ms. B. Actuary, ASA MAAA, of Actuaries for Everyone, LLC.

III. PHASE I—FAMILIARITY WITH THE COMPANY

To become familiar with the operations and risks of the company the following were reviewed:

- Actuarial Addendum to the 20YY Examination (PriorExamActlAdd_kjk_XLIC.doc)
- Actuarial Compliance Review for 20XX (ActlCompRev_kjk_XLIC.doc)
- Memorandum from the Financial Analyst (AnalystComments_kjk_XLIC.doc)
- Company website (WebSite_kjk_XLIC.doc and AnnuityDigest.doc)
- S&P Rating of Company
- Actuarial Opinions (Opinions_kjk_XLIC.doc)
- Five Year Trend (Trend_kjk_XLIC.doc)
- Summary of Company Operations (SummaryOps_kjk_XLIC.doc)
- Cash Flow Testing for 20XX and 20YY (AssetAdequacyStudy_kjk_XLIC.doc)
- Annual Statement (AnnlStmt_kjk_XLIC.doc and ASOtherPgs_kjk_XLIC.doc)
- Investment Policy (InvPolicy_kjk_XLIC.doc)
- Plan Code Summary (PlanCode_kjk_XLIC.doc)
- Database
- Interview with Actuary (ActlInterview_kjk_XLIC.doc)

The work papers where the details of the review and analysis are noted parenthetically for each item. The risks were accumulated into a spreadsheet (RiskAccumMtrx_kjk_XLIC.xls). The EIC was informed of the identified potential inherent risks found in Phase 1. He assigned to the actuarial examiner those risks he deemed potentially significant and within the scope of the actuarial portion of the examination.

In addition to the risks identified through the actuarial portion of the Phase 1 review, the EIC was asked if there were any additional risks identified by the examination team or department for the actuarial examiner to review or test. No additional actuarial risks were identified by the EIC or department for consideration.

IV. RISKS

The risks identified in Phase I of the examination are presented below. The non-actuarial risks, which were referred to the EIC, are listed below without additional detail. These risks were identified as non-actuarial risks and the EIC was notified (InherentRiskMemo_kjk_XLIC.doc).

Non-Actuarial Risks Identified in the Actuarial Review

The following risks were identified as non-actuarial risk and referred to the EIC. Unless these risks were subsequently assigned to the actuary or the actuary was asked to assist the examiners in their review of these risks, no further action was taken by the actuary on them.

- A. The company reports ceding A&H business to Biggest RE, but Biggest RE does not report assuming the reserves for this business.

- B. Current assets are insufficient to liquidate current liabilities. The company holds a substantial amount of affiliated and low quality assets. There is a question about the company's liquidity in the event of immediate termination.
- C. The RBC ratio is too low. This is particularly an issue after the moderately-high likelihood of adjustments resulting from the asset adequacy study.
- D. The company is reporting that it pays 25% commissions on annuities. If this is true, the continued sale of annuities will cause a severe capital strain on the company. The commissions reported may be incorrect.
- E. The IMR is not properly amortized. This is obvious from a cursory review of the IMR. Too much of the IMR loss is deferred to the end of the amortization period. This will result in the IMR being understated.
- F. The company does not report that it has any paid-up policies in the exhibit of life insurance in force, but it has numerous single premium policies, policies in reduced paid-up status and policies reported as paid-up in the plan code study. This is inconsistent.

Actuarial Risks Identified in the Actuarial Review

The following risks were identified during the actuarial review as actuarial risks to be evaluated in the examination. An analysis and disposition of each risk is provided in the next section. When possible, risks were combined under a primary heading. The cash flow testing review revealed several risks. Risks associated with asset adequacy were combined under the heading of investments being insufficient to meet future benefit payments.

- A. The Claim Reserve (particularly IBNR) is understated.
 - 1. The claim liability reported by the actuary is not the amount reported on the annual statement.
- B. Investments are insufficient to meet future benefit payments.
 - 1. The testing period for the asset adequacy study is insufficient.
 - 2. Insufficient scenarios were used to test the asset adequacy.
 - 3. The asset adequacy study does not properly model company assets.
 - 4. AVR was excluded from Cash Flow Testing.
 - 5. Liabilities in the Cash Flow Testing do not take into account the effect of changes in interest rates.
 - 6. The Cash Flow Testing did not include sensitivity testing.
- C. The database contains bad records.
- D. Policies have cash surrender value equal to reserves.

Actuarial Risks the Department Desired Reviewed

There are some risks the Actuary from the Department of Insurance desires be reviewed on all examinations. The additional risks to be considered are:

- E. Premiums and annuity considerations paid in advance are materially incorrect.

Actuarial Risks Identified by the Examination Team and Assigned to the Actuary

The following risks were identified by the examination team and were assigned to the actuary to review during the examination:

- F. Deferred premiums are materially incorrect.
- G. Accident and Health reserves are materially incorrect.

V. PHASES 2-5

The following actuarial risks were reviewed to determine the inherent risk and, when the inherent risk was moderate or high, reviewed to determine the residual risk after considering mitigating factors, such as company controls. The levels of inherent and residual risks are provided following the risk identified. Finally the net recommended adjustment to surplus for each risk, based on the examination results, is provided.

The levels used for assessing risk with metrics used are as follows:

Likelihood of Occurrence

High	Expected to occur most of the time	>50% likely
Moderate-High	Will probably occur at some time	>20% likely
Moderate-Low	Could occur at some time	≥5% likely
Low	May occur in rare occasions	<5% likely

Expected Impact

Threatening	>5% of capital and surplus	Expected Impact ≥ \$720,000
Severe	>3% of capital and surplus	\$720,000 > Expected Impact ≥ \$430,000
Moderate	≥1% of capital and surplus	\$430,000 > Expected Impact ≥ \$140,000
Immaterial	< 1% of capital and surplus	\$140,000 > Expected Impact

A. Claim Reserves are Understated Moderate – Low - \$0

Phase 2: Claim reserves represent 49 days of claims. Does the claim reserve (excluding IBNR) account for a release of the reserves released upon death? The reserve release for deaths represented about 18.4% of the death benefits paid. The potential overstatement of claim reserve was approximately \$260K. The likelihood of this was determined to be moderate-low and the severity level was severe (although it is to the company’s advantage). The resulting inherent risk was moderate.

Phases 3 & 4: The appointed actuary was asked if the claim reserves for life insurance policies took into account the reserve released. He stated the company releases reserves for both the IBNR and claims in the course of settlement. (See RE_ 1 additional question.pdf.). The company doing this reduces the residual risk to low. The fact that the liability for claims in the course of settlement is not in multiples of \$100 or \$1,000 supports this. The IBNR is reported in multiples of \$1,000 for both industrial and ordinary life, which does not support the use of reserve release for IBNR. The total IBNR for life insurance was \$120,000. The estimated adjustment to the IBNR would be approximately \$22,080. This is an immaterial impact, but the likelihood of it being an issue is greater. However, the issue concerned is an optional approach to establishing IBNR. The approach the company is taking appears to be conservative. The actuary provided documentation (XLIC201012_Exhibit8.pdf) showing how reserves released did work into the computation of IBNR and how after taking the reserve release into consideration, the reserves were rounded up to \$1,000 increments. Thus the mitigated residual risk is valued as low.

Disposition: Since the company claims to already take credit for the reserves released from death and the credit is to the company’s advantage, no additional consideration was given to this issue.

A.1. Claim Reserves Reported are not the Amounts Provided by the Actuary

Moderate – Low - \$0

Phase 2: The prior examination noted the amounts reported as claim reserves in the annual statement were substantially less than the amounts reported by the actuary. This resulted in a moderate-high likelihood. The previous examination impact was approximately 10% of the originally reported life claim reserves. 10% of the current life reserves is approximately \$154K, which is in the moderate impact range. The resulting inherent risk was moderate.

Phases 3 & 4: The actuary provided the worksheet of claim reserve computations (XLIC_Exhibit8.pdf). During the actuarial interview, the actuary explained that since the previous examination, the company required her to review the annual statement and provide them a statement that all of the amounts reported by her were accurately reflected in the annual statement. The company provided a copy of this statement of internal review (IntReviewActuary.pdf). Additionally the company has an individual check all key numbers on the financial portion of the annual statement to their source. I conducted a crosscheck of the amounts reported by the actuary and the amounts reported in the annual statement. The testing of the controls confirmed the control had been effective. This indicates the likelihood of an actual error is low. The residual risk was determined to be low.

Disposition: The amounts reported by the company were accepted as the amounts reported by the actuary. No further action is recommended on this matter.

B. Investments Insufficient to Cover Future Liabilities High – Moderate – \$0

Phase 2: Interest rates are expected to rise moderately over the next few years. Under the rising interest rate scenarios, the cash flow testing shows the company has a negative surplus in interim years. The asset adequacy opinion was based on the final market value of surplus; however, the interim market values for tested scenarios would result in negative surplus of as much as \$25.8 million. Investments will probably be insufficient to cover future liabilities at some time according to the cash flow study and economic projections. The likelihood was deemed to be moderate-high. The impact of \$25.8 million is approximately 360% of capital and surplus. This is a threatening level of severity. The inherent risk is high.

Phases 3 & 4: The appointed actuary was interviewed to determine if there were any mitigating circumstances to justify not increasing reserves based on the interim results of the cash flow study. (See ActlInterviewQs_With Responses_1.pdf for the interview questions and responses.) Since no additional reserves were established to address the potential shortfall and the company's investment policy does not indicate a plan to hedge the risks, the risk was determined to be un-mitigated. However, the actuary noted there was an error in the cash flow testing report, because the determination of asset sufficiency is based on the present values of book value of surplus instead of market value. This reduced the severity of impact. The residual risk was deemed to be moderate.

Phase 5: (CFDeficiency_kjk_XLIC.doc) Based on the 20XX cash flow study, the company outperformed the best of projections (book). Using expected future scenarios; the present value of surplus steadily increases and provides a margin for adverse experience. However, this is based on data from the Analysis of Increase in Reserves, which was subsequently found to be improperly completed. Without additional information, the actuary's decision to use the book value of surplus appears reasonable and was accepted. Using a book value of surplus, no additional reserves are required.

Disposition: Reserves were not adjusted to address market shortfalls identified by the asset adequacy study. We recommend the company's actuary be advised to correct the cash flow testing metric to be book rather than market.

[Note: Items B.1. through F are omitted from this sample document. They would be included in an actual actuarial addendum.]

G. A&H reserves are incorrect Low – N/A – \$0

Phase 2: The A&H reserves were reported as \$192,507 with \$117,260 ceded to Biggest RE, with a net amount of \$75,247. The unearned premium reserve was \$10,912. According to Schedule H of the annual statement the annual premiums were \$240,182 and incurred claims were \$90,890 for the A&H business. The unearned premium reserves represent approximately 17 days of premiums. Since most A&H policies are paid at the beginning of the month, this is probably a conservative estimate. The net reserves for claims represent approximately 261 days of prior year incurred claims. This is a reasonable amount of A&H reserves. The likelihood of an understatement of reserves is low. The expected severity of an understatement is immaterial. The inherent risk was determined to be low.

Disposition: Since the inherent risk is low and the reserves are likely to be conservative, no adjustment was made to the A&H reserves. The reserve reported as ceded to Biggest RE was not reported as assumed by Biggest RE and the company did not report paying any premiums to Biggest RE. This matter was referred to the EIC. However, even without the reinsurance credit, the company appears to have reasonable reserves established for A&H business.

VI. PHASE 6 – OPINION AND RECOMMENDATIONS

The adjusted aggregate net amounts reported in the summary section above are judged to meet or exceed the State statutory standards for Experimental Life Insurance Company as of December 31, 20XX.

This examination conclusion is not a guarantee that the reserves and any supporting assets will be adequate under every scenario of future experience; the results reached in this analysis are dependent on the assumptions used. Realized results may vary as actual experience differs from the assumptions.

The following adjustments to the amounts reported in the annual statement are recommended:

1. Increase the provision for coupons and dividends payable to policyholders by \$127,339 to account for coupons and dividends that are expected to be paid to policyholders in 20XX+1 in accordance with the NAIC's annual statement instructions.

The following operational changes are recommended:

1. The Analysis of Increase in Reserves (page 7 of the annual statement) should be completed correctly.
2. In the cash flow study, all assets of the company should be matched to liabilities not modeled, capital and surplus or modeled liabilities. Before selecting assets to model for cash flow testing, current assets (cash equivalents) required to settle liabilities not modeled should be assigned from the asset pool, and then assets may be removed from modeling up to the amount of the company's capital and surplus.

Anne Actuary, MAAA, FSA – Examining Actuary

DATE