

The Actuary's Role in a Risk-Focused Statutory Examination

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Abstract: This paper is being written for the benefit of company actuaries to help them prepare for their statutory financial examination and for consulting actuaries who assist state regulators with the examination of actuarial areas.

States have recently changed the way they perform statutory examinations. The National Association of Insurance Commissioners (NAIC) adopted a risk-focused examination approach as the accreditation standard for statutory examinations. One enhancement of the risk-focused approach is that regulators now leverage more work performed by independent auditors and evaluate company controls to gain comfort in areas that present less financial risk. This change allows regulators to spend more time testing areas with greater risk of material misstatement and assess prospective risk. As a result, many areas that involve the use of actuarial estimates are now getting more scrutiny.

By gaining a better understanding of how examiners assess risk, company actuaries will be better prepared for the examination and be more effective at demonstrating that company controls mitigate risk. This may result in a more efficient examination process by reducing the testing procedures required by the examination team. The information presented in this paper will prepare actuaries to expand their role assisting the examiner-in-charge (EIC) with all phases of the examination. An enhanced understanding of the risk-focused examination process will allow actuaries to assist with the risk assessment process, develop risk-focused testing plans for loss reserves, and add value in other actuarial areas of the examination.

1. INTRODUCTION

The risk-focused exam is now the NAIC standard for insurance company statutory financial examinations. Companyⁱ actuaries and actuaries on the examination team have seen their role in the examination process expand. The risk-focused examination goes beyond evaluating the adequacy of loss reserves and auditing the financial statement for the examination year. Regulators are spending more time during the examination evaluating company controls over the actuarial areas, considering operational risks, and determining whether there are prospective risks that threaten the future financial stability of the insurer.

Before developing a testing plan to evaluate loss reserves, the examination team evaluates all risks associated with the reserving process, beginning with the process to gather

ⁱ Company Actuary is being used in this paper to refer to the actuary providing the analysis company management relies on for making decisions on reserves, rate levels, and other areas of work commonly performed by actuaries.

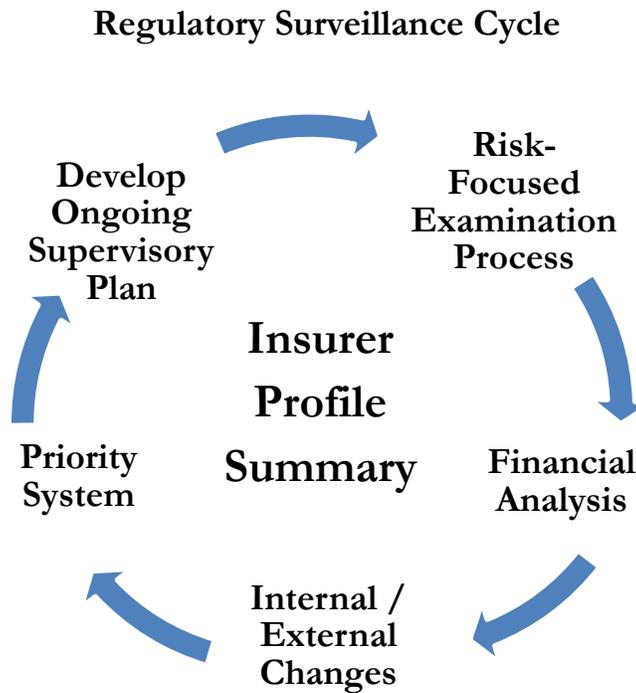
and organize the claim data, and ending with the recording of management's best estimate. In addition, the examination actuary may collaborate with other members of the examination team to assess other areas of risk, including pricing and underwriting risk, concentration of exposure, reinsurance, and other activities that could impact financial results or insurer solvency. As a result, company actuaries working in pricing areas and involved in other enterprise risk management functions may be involved in the examination process.

One of the expected benefits of risk-focused examinations was to create efficiencies in the examination process. Using a risk-focused approach, regulators evaluate the work being performed by the company, the company's auditors, and third party consultants to identify risk and evaluate the effectiveness of controls used to mitigate risk. A testing plan is usually developed to evaluate all areas deemed to have high inherent risk and areas where the company's documented controls and mitigation techniques are not effective at reducing risk to a low level. However, if the company can demonstrate that its controls are effective at mitigating the risk to a low residual level, no additional testing procedures may be required by the examination team. By gaining an understanding of how examiners assess risk, company actuaries will be better prepared for the examination and will know the type of information to provide to the examination team that could result in reduced testing procedures.

The sections that follow provide an overview of the NAIC risk-focused examination, with a concentration on areas of the exam where actuaries may be involved. The role of the actuary during a state exam will be addressed from two perspectives: the role of the examination actuary and the role of the company actuary. This paper provides an example of the risk-focused assessment and includes a sample template for documenting the risk assessment and testing plan. The paper will identify actuarial activities creating risk and the common mitigation strategies used by some companies that the examination team may evaluate during the risk assessment process. The paper will also provide a process for developing an efficient testing plan for loss and loss adjustment expense reserves using a risk-focused approach. Many sections of the paper conclude by addressing how the company actuary can better prepare for the statutory exam and providing suggestions to facilitate an efficient examination.

2. OVERVIEW OF RISK-FOCUSED STATUTORY EXAMINATIONS

While some states have been using a risk focused approach since 2007, as of January 1, 2010, the risk-focused surveillance and examination approach became the standard for NAIC accreditation. The main purpose of the surveillance process is to detect (a) financially troubled companies and (b) noncompliance with statutory requirements. The NAIC refers to the risk-focused regulatory process as a surveillance cycle since each element of the process feeds into other steps on a continuous basis. The surveillance cycle is described in detail in the National Association of Insurance Commissioners Financial Condition Examiners Handbook (the NAIC Handbook)ⁱⁱ and depicted in the graphic below.



For each insurance company in its jurisdiction, state regulators create an insurer profile summary. Regulators use the insurer profile summary to develop a priority system and supervisory plan for financial solvency. Regulators analyze the company's quarterly statements and calculate key financial ratios to update the company's profile and priority score. Regulators also monitor significant changes in company management, changes in company operations, and reports from external sources. They use the company's priority score to determine how often the statutory exam will be performed. However, to maintain

ⁱⁱ 1976-2014 National Association of Insurance Commissioners, Financial Condition Examiners Handbook, 2014 Edition, pages 11-14. Future references of this publication will be denoted "NAIC Handbook, page xx".

NAIC accreditation, all companies under a state's jurisdiction must be examined at least once every three to five years. The information in the insurer profile summary is used by the EIC to develop an examination plan focused on the areas that represent the company's greatest risk. The examination findings are then used to update the supervisory plan.

The NAIC Handbook, page 183, has nine branded areas of risk that must be considered during the examination:

- Credit Risk
- Market Risk
- Pricing/Underwriting Risk
- Reserving Risk
- Liquidity Risk
- Operational Risk
- Legal Risk
- Strategic Risk
- Reputational Risk

Just as the role of the company actuary continues to expand across many operations of the typical property/casualty insurance company, the EIC is now asking examination actuaries to collaborate with other members of the examination team to assess the NAIC branded risks in several areas of the insurance company's operationsⁱⁱⁱ. While the EIC is ultimately responsible for the design and execution of the examination, once the examination actuary develops a strong understating of the risk focused approach, the actuary may be asked to take a leadership role in the efforts to evaluate reserving risk and pricing/underwriting risk. In addition, on some examinations, the actuary plays a critical role in evaluating the company's reinsurance programs and assessing whether they effectively mitigate the company's liquidity risk. The role of the actuary and the risk considerations in these areas will be described below for each phase of the exam.

ⁱⁱⁱ The EIC develops procedures specifically for the company being examined. Some of the procedures described in this paper may not be incorporated into an examination since the EIC may determine that a targeted examination of specific areas is most appropriate. It is the author's experience that the risk-focused examination approach has required the EIC to seek actuarial expertise to effectively assess the variety of risk that exists in insurance companies today.

Similar to an independent audit, an examination is organized into key functional areas of an insurance company's operation.^{iv} For each of these functions, a risk assessment is performed to evaluate the nine types of risk. The NAIC Handbook, page 573, includes a template to document the risk assessment, listing all "risk activities"^v and mitigation strategies, and documenting the testing plan. The examination team will usually develop a matrix for each functional area. To facilitate the sharing of information^{vi} and ensure that the phases of an examination are documented in a consistent manner, many states use an electronic repository system called TeamMate to compile examination workpapers and track the progress of each phase of the exam. The NAIC Handbook identifies sub-activities for each of the key functional areas and lists common risks, best practice controls, and potential tests of the controls for the examination team to consider. The following is a list of key functional areas for property/casualty insurance companies^{vii}; the bolded areas listed below are those in which actuaries are most commonly involved:

- Premium
- Claims
- **Reinsurance**
- **Reserves**
- Investments
- Taxes
- Expenses
- Other Liabilities and Surplus
- **Underwriting**

The NAIC Handbook, page 14, depicts the steps for the risk-focused examination. The examination process includes seven separate and distinct phases. Each phase is performed sequentially by the examination team and must be completed and approved by the EIC in the following order:

^{iv} Auditors may refer to these as cycles or significant business processes.

^v In this paper "risk activity" is used to describe the steps inherent in a business process that may result in a risk of material misstatement or other significant business risk.

^{vi} Many times, regulators from multiple states will participate in a company's exam when a company has affiliates domiciled in other states. While the EIC for the lead state has the ultimate responsibility for the examination process, state regulators will collaborate to ensure all areas of risk important to their state are addressed during the exam.

^{vii} See NAIC Handbook, page 299, for Reinsurance - Ceding Insurer; page 333, for Reserves; and page 421, for Underwriting.

- Phase 1 - Understand the company and identify key functional activities to be reviewed
- Phase 2 - Identify and assess inherent risk in activities
- Phase 3 - Identify and evaluate risk mitigation strategies/controls
- Phase 4 - Determine the residual risk
- Phase 5 - Establish/conduct examination procedures
- Phase 6 - Update prioritization and supervisory plan
- Phase 7 - Draft examination report and management letter based upon findings

The first two phases are considered the planning phases. During Phase 1, the examination team gains an understanding of the company's business and operational procedures through interviews with the company's management and "walk-throughs" of the company's operational processes. In Phase 2, the examination team reviews information gathered from Phase 1 and identifies the risk activities. All areas with significant risks are initially listed in the matrix and the examination team assesses the inherent risk related to those activities. During the Phase 3 procedures, the examination team identifies the company's controls and risk mitigation strategies and begins to evaluate the effectiveness of these controls at reducing risk. In Phase 4, the examination team determines a residual risk rating for each risk listed in Phase 2^{viii}. The residual risk rating reflects both the inherent risk identified in Phase 2 and the degree to which the controls and risk mitigation strategies reduce the potential impact of these risks. In Phase 5, the examination team determines a testing plan commensurate with the residual risks assigned in Phase 4. In general, areas with high residual risk require more substantive testing, while abbreviated testing procedures may be used for areas with moderate residual risk. No additional testing procedures may be required for areas with low residual risk. The testing results are then used by the EIC to update the Insurer Profile Summary, the insurer's priority and supervisory plan in Phase 6. The final examination report and, if necessary, a comment letter to company management, are issued in Phase 7.

A more detailed description of the activities performed by the actuary in each phase of the exam follows.

^{viii} Some EICs may eliminate risk activities with low residual risk from the risk assessment matrix if no examination testing procedures are deemed necessary.

2.1 Phase 1 – Understand the Company and Identify Key Functional Activities to be Reviewed

The examination team needs to have a complete understanding of the company's operations in order to identify risk activities and the company's risk mitigation strategies. The examination actuary's first step in understanding the company is to gather and evaluate relevant public information and review the findings from prior examinations. The examination actuary may want to review the company's Annual Report, the 10-K, and 10-Qs and search for relevant press releases. The EIC will usually provide the examination actuary with copies of the company's statutory financial statements, actuarial opinions and actuarial opinion summaries, and discuss the areas of significant risk from the prior exam.

A review of the company's statutory financial statements will allow the actuary to identify areas of risk. The actuary may want to note changes in premium volumes, loss ratios, and the one-year and two-year runoff statistics shown in the Five-Year Historical Data section of the annual statement. A preliminary review of Schedule P will allow the examination actuary to better understand the company's mix of business and determine if there has been a recent shift in the insured exposure. Loss ratios and reserve balances by accident year shown in Schedule P, Part 1 and the change in prior year estimates shown in Schedule P, Part 2 may provide the examination actuary with a basic understanding of the inherent reserving risk. A review of Schedule F, Part 3 will provide the examination actuary with a preliminary understanding of the amount and quality of the reinsurance placements. The purpose of the initial review is to develop a broad list of questions and issues that will be discussed during the company interviews.

The examination actuary may benefit by attending the examination's initial kick-off meeting, during which company management provides a high level overview of its operations and highlights changes, or issues that have emerged, since the prior exam. The examination team also uses this meeting to provide an overview of the scope and timing of the exam. A series of "C-suite" meetings are held with the company's Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chief Risk Officer (CRO), Chief Information Officer (CIO), Appointed Actuary and other company leadership^{ix} to allow the examination team to gain a better understanding of the company's operations and any significant business activities.

^{ix} It should be noted that the corporate structure does not include all of the "Chief" officers designated in this list for some insurance companies. During the kick-off meeting the company will usually identify the person responsible for each of the designated areas. The examination team usually schedules interviews with the company's leadership in each of these areas.

During the C-suite meetings, the examination team begins to develop a basic understanding of how the company manages its business, its governance, and the controls management uses to mitigate risk. These meetings allow the examination team to gain a better understanding of the “tone from the top” related to the company’s controls. The examination actuary may use the C-suite meetings to ask the CFO to explain how management establishes its best estimate for the recorded reserves and how management documents the rationale for reserves that differ from the actuarial central estimate. The examination actuary may use the meeting with the CRO or CEO to inquire how the company establishes its risk tolerances, evaluates its catastrophe exposure, and establishes retention levels for its reinsurance programs. Finally, the examination actuary may want to inquire how the company manages its underwriting and pricing activities. The responses from these inquiries will allow the examination team to organize the next level of meetings to gain a detailed understanding of the company’s processes.

The actuary will usually work with the EIC and collaborate with other members of the exam team to coordinate meetings with the chief actuary, the actuary in charge of reserving, the actuary or executive in charge of pricing and product development, the head of the claims department, and the actuary or executive who develops and places the reinsurance program. While other members of the examination team usually attend meetings with the company actuaries, the examination actuary usually prepares an agenda and questions related to the actuarial aspects of the exam. Following these meetings, separate meetings are scheduled with the company auditor to evaluate the audit testing plans in the actuarial areas.

During this phase of the exam, the examination team may perform a “walk-through” of the company’s processes. The findings from the walk-throughs can be used in Phase 2 to identify risk activities and evaluate inherent risk and can also be used in Phase 3 to evaluate the company’s risk mitigation techniques. The “walk-through” is similar to the process used by auditors during the Sarbanes-Oxley^x testing of internal controls, required for public companies. The examination team usually reviews the documentation supporting the company’s internal controls and may be able to leverage the company’s flow-charts and the Sarbanes-Oxley control matrices to identify risk activities and company controls.

Phase 1 documentation usually includes the company’s responses to the examination team’s questions, the agendas, and minutes of the meetings.

^x The federal Sarbanes-Oxley Act of 2002 established corporate governance and risk management standards that required public companies to document internal controls.

2.1.1 Notes for the Company Actuary on Phase 1

Understanding the risk-focused exam procedures and the examination team's scope and objectives for the examination meeting will allow the company actuary to be better prepared. Since one of the examination team's objectives is to perform a risk assessment of the actuarial process, the company actuary may want to gather and prepare information regarding the company's procedures, oversight, controls, and other risk mitigation techniques inherent in the actuarial process. One of the goals for the company actuary, as it relates to the risk assessment process, is to demonstrate that the level of oversight for the process is commensurate with the inherent risk. If the company actuary is successful at demonstrating that the company controls are effective at mitigating risk, then less testing may be required by the examination team, resulting in a more efficient exam.

Using the reserving process as an example, the company actuary in charge of the reserves may want to demonstrate that data controls are performed at various stages of the review and quality controls are built into the actuarial analysis, allowing the actuary to easily identify material errors. Quality documentation of the actuarial review may allow the examination team to leverage more of the company's work. Additionally, showing evidence of a robust peer review of key actuarial judgments and a formal process to evaluate changes in prior estimates may reduce the examination team's assessment of residual risk, which can result in a more narrowly-focused testing plan. Prior to meeting with the examination team, the company actuary may want to review and update the documentation of the company's actuarial reserving process and ensure that the report supporting the actuarial opinion includes text that memorializes the key actuarial judgments and assumptions. The company actuary may want to schedule a preliminary meeting with the auditor to ensure that the auditor's actuaries are prepared to discuss all of their oversight activities and audit testing plan. The company actuary may supplement these discussions with the procedures the company uses to reconcile the company's estimates with those produced by the auditor. Showing the examination team how the two independent estimates have performed over time may be an effective way to convince the examination actuary to leverage more of the work performed by the auditor's actuary.

To be better prepared for the meetings, the company may request that the examination team provide an agenda and list of questions in advance of the meeting. The organization and quality of the information provided during these initial meetings influence the examination team's assessment of inherent risk and the effectiveness of the company's controls. Advanced preparation by the company actuary will usually result in a more

efficient and effective meeting, with the examination team gaining a better understanding of the company's controls.

2.2 Phase 2 – Identify and Assess the Inherent Risk

During Phase 1, the examination team gains an understanding of the company's operational procedures and begins to identify the activities that will be evaluated for inherent risk. For each of the key functional areas, the NAIC Handbook identifies major activities and common risks for the examination team to consider. As noted above, three of the key functional areas have a significant actuarial component. The reserving function and the underwriting/pricing function are directly tied to an NAIC branded risk, and the reinsurance function is tied to liquidity risk. This section will specifically address the actuarial aspects of the reserving process, the underwriting process and reinsurance. It should also be noted that all functional areas also include many other risk activities that are not considered "actuarial" in nature. For example, the examination of the reserving function may begin with the risk activities related to information systems and the process to accumulate the data used in the actuarial analysis and may end with the activities to record reserve changes or other financial reporting activities performed by the accounting department. The complete spectrum of risk activities included in the risk assessment matrix is not the focus of this paper. Even though the EIC may ask the examination actuary to collaborate with other members of the examination team on other areas, the focus of the discussion that follows is related to areas that are most often reviewed by the examination actuary.

As noted above, for each of the key functional areas, the NAIC Handbook lists general activities, common risks, and best practice controls to be considered for inclusion in the documentation matrix^{xi}. However, because of the diversity in organizational structure among property/casualty insurers and unique nature of the risk activities that exist for each company, the documentation matrices used in practice are developed specifically for each company being examined. For smaller insurers, the general activities listed in the NAIC Handbook may be sufficient and the examination team may simply include the risks that are appropriate for the company being examined. However, a large, more complex insurance company may have unique processes that require a more detailed listing of risk activities or sub-activities to identify the risks associated with the process.

The organizational structure within the company being examined may necessitate multiple risk matrices for each key functional area. Some property/casualty companies use

^{xi} See NAIC Handbook, page 299, for Reinsurance - Ceding Insurer; page 333, for Reserves; and page 421, for Underwriting.

different processes for various business units within the company. For example, the process used by a company for its personal lines exposure may differ from the process used for its commercial business. Some companies may also use different processes for subsidiary legal entities or branch offices, and others may have a separate and distinct process for unique types of businesses written in the company. If the inherent risk and controls to mitigate risks differ within the company, the examination team may consider performing separate risk assessments and documenting the results in separate matrices. Since the risk assessment may result in a different residual risk, the associated testing plan developed for each area may also differ.

2.2.1 Activities related to reserving risk

Many risk activities for the reserving process cross all lines of business (or reserving segments). Even if the company uses a best practice reserving process and has strong risk mitigating controls, the risk inherent in the exposure for some reserving segments (or for certain activities within the reserving process) may be sufficiently high that risk mitigation techniques will not effectively reduce the reserve risk to a low level. Different levels of inherent risk for the various reserving segments may create situations where certain activities and controls result in a high or moderate residual risk for one review segment but low residual risk for another. To develop a testing plan that is directly tied to the risk assessment process, it may be appropriate to perform a risk assessment at the reserve segment level. An example of a risk assessment performed at the reserve segment level is contained in Appendix B.

The first step of the risk assessment process is to develop the framework of activities to be considered in the risk assessment matrix. The reserving process may begin with the process to aggregate data for the actuarial review, but many times, the examination actuary's process begins with ensuring that the data used in the actuarial analysis is appropriate for estimating the unpaid claim liabilities. The system activities related to the claims and exposure data and the other detailed data quality controls are important elements in the reserving process, but these activities are usually evaluated by other members of the examination team. However, since risks associated with the underlying data may impact the actuary's risk assessment and testing plan for the reserve risk, the EIC may want to review the risk assessment and consider the testing results for the related claims systems prior to the examination actuary's providing a conclusion on the actuarial aspects of the reserving risk.

The following is a sample of risk activities associated with the reserving process and examples of risks that may be considered by the examination actuary.

- **Data aggregation and reconciliation** – The actuarial data is inaccurate, incomplete or otherwise inappropriate for estimating the unpaid claims.
- **Segmentations used in the actuarial reviews** – Improper segmentation of underlying actuarial data may inhibit the detection of loss trends, development patterns, or shifts in types of loss.
- **Environmental or operational changes impacting the actuarial analysis** – Changes in the company's policies, written exposure, claim processing, or environment are not adequately contemplated in the actuarial estimates.
- **Consideration of reinsurance** – Historical changes in the reinsurance program are not properly reflected in the estimation of net or ceded reserves.
- **Consideration of special policy provisions** – The actuarial estimates of unpaid claims do not adequately consider unique risks related to special policy provisions. Examples of special policy provisions include retrospective premium reserves, credit risk from large deductible policies, and long duration contracts that may require unearned premium reserve testing.
- **Actuarial methods and techniques used** – The company's actuarial reserving software does not include adequate or appropriate actuarial methods and techniques to evaluate the exposure. This assessment may include an evaluation of the company's reserving software and the system and spreadsheet controls related to the actuarial reserving process.
- **Quality controls and oversight** – Inadequate quality controls and oversight may result in material errors in the estimates, a bias in the actuarial assumptions, or unreasonable selections resulting in inadequate estimates of unpaid claims. Management's influence on the actuarial estimates may be evaluated in this area of the process.
- **Loss Adjustment Expense (LAE) considerations** – The actuarial process to estimate unpaid allocated loss adjustment expense (ALAE), or defense and cost containment (DCC) expense, does not adequately address changes in defense strategies or trends in legal defense costs. The process used by the company to estimate unpaid unallocated loss adjustment expense (ULAE), or adjusting and other payments (AOP), does not adequately reflect the company's average cost to settle claims or the expected duration of the remaining open claims. For some companies the reserving risks for loss and LAE are similar and a separate risk assessment may

not be required. However, differences in the company's process for estimating LAE reserves or unique risks related specifically to LAE may necessitate separate consideration.

- **Recording differences between Actuarial Central Estimate (ACE) and Management's Best Estimate (MBE)** – The recorded reserves based on the MBE are inadequate or have been selected in a manner that distorts reported earnings resulting in a material reputational risk for the company. The examination actuary may need to consider the risks and controls related to management's selection process if the recorded reserve differs from the company's actuarial central estimate.

2.2.2 Activities related to underwriting risk

The examination actuary's review for underwriting risk is usually focused on the actuarial ratemaking process, management's oversight of rate level changes, and the interaction between the ratemaking and actuarial reserving functions. The examination actuary may be asked to evaluate areas considered to have elevated underwriting risk. This may include segments of business with significant growth, newly emerging markets, segments with a high concentration of exposure, segments with perpetually high loss ratios, or lines with significant variability. Underwriting/pricing risk is more of an operational risk than a financial reporting risk. It is also more prospective in nature since the examination actuary is evaluating whether current or future policies may be written at inadequate rate levels, resulting in a future drain on surplus.

The following is a summary of some specific risks that may be evaluated by the examination actuary related to underwriting risk:

- Inappropriately selected ratemaking methods, resulting in inadequate rate levels;
- Inadequate actuarial expertise, impacting the quality and timeliness of rate adequacy reviews and rate filings;
- Significant growth in new markets, resulting in books of business with optimistic or inadequate pricing that may not be detected and corrected in a timely manner;
- Improper use of predictive modeling or other underwriting tools, leading to poor risk selection, adverse selection, and inadequate rate levels;
- Inadequate monitoring of rate levels and use of flexible pricing adjustments, leading to inadequate rate levels and underwriting deterioration; and

- Material unreconciled differences between the ultimate loss estimates derived for ratemaking and those estimated for reserving, resulting in inadequate rate levels and unfavorable underwriting results.

For well-established companies, many of the risks noted above may have a moderate to low inherent risk, which may be further mitigated by company controls. However, many well-established companies do acquire less successful companies or expand their operations to achieve growth objectives. The integration of new business or expansion plans may increase a company's underwriting risk. A walk-through of the company's product development and ratemaking process will allow the examination actuary to identify other risk activities that may require further review.

2.2.3 Activities related to liquidity risk and reinsurance

One of the more common areas the EIC asks the actuary to review for liquidity risk is the process used by the company to develop its company's reinsurance program. For property insurers, this may also involve evaluating the company's catastrophe exposure. However, under certain circumstances, the examination actuary may be asked by the EIC to evaluate company's payment patterns and perform cash flow testing to evaluate whether there is sufficient liquidity in invested assets.

To evaluate the company's reinsurance program, the examination team usually begins by gaining an understanding of the company's stated risk tolerances and procedures to establish the reinsurance program to mitigate fluctuation in the company's retained losses. The examination actuary usually reviews a history of the per-occurrence retention, the limits of coverage, and quality of placements for the company's reinsurance covers. The actuarial risk assessment may include reviewing variability studies supporting the company's per-occurrence retention or the exposure modeling used to evaluate the company's concentration of property risk. Some of the risks that the examination actuary may include in the assessment of the reinsurance program include:

- Inadequate actuarial expertise or system capabilities to perform exposure modeling and evaluate concentration of risk, leading to retained exposure that exceeds the company's stated risk tolerances.
- Inadequate process to monitor and manage new business writings, leading to excess exposure or inadequate rate levels due to increased reinsurance costs.
- Inadequate governance of risk tolerances by the company's Board or Enterprise Risk Management (ERM) committee, resulting in retained risk that exceeds rating agency risk tolerance levels.

- Inadequate management controls over the reinsurance program, leading to policy provisions or a design that does not effectively limit the company's exposure.
- Inadequate underwriting controls, resulting in the issuance of primary policies that do not meet retention levels or coverage limitations required by the company's reinsurance programs.

2.2.4 Determining inherent risk

Once the risk activities are identified, the examination team must assess the inherent risk for each risk. For most activities, the risk assessment is usually performed at the company level since the inherent risk defined in the NAIC Handbook relates to the frequency and magnitude of risk at the company level. If the risk assessment is performed in greater detail, the risk assessments for the individual segments must be aggregated to determine the company's total inherent risk for that activity.

In the example shown in Appendix B, the risk assessment is performed at the reserve review segmentation level. By approaching the risk assessment at this level of granularity, the resulting residual risk and recommended testing plan for each review segment may be tied directly to the risk assessment process. If risks are evaluated at the reserve segment level, both the magnitude of risk and the aggregation of risk with other segments need to be considered when assigning the inherent risk at the company-wide level. For some risks, such as random (independent) calculation errors, it would be less likely that multiple smaller errors would occur and aggregate to the magnitude required to be classified as a High Risk for the company. However, for highly correlated risks, such as errors in a reserving template impacting all review segments or a bias in actuarial judgment for a long tailed line of business, the aggregation of smaller risks in multiple reserve segments may result in a high risk for the company. Therefore, actuarial judgment must be applied when considering the appropriate magnitude of risk for each segment. If magnitude and aggregation are considered in assigning the inherent risk ratings for each segment, an averaging technique may be appropriate to determine the inherent risk for the company.

The NAIC Handbook, pages 185 – 188, includes a framework and a rating system for determining the three classifications of inherent risk. The NAIC Handbook suggests that a "High" inherent risk be assigned to risk activities that are large (in relation to the company's financial strength) and that could result in significant and harmful financial and/or reputational loss to the organization. A "Moderate" inherent risk is considered significant (moderate in size in relation to the company's financial strength) and the loss to the insurer could be absorbed in the normal course of the business. A "Low" inherent risk

results in an error that would have an insignificant negative impact on the insurer's financial strength and reputation.

The NAIC Handbook recommends the use of a frequency and severity approach to evaluate both the likelihood of an occurrence and the magnitude of the impact for each inherent risk. If the event being evaluated is likely to occur "most of the time", the risk is assigned a "High" frequency rating. If the event only rarely occurs, the risk is assigned a "Low" frequency rating. Events that will probably occur some of the time are assigned a "Moderate-High" rating and events that could occur some of the time are assigned a "Moderate-Low" rating. To develop the ratings, both qualitative and quantitative assessments are used, along with actuarial judgment.

The NAIC Handbook, pages 185-188, four classifications for the magnitude, or severity, of the impact:

- **Threatening** - The risk is classified as threatening if the event could result in an impact greater than 5% of surplus or material rating agency downgrade, or could otherwise give rise to financial solvency concerns.
- **Severe** - The risk is classified as severe if the event could result in an impact between 3% and 5% of surplus, have a serious impact on shareholder value and reputation with adverse publicity, or result in board and senior management attention.
- **Moderate** - The risk is classified as moderate if the event could result in an impact between 1% and 3% of surplus, have an impact on shareholder value and/or reputation, or result in senior and middle management attention.
- **Immaterial** - The risk is classified as immaterial if it results in an impact less than 1% of surplus, has no potential impact on shareholder value and/or the reputation of the company, and is expected to be addressed and resolved by the company's middle management.

The NAIC Handbook suggests the overall inherent risk assessment be determined by considering both the frequency and severity components as shown in the table on the following page:

Overall Inherent Risk Rating Scale

Likelihood of Occurrence	Magnitude of the 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

Phase 2 is completed once the inherent risk assigned to the list of risks is approved by the EIC. The effectiveness of the company's risk mitigation techniques is evaluated in Phase 3.

2.3 Phase 3 – Identify and Evaluate Risk Mitigation Strategies

The examination actuary will learn about the company's risk mitigation techniques during the Phase 1 meetings, review of the company's documented Sarbanes-Oxley or Model Audit Rule (MAR)^{xiii} controls, and walk-throughs of the processes being evaluated. However, while many company actuaries naturally incorporate risk mitigation techniques in their processes, they may not think about the various quality control checks and balances as "risk mitigation strategies." The following sections are intended to identify some of the risk mitigation techniques commonly used by companies.

2.3.1 Reserving risk mitigation techniques

The loss and LAE reserve estimates are inherently a high risk area for most property/casualty insurance companies. However, most companies have a number of controls and risk mitigation strategies imbedded in their actuarial reserving process. These include controls that are built into the actuarial analyses (or models) underlying the estimates of the unpaid claims, as well as management controls over the change in estimates. The company's auditor (or a third party actuary) may also produce independent estimates that serve as a control over the reserve estimates.

^{xiii} The Model Audit Rule is the common name for the NAIC Annual Financial Reporting Model Regulation (#205). MAR requires large non-public insurance companies to document their assessment of internal controls. For smaller companies, professional auditing standards, established by the American Institute of Certified Public Accountants (AICPA) requires the auditor to document and review the company controls.

Potential risk mitigation strategies that may be used by companies include:

- The existence of data controls and reconciliations performed before and after the actuarial review to ensure the data provided for actuarial analysis reconciles to the financial statements.
- The use of procedures to verify that prior valuations of claims data have not changed.
- Robust discussions between the reserving actuary and management, the claims department, and key personnel in other operational areas to identify potential changes in business and other industry trends to be incorporated into the reserving process.
- An adequate team of actuarial experts assigned to develop the actuarial central estimate and range of reasonable estimates of unpaid claims.
- The use of a protected loss reserving system that includes multiple actuarial techniques and the application of appropriate methods to evaluate the exposure.
- Adequate actuarial oversight of the methods and assumptions, with documented peer reviews.
- A formal process to monitor and respond to changes in prior estimates.
- Detailed reconciliations and analysis of differences between company estimates and those developed by the independent auditor's actuary or other third party.
- The inclusion of claim diagnostics and other statistical controls to evaluate environmental or operational changes that may impact the actuarial estimates of reserves.
- Proper procedures in place to estimate ceded reserves.
- Documentation of management's best estimate for the recorded reserves, with sufficient rationale for differences with the appointed actuary's central estimates.
- The existence of a functional reserve committee that meets regularly and documents meeting minutes.
- A well-written actuarial opinion identifying risk of material adverse deviation and a complete actuarial report with text memorializing the key assumptions inherent in the estimates.

- Sufficient interaction between the appointed actuary and the Board or Audit Committee.

These and other mitigation techniques may effectively reduce the risk inherent in developing estimates of unpaid claims. However, just as the inherent risk may differ by reserving segment, so may the effectiveness of risk mitigation strategies at reducing the risk. Therefore, once the mitigation strategies are identified, the actuary needs to determine if the effectiveness of the mitigation technique can be evaluated at the company level or whether it may be more appropriate to evaluate the effectiveness of the controls for each reserving segment.

As noted above, the example provided in Appendix B was prepared at the reserve segment level, and the effectiveness of the risk mitigation techniques was evaluated for each segment individually. This process allows the examination actuary to develop a testing plan commensurate with the residual risk for each reserving segment. However, to determine the overall effectiveness of controls, an aggregation of the results by segment is needed to complete the risk assessment at the company level. Similar to assessing the inherent risk, the effectiveness of the control may be assigned at the reserving segment level in consideration of the aggregation technique to be applied. Once completed, the aggregation of the results for each segment is used to determine the overall rating documented in the company's risk assessment matrix.

2.3.2 Underwriting risk mitigation techniques

Many of the mitigation techniques listed above for reserving risk may also be considered mitigating controls for underwriting risk. Some of the common mitigation techniques for underwriting risk are:

- An adequate number of experienced actuaries overseeing the rate review process.
- The involvement of actuaries in product development and evaluating the costs of coverage changes.
- The existence of a robust planning process and comparison of plan to actual results.
- A process to reconcile differences between projected (budgeted) premiums and actual premium.
- A process to monitor rate level changes, flexible pricing changes, and the use of pricing tiers.
- A process to determine profitability by line, branch office, agency, and geographical region.

- A process for integrating newly acquired businesses and entry into new markets.
- A process to compare company loss costs and rate levels with industry benchmarks or key competitor rates.
- A well-defined and documented process to develop and review underwriting models.

For many well-established companies, underwriting risks have a low inherent risk and the assessment of the effectiveness of the controls may be performed on a company-wide basis. However, variability in operating results and change in business operations may elevate the inherent risk. Larger companies may have separate personal and commercial units, and very large companies may have a regional organizational structure. During Phase 1, the examination team may want to perform a walk-through for each unit to determine if the underwriting process is more appropriately evaluated on some basis other than at the overall company level.

2.3.3 Liquidity risk mitigation techniques

The most common liquidity-related risk mitigation technique evaluated by the examination actuary is the design and placement of the reinsurance program. Therefore, the examination actuary may need to understand how the company's risk tolerances were established and how those risk tolerances compare to targets established by rating agencies. The examination actuary may also be asked by the EIC to evaluate whether the reinsurance program is designed to meet the specific thresholds established by the Risk Based Capital requirements.

For companies with a large property insurance exposure, the EIC may ask the examination actuary to review the results of the company's catastrophe modeling and evaluate how the company manages its concentration of risk. The examination actuary may want to compare the catastrophe model results reported to the rating agencies to the results produced by the reinsurer in underwriting the exposure. The type and quality of the model used and the abilities of the company actuaries to evaluate the exposure are important elements in the risk assessment. If there has been a recent change in the company's per risk retention, the examination actuary may also want to evaluate any actuarial variability studies performed to evaluate the change in retained risk. Common liquidity risk mitigation techniques used by companies include:

- An adequate amount of actuarial expertise involved in the design and development of the reinsurance program.
- An active program to measure and monitor concentration of risk.

- The use of appropriate catastrophe models and documentation of the company's catastrophe results.
- An annual presentation to the company's Board, ERM committee, or other governing committee.
- Documentation of the company's historical reinsurance placements with quality reinsurers.

2.3.4 Determining the effectiveness of the control

Phase 3 requires an assessment of the effectiveness of the mitigation strategy for each risk. The NAIC Handbook considers a risk control “strong” when it is deemed to be effective at reducing the assessed risk, “moderate” when it is only partially effective at reducing risk or will reduce the risk some of the time, and “weak” when there are no risk mitigation procedures in place or if there is material weakness identified during the controls testing. Under certain circumstances, a weak risk control may actually increase the risk for the activity, and the examiner may revise the rating of the inherent risk and recalculate the residual risk.

2.3.5 Notes for the company actuary on risk mitigation strategies

The effectiveness of the company controls impacts the amount of testing to be performed by the examination team. If the company actuary is able to show the examination team there are strong risk mitigation techniques in place and provide evidence to demonstrate that these controls are effectively reducing the company's risk, less testing may be required by the examination team. However, it may not be adequate for company actuaries, or other staff, to show that they perform risk mitigation activities on an informal or periodic basis. To be considered an effective control, many examination teams request to see documentation of the process and evidence to demonstrate that the process is consistently executed by the company. The company actuary will benefit by developing a strong understanding of the activities considered “risk mitigation techniques” and documenting these processes as part of the company's internal controls. Maintaining organized files and documentation of the risk mitigation procedures will facilitate the risk assessment process and may ultimately result in fewer testing procedures.

One of the controls the examination actuary may consider is the company's peer review process and the oversight of the actuarial estimates. When the company's peer reviews are not adequately documented, or there is not adequate evidence to validate that the peer reviewer has actually performed a robust review of the key actuarial assumptions and judgments, the examination team may not be able to place strong reliance on this control.

Some company actuaries maintain separate peer review files where the second reviewer adds comments, questions, and suggestions. These files may demonstrate that there has been a thorough peer review and robust professional discussion about the underlying assumptions used in the final estimates. This documentation also provides the examination actuary with additional insight on the final selections.

Another control that may be considered by the examination actuary is the quality of the auditor's actuarial review and the consistency between the auditor's estimates and the company's actuarial estimates. If the company actuary does not maintain a history of the auditor's estimates in their files or does not maintain documentation of their assessment of the difference in estimates, the examination team may need to perform additional procedures to evaluate both sets of estimates. Company actuaries that maintain a history of how the company estimates compared to the auditor estimates, or other independent actuarial estimates, are able to more efficiently identify and address the difference in assumptions that produced the estimates. It is also effective when the company actuary is able to show the examination team how the company's prior actuarial estimates have run off compared to those selected by the auditor's actuary and discuss the rationale for changes in prior reserve estimates. If the company actuary is able to provide this level of detail, the examination actuary may be able to place a greater reliance on the auditor's independent estimates as an effective control.

2.4 Phase 4 – Residual Risk Assessment

The residual risk for each identified risk activity is determined in Phase 4. The residual risk is based on both the inherent risk assigned in Phase 2 and the effectiveness of the controls assigned in Phase 3. The NAIC Handbook, page 198, includes the table shown on the following page to depict the process used to determine residual risk. The examining actuary may want to review the resulting residual risk assigned to each activity and apply sound actuarial judgment to reconsider the inherent risk and effectiveness of the risk mitigation strategy if the residual risk is not appropriate. For areas in which the company has weak controls or testing has identified a material weakness in the execution of the company controls, the inherent risk may be elevated to reflect the increased residual risk.

Calculating the Residual Risk

Inherent Risk Assessment	Control Risk Assessment		
	Strong Control	Moderate Control	Weak Control
High	Moderate to High	Moderate to High	High
Moderate	Low to Moderate	Moderate	Moderate*
Low	Low	Low	Low*

* The inherent risk may be reassessed in light of the control weakness

The risk assessment is documented and the resulting residual risk is approved by the EIC. If the examination actuary issues a memo to describe the risk assessment process, it is usually referenced in Columns 3b and Column 4b of the NAIC Risk Assessment Matrix shown in Appendix A.

2.5 Phase 5 – Establish and Conduct Examination Testing Procedures

Under a risk-focused approach, the examination testing plan is developed based on the level of residual risk. No additional testing procedures may be required for areas with low residual risk, but the EIC may ask the examination actuary to perform additional analytical procedures to document the risk assessment. Testing procedures are required for moderate and high residual risks unless the rationale is documented and approved by the EIC. More robust independent testing procedures are required for areas with high residual risk. For areas with moderate residual risk, the examination team may leverage more of the testing procedures performed by the company or the company’s auditors in its testing plan.

For most insurance companies, the reserving risk poses the greatest risk of material financial misstatement. Even if the company uses appropriate actuarial estimation techniques and uses best practice mitigation techniques, it is unlikely the risk assessment will result in a low residual reserving risk. As a result, a Phase 5 testing plan is usually required to be developed and approved by the EIC.

Tying the testing plan back to the NAIC Risk Assessment Matrix is sometimes a challenge. Many risks in the reserving Risk Assessment Matrix are related to company procedures for developing reserve estimates. While some testing procedures may be designed to evaluate specific risks^{xiii}, many reserving risks are interrelated. Some examination

^{xiii} For example, data reconciliations can be performed and data testing procedures may be designed to evaluate the accuracy and completeness of the data used in the actuarial analysis.

teams simply default to performing an actuarial analysis to evaluate the reasonableness of the recorded reserves. However, performing independent testing to validate that the company's recorded reserves are reasonable does not necessarily provide insight on the appropriateness of company's reserving process or the effectiveness of the company's controls. The examination actuary may want to consider testing procedures to evaluate the company's processes and controls in order to leverage the company's or the auditor's actuarial estimates.

Even though a testing plan will likely be required to evaluate the company's reserving risk, it is not readily apparent how to develop an efficient testing plan. If a risk assessment is performed at the reserve segment level, it will likely show that the estimates have different residual risk. This risk assessment will allow the examination actuary to develop a testing plan for each reserving segment that is commensurate with the residual risk.

For reserve segments with lower residual risk, diagnostic statistics may allow the examination actuary to determine that the company's reserve balances are not materially misstated. The examination actuary may compare the company's estimates of the unpaid claims to the auditor's actuarial estimates and conclude the reserves are reasonable based on the proximity of the company's and auditor's current estimates, the consistency of the estimates over time, and the runoff of prior year estimates. The examination actuary may also calculate and evaluate other diagnostic statistics^{xiv} using Schedule P data to reach a similar conclusion.

For moderate risk segments, the testing approach may include a methods and assumptions review^{xv} of the actuarial analysis supporting the company's estimates or the analysis performed by the auditor. A methods and assumptions review of an actuarial analysis can take many forms^{xvi}. When documenting the peer review approach used in the exam, the author sometimes finds it useful to differentiate between a methods and assumptions review and a technical peer review where the differences in actuarial judgments are quantified. For the former, the reviewing actuary generally reviews the work papers, methods and key assumptions in the analysis. If the analysis is deemed reasonable, the actuary adopts the reserve estimates as the examination estimate with little modification. For the latter, a more robust peer review is performed, and differences in actuarial judgment are

^{xiv} Various ratios may be compared to industry benchmark ratios and the company's ratios from prior statement years. Accident year ratios that may be considered include IBNR to case reserve ratios, the implied paid and reported development factors, various reserve to premium ratios, and ultimate LAE to loss ratios.

^{xv} A methods and assumptions review is sometimes referred to as a peer review.

^{xvi} The reader may want to review Balester, Jennifer Lynn and Kirschner, Gerald S. Casualty Actuarial Society Forum Casualty Actuarial Society - Arlington, Virginia 2013: Fall, Vol. 1 1-30 Structured Tools to Help Organize One's Thinking When Performing or Reviewing a Reserve Analysis

quantified. For this procedure, the selected ultimate losses and key parameters of the company's actuarial analysis^{xvii} are entered into a spreadsheet allowing the reviewing actuary to independently select his parameters and quantify the difference in actuarial estimates.

Other testing procedures may also be appropriate for segments with moderate residual risk. These may include: tests to evaluate a specific aspect of the estimate, supplemental tests not included in the company's procedures, and re-performing selected actuarial methods to validate the results.

If these abbreviated testing procedures indicate there is elevated risk of a significant difference in estimates, the examination actuary may need to perform additional testing procedures or revert to developing independent estimates in order to quantify the amount of the potential misstatement. For segments with high residual risk, the examination actuary may need to develop independent estimates to efficiently evaluate the reasonableness of the company's reserve.

When using a detailed risk assessment to develop a testing plan, the examination actuary may need to consider the aggregation of many small to moderate differences in reserve estimates that may result in a material misstatement. For some companies, it may be appropriate to independently test a sample of low and moderate risk lines to evaluate if there is a bias in the company's estimates. Similarly, for some companies, it may be appropriate to include a mix of testing procedures for segments with a high residual risk rating.

When a mix of testing procedures is used, it is usually helpful for the examination actuary to develop a summary showing the distribution of the reserves by testing procedure as shown in the table below. This will allow the EIC to efficiently evaluate the mix of testing procedures by level of residual risk.

^{xvii} The key parameters will depend on the analysis, but loss development factors, expected losses, and weights assigned to each of the methods are elements that may be included.

Residual Risk Assessment vs Review Testing Approach

Carried Reserves in \$000

Review Approach	Residual Risk Assessment						Total
	Low		Moderate		High		
Independent Estimates	1,222	1%	6,667	6%	53,333	48%	55%
Technical Peer Review or Supplemental Procedures	1,100	1%	10,000	9%	8,889	8%	18%
Peer Review	1,111	1%	10,889	10%	4,441	4%	15%
Diagnostic/Non-Review	10,000	9%	3,556	3%	333	0%	13%
Total	13,433	12%	31,111	28%	66,997	60%	100%

The example provided in Appendix B demonstrates how a risk assessment process can be structured to evaluate the residual risk for each review segment and used to develop an efficient testing plan.

To complete the Phase 5 testing procedures for reserving risk, the actuary will be required to evaluate whether recorded reserves are reasonable or quantify the resulting differences for the EIC. Examination testing procedures and results are usually documented in an actuarial report, consistent with actuarial standards of practice.

2.5.1 Testing procedures for underwriting/pricing risk and liquidity risk

The level of actuarial involvement in testing the underwriting risk and liquidity risk varies significantly by exam. To evaluate the underwriting risk, the EIC may ask the examination actuary to perform testing procedures to validate the quality of the company's rate reviews or underwriting models. To evaluate liquidity risk, the testing plan may include an actuarial review of the company's catastrophe model or an analysis to ensure that the reinsurance program is designed to meet the company's stated risk tolerances. Detailed descriptions of the testing procedures used by the examination actuary in these areas are beyond the scope of this paper.

2.6 Phase 6 and Phase 7

The examination results are used by the EIC in Phase 6 to update the Insurer Profile Summary and prioritization plan. Once the examination actuary's report is approved, the EIC may schedule meetings to discuss the examination results with the company actuaries. The actuary's examination findings will be incorporated into the EIC's final examination report in Phase 7. Any significant findings in the examination actuary's report related to the company's actuarial process or the company's risk mitigation strategies may be addressed in the EIC's final report or the management letter issued by the EIC at the conclusion of the exam.

3. CONCLUSION

Developing a detailed understanding of the risk-focused examination process will allow the company actuary to facilitate a more efficient examination of the company's actuarial processes, and allow examination actuaries to add value to the EIC in more phases and operational areas of the exam. The risk-focus examination encourages examination actuaries to develop targeted testing plans and concentrate their efforts in the areas that represent the greatest risk for the company.

Appendix – Example Risk Assessment

This is an example risk assessment for Sample Company's reserving risk. The NAIC Risk Assessment Matrix is shown in Appendix A. A sample of actuarial risk activities begins in activity 3.1 and ends with activity 5.1. The risk assessment for Sample Insurance Company was performed on a reserve segment basis and is shown in Appendix B.

Sample Company reviewed their reserves by legal entity and separately for commercial and personal lines. To account for these differences, the detailed risk assessment was performed at the company and reserving segmentation level (Appendix B, Sheets 2-3). Due to space limitations, only a selection of segments is actually shown in the exhibits. In Appendix B, Sheet 1, a weighted average of the risk assessments for each reserve segment was used along with actuarial judgment to aggregate the risk assessments to a company level. The aggregated company risk ratings in this summary are used to complete the reserving risk matrix shown in Appendix A. However, there is not a one-to-one correspondence between the detailed risk assessment performed on a reserving segment basis in Appendix B and the risks for the actuarial reserving process shown in Appendix A. The assessments shown in Appendix A may also include a review of procedures and controls that would be referenced in columns 3B and 4B. Due to space limitations, the text and reference to key documents in the database would be entered in the Reserving Risk Matrix for Phase 3 through Phase 7 are not shown. By considering the residual risk at the review segment level, a testing plan can be selected for each reserve review segment based on the risk characteristics and effectiveness of the mitigation techniques for that specific segment. The testing method is shown in Appendix B, Sheets 2-3.

The factors considered in the detailed risk assessment included the following:

- **Quality of the Company's Actuarial Reserve Analyses** – The quality and completeness of the actuarial review process and the documentation supporting the estimates was considered. The types of methods used and the specific diagnostics evaluated in the actuarial reserving package were considered, including: settlement rates, case reserve adequacy, frequency, severity, runoff of prior estimates, and other supporting analysis to support the estimates of unpaid claims.
- **Management's Differences** – The variances between the actuarial central estimate (ACE) and management's best estimate (MBE), which is the basis for the held reserves, were considered in the risk assessment. The larger the variation, the higher the assessed risk.
- **Results of Auditor's Reserve Analyses** – The type of review performed by the auditor and comparison of the auditor's estimates with the company's estimates were considered. Lines of business or review segments where the auditor showed larger

variances to the company's actuarial central estimate were assigned higher risk. Lines of business where the auditor did not test the reserves may also have elevated the risk assessment, considering other factors.

- **Prior Results** – The historical change in ultimate losses from prior years was used as an indication of the inherent risk in the estimate.
- **Inherent Risk of Particular Line of Business/Segment** – The unpaid claims for some segments are inherently difficult to estimate. Longer-tailed casualty lines, lines with large concentrations of reserves and/or lines of business where the loss development patterns or loss ratios demonstrate significant variability were considered higher risk.

SAMPLE INSURANCE COMPANY RISK ASSESSMENT MATRIX

Calculated Cell Do Not Enter Data

Enter Data / Information using Drop Down Boxes or Message Prompts

1a	Key Activity	P&C Reserving
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1b – Overall Risk Statement The risk that reserve accounts are not properly reported, misstated, or improperly valued.

1c – Analytical Assessment: Refer to analytical procedures performed as part of phase 1 for further information.

Phase One		Phase Two						Phase Three					Phase Four			Phase Five	Phase Six	Phase Seven	
1d		2a	2b	2c	2d	2e	2f	3a				3b	3c	4a	4b	4c	5	6	7
		Risk Identification			Inherent Risk Assessment			Risk Mitigation Strategy/Control Assessment					Residual Risk Assessment						
Sub-activities	Identified Risk Number	Identified Risks	Branded Risk(s)	Exam Assertion(s)	Likelihood	Impact	Overall Inherent Risk Assessment	Risk Mitigation Strategy	Frequency	Samples Tested	Obtained from	Evidence & 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 & Management Letter Comments
Risks Other than Financial Reporting																			
	1.1	The Company Board of Directors are not involved in establishing and/or reviewing the insurer's overall reserving policy and methodology.	ST, RV		Moderate-Low	Severe	Moderate												
	1.2	The Company is not following the reserving policy and methodology that has been adopted and reviewed by the Board of Directors.	OP, RV, ST		Moderate-Low	Severe	Moderate												
Financial Reporting Risks																			
Accumulation of Data for Reserving	2.1	Claims data maintained by the Company is not complete, accurate (including line of business classification) and properly cut off.	OP, RV	CO, AC	Moderate-Low	Moderate	Moderate												
Accumulation of Data for Reserving	2.2	The claims data utilized by the actuary to estimate reserves does not correspond to the data in the Company's claims system and to the data in the insurer's accounting records.	OP, RV	CO, AC	Moderate-Low	Moderate	Moderate												
Accumulation of Data for Reserving	2.3	Loss adjustment expense data is not properly classified as defense and cost containment (DCC) or adjusting and other (AO).	OP	AC	Low	Moderate	Low												
Reserving Assumptions and Methodologies	3.1	The methodologies used by the insurer to estimate loss and LAE reserves are not performed using standard actuarial techniques or are not appropriate for the exposure.	RV	VA, AC, PD	Moderate-High	Severe	High					See note below	Strong Risk Controls	Moderate or High	Moderate-High				
Reserving Assumptions and Methodologies	3.2	Changes in the legal environment or changes in the insurer's underwriting, case reserving, or claims handling processes are not appropriately considered within the insurer's reserving assumptions and methodologies.	OP, RV, ST	VA, PD, AC	Moderate-Low	Moderate	Moderate						Moderate Risk Controls	Moderate	Moderate				
Performance of Reserve Calculations	4.1	The company does not use year end data to estimate its reserves. Errors may occur when the actuarial estimates are rolled forward to adjust to the reporting date reserves. The actuary does not reconcile data used in the loss development analysis with the financial statements.	RV	AC, VA, CO	Moderate-Low	Moderate	Moderate						Moderate Risk Controls	Moderate	Moderate-High				
Performance of Reserve Calculations	4.2	The actuarial calculations are not accurate or the actuarial assumptions and judgements are not appropriate, or selected estimates are not reasonable.	OP, RV	AC, VA, PD	Moderate-High	Severe	High						Moderate Risk Controls	Moderate or High	High				

Note: Column 3b includes references to the actuarial risk assessment memo, the analysis shown in Appendix B, and other company documents reviewed to assess the specific risks and controls for each row.

Phase One		Phase Two						Phase Three					Phase Four			Phase Five	Phase Six	Phase Seven	
1d		2a	2b	2c	2d	2e	2f	3a				3b	3c	4a	4b	4c	5	6	7
		Risk Identification			Inherent Risk Assessment			Risk Mitigation Strategy/Control Assessment					Residual Risk Assessment						
Sub-activities	Identified Risk Number	Identified Risks	Branded Risk(s)	Exam Assertion(s)	Likelihood	Impact	Overall Inherent Risk Assessment	Risk Mitigation Strategy	Frequency	Samples Tested	Obtained From	Evidence & 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 & Management Letter Comments
Performance of Reserve Calculations	4.3	The computation of ceded reinsurance credits within loss and LAE reserves for internal and external reinsurance programs are not performed correctly or are not reasonable.	CR, RV	AC, VA	Moderate-Low	Moderate	Moderate					See note below	Moderate Risk Controls	Moderate	Moderate				
Performance of Reserve Calculations	4.4	The defense and cost containment loss adjustment expense (DCC or ALAE) estimates for direct business are not estimated using standard actuarial techniques, are not performed correctly, or the selected estimates are not reasonable.	CR, RV	AC, VA, CO	Moderate-High	Severe	High						Moderate Risk Controls	Moderate or High	Moderate-High				
Performance of Reserve Calculations	4.5	The unallocated loss adjustment expense (AOE, or ULAE) estimates are not estimated using standard actuarial techniques, are not performed correctly, or the selected estimates are not reasonable.	CR, RV	AC, VA, CO	Moderate-High	Moderate	Moderate						Strong Risk Controls	Low or Moderate	Moderate				
Performance of Reserve Calculations	4.6	New business may result in a development patterns that are different from the historical data. The actuarial methods and assumptions used to estimate reserves may contain a bias resulting in a build-up of differences across many years. Significant growth or expansions into new areas make it difficult to estimate the initial loss reserves.	OP, RV	VA	Moderate-High	Severe	High						Moderate Risk Controls	Moderate or High	Moderate-High				
Recording and reporting of loss reserves	5.1	Management books reserves that are materially different than the actuary's best estimate.	OP, ST, LG	VA, PD	Moderate-High	Moderate	Moderate						Moderate Risk Controls	Moderate	Moderate				
Recording and reporting of loss reserves	5.2	Loss reserves and loss adjustment expenses are not properly distributed and recorded amongst insurers in the reinsurance pooling arrangement.	OP	OB/OW, AC, CM	Moderate-High	Moderate	Moderate						Strong Risk Controls	Low or Moderate	Low				
Recording and reporting of loss reserves	5.3	Unauthorized changes could be made to adjust limit's within the system allowing unauthorized changes in case basis claim reserves.	OP	AC, VA	Moderate-Low	Moderate	Moderate						Strong Risk Controls	Low or Moderate	Low				
Recording and reporting of loss reserves	5.4	Reserves are not properly monitored within management expectations.	OP, ST, LG	VA, PD	Moderate-Low	Moderate	Moderate						Moderate Risk Controls	Moderate	Moderate				

Note: Column 3b includes references to the actuarial risk assessment memo, the analysis shown in Appendix B, and other company documents reviewed to assess the specific risks and controls for each row. Highlighted risks are documented by the examination actuary. Other items completed by other members of the examination team after collaboration with examination actuary.

Sample Insurance Company Aggregated Risk Assessment

		Reserve Risk Assessment				
		Risk 5.1	Includes Risks 3.1, 3.2, 4.2, 4.3, 4.4, 4.5		Risk 4.6	Overall Residual Risk
		MBE Difference	Auditor vs ACE Difference	Inherent Variability	Runoff Risk	
1	Loss	Moderate	Moderate	Moderate	Moderate-High	Moderate-High (1)
2	Personal Company 1	High	Moderate	Moderate	High	Moderate-High
3	Personal Company 2	Low	Moderate-High	Moderate-High	Moderate-High	Moderate-High
4	Commercial Company 1	Moderate	Moderate	Moderate	Moderate	Moderate-High
5	ALAE	Moderate	Moderate	Moderate	Moderate-High	Moderate-High (2)
6	Personal Company 1	Moderate	Moderate	Moderate	Moderate-High	Moderate-High
7	Personal Company 2	Low	Moderate-High	Moderate-High	Moderate-High	Moderate-High
8	Commercial Company 1	Moderate	Moderate	Moderate	Moderate-Low	Moderate-High
9	ULAE	Low	Moderate	Moderate	Low	Moderate (3)
10	Personal Company 1	Low-Moderate	Moderate	Moderate	Low	Moderate
11	Personal Company 2	Low	Moderate	Moderate	Low	Moderate
12	Commercial Company 1	Low	Moderate	Moderate	Low	Moderate
13	Assumed	Low	Low	Low	Low	Low
14	Personal Company 1	Low	Low	Low	Low	Low
15	Personal Company 2	Low	Low	Low	Low	Low
16	Commercial Company 1					
17						
18	Ceded	Moderate	Moderate	Moderate	Moderate	Moderate (4)
19	Personal Company 1	Moderate	Moderate	Moderate	Moderate	Moderate
20	Personal Company 2	Low	Low	Low	Low	Low
21	Commercial Company 1	Low	Low	Low	Low	Low
22						
21	All Segments	Moderate (5)	Moderate (7)	Moderate (7)	Moderate (6)	Moderate

The ratings on Sheets 2-3 are based on our review of the inherent risk and the effectiveness of the company controls applied to a reserve segment basis. The ratings by reserving segment are aggregated to the company level on Sheet 1, using a weighted average with reserve balances as weights. The average residual risk represents a composite of many reserving risks identified in the Reserving Risk Matrix - Appendix A

- (1) This represents a composite residual risk for the direct loss reserves. This rating is used to evaluate risks 3.1, 3.2, and 4.2 in Appendix A.
- (2) This represents a composite residual risk for ALAE reserves. This rating is used to evaluate risks 4.4 in Appendix A.
- (3) This represents a composite residual risk for ULAE reserves. This rating is used to evaluate risks 4.5 in Appendix A.
- (4) This represents a composite residual risk for ceded reserves. This rating is used to evaluate risks 4.3 in Appendix A.
- (5) This represents a composite residual risk for MBE-ACE differences. This rating is used to evaluate risks 5.1 in Appendix A.
- (6) This represents a composite residual risk for actuarial bias and reserve runoff. This rating is used to evaluate risks 4.6 in Appendix A.
- (7) This is a composite residual risk for all loss and LAE reserves. This rating is adjusted if the aggregation of small differences in estimates have increased the risk.

Sample Insurance Company

Company 1: Personal Lines - Risk Assessment on an Actuarial Review Segment Basis

Line of Business	Estimates as of 12/31/2013				Auditor Estimates as of 12/31/2013				Runoff Change in Estimate	R = Auditor Reviewed	Examination Team Risk Assessment					Phase Five Test Plan	
	Company				\$ Difference						R	Risk 5.1 MBE Difference	Risks 3.1, 3.2, 4.2, 4.3, 4.4, 4.5 Auditor vs ACE Difference	Risk 4.6 Inherent Variability	Risk 4.6 Runoff Risk		Overall Residual Risk
	MBE	ACE	Difference \$	Difference %	Select	to Booked	% Difference to Booked	% Difference to ACE									
DIRECT																	
TOTAL LOSS	431,630	458,666	(27,036)	-5.9%	472,321	(40,691)	-8.6%	-2.9%			High	Moderate	Moderate	High	Moderate-High		
PPA BI/UM Liability	305,000	330,000	(25,000)	-7.6%	342,100	(37,100)	-10.8%	-3.5%	16,301	R	High	Moderate	Moderate	High	High	Ind	
PPA Prop. Damage Liability	21,500	21,636	(136)	-0.6%	22,450	(950)	-4.2%	-3.6%		R	Low	Moderate	Low	Low-Moderate	Moderate	Peer	
PPA PIP/NF Liability	15,800	16,800	(1,000)	-6.0%	17,300	(1,500)	-8.7%	-2.9%		R	High	Moderate	Moderate	High	Moderate	Ind	
Homeowners	38,110	38,110	(0)	0.0%	37,948	162	0.4%	0.4%	953	R	Low	Low	Low-Moderate	Low-Moderate	Low-Moderate	M&A	
Umbrella	12,950	12,950	0	0.0%	13,353	(403)	-3.0%	-3.0%		R	Low	Moderate	Moderate	Low-Moderate	Low-Moderate	Peer	
Dwelling Fire	2,450	2,450	0	0.0%	2,450	0	0.0%	0.0%			Low	Low	Low	Low-Moderate	Low	Peer	
Inland Marine	420	420	0	0.0%	420	0	0.0%	0.0%			Low	Low	Low	Low-Moderate	Low	Diag	
TOTAL ALAE	42,382	39,855	2,527	6.3%	42,862	(480)	-1.1%	-7.0%			Moderate	Moderate	Moderate	Moderate-High	Moderate-High		
PPA Liability	33,289	30,844	2,445	7.9%	33,755	(466)	-1.4%	-8.6%	4,000	R	Moderate	Moderate	Moderate	High	Moderate-High	Ind	
PPA Physical Damage	333	333	0	0.0%	333	0	0.0%	0.0%			Low	Low	Low	Low	Low	Diag	
Homeowners	6,800	6,713	87	1.3%	6,809	(9)	-0.1%	-1.4%	844	R	Low	Low-Moderate	Low-Moderate	Moderate	Low-Moderate	Peer	
Umbrella	1,500	1,512	(12)	-0.8%	1,512	(12)	-0.8%	0.0%			High	Low	Low	Low	Low	Diag	
Dwelling Fire	450	445	5	1.1%	445	5	1.1%	0.0%			Low	Low	Low	Low	Low	Diag	
Inland Marine	10	8	2	24.8%	8	2	24.8%	0.0%			Low	Low	Low	Low	Low	Diag	
ULAE	43,000	44,000	(1,000)	-2.3%	43,000	0	0.0%	2.3%		Auditor Accepted Booked!	Low-Moderate	Moderate	Moderate	Low	Moderate	Ind	
TOTAL DIRECT LOSS & LAE	517,012	542,521	(25,509)	-4.7%	558,183	(41,171)	-7.4%	-2.8%									
TOTAL ASSUMED											Low	Low	Low	Low	Low		
FAIR Plan/Other Pools	6,428	6,428	0	0.0%	6,428	0	0.0%	0.0%			Low	Low	Low	Low	Low	Diag	
TOTAL DIRECT & ASSUMED	523,440	548,948	(25,509)	-4.6%	564,611	(41,171)	-7.3%	-2.8%									
CEDED											Moderate	Moderate	Moderate	Moderate	Moderate		
Auto Liability	29,125	26,200	(2,925)	-11.2%	29,125	0	0.0%	10.0%		Auditor Accepted Booked!	Moderate	Moderate	Moderate	Moderate	Moderate	Ind	
Homeowners	17,426	16,250	(1,176)	-7.2%	17,426	0	0.0%	6.8%			Moderate	Moderate	Moderate	Moderate	Moderate	Ind	
Fair Plan	2,800	2,800	0	0.0%	2,800	0	0.0%	0.0%			Low	Moderate	Low	Low	Low	Diag	
TOTAL CEDED LOSS & LAE	49,351	45,250	(4,101)	-9.1%	49,351	0	0.0%	8.3%									
TOTAL NET LOSS & LAE	474,089	503,699	(29,610)	-5.9%	515,261	(41,171)	-8.0%	-2.2%									

The Actuary's Role in a Risk-Focused Statutory Examination

Sample Insurance Company

Company 2: Personal Lines - Risk Assessment on an Actuarial Review Segment Basis

Appendix B

Note * Detail for only two segments of business are shown in the example. Loss, ALAE and ULAE Total represent sum of all segments.

Sheet 3

Line of Business	Estimates as of 12/31/2013				Auditor Estimates as of 12/31/2013				Runoff Change in Estimate	R = Auditor Reviewed	Examination Team Risk Assessment					Phase Five Test Plan
	Company				\$ Difference % Difference % Difference						Risk 5.1	Risks 3.1, 3.2, 4.2, 4.3, 4.4, 4.5	Risk 4.6	Overall		
	MBE	ACE	Difference \$	Difference %	Select	to Booked	to Booked	to ACE			MBE Difference	Auditor vs ACE Difference	Inherent Variability	Runoff Risk	Residual Risk	
DIRECT																
Loss	113,875	114,750	(875)	-0.8%	121,345	(7,470)	-6.2%	-5.4%								
PPA BI	66,000	66,400	(400)	-0.6%	72,242	(6,242)	-8.6%	-8.1%	1,406	R	Low	Moderate-High	Moderate-High	Moderate-High	Moderate-High	Ind
PPA PIP	5,000	5,100	(100)	-2.0%	5,853	(853)	-14.6%	-12.9%	1,600	R	Low	High	Moderate	High	High	All
*																
ALAE	26,000	26,005	(5)	0.0%	27,972	(1,972)	-7.0%	-7.0%								
PPA BI	14,500	14,650	(150)	-1.0%	16,115	(1,615)	-10.0%	-9.1%	1,743	R	Low	Moderate-High	High	High	High	Ind
PPA PIP	4,250	4,130	120	2.9%	4,632	(382)	-8.3%	-10.8%	1,030	R	High	Moderate-High	High	High	Moderate	All
*																
Total Loss & ALAE	139,875	140,755	(880)	-0.6%	149,317	(9,442)	-6.3%	-5.7%								
ULAE	9,000	9,000	0	0.0%	9,450	(450)	-4.8%	-4.8%			Low	Moderate	Moderate	Low	Moderate	Ind
*																
TOTAL DIRECT Loss & LAE	148,875	149,755	(880)	-0.6%	158,767	(9,892)	-6.2%	-5.7%								
ASSUMED	8,950	8,950	0	0	8,950	0	0.0%	0.0%			Low	Low	Low	Low	Low	Diag
TOTAL DIRECT & ASSUMED	166,775	167,655	(880)	-0.5%	176,667	(9,892)	-5.6%	-5.1%								
TOTAL CEDED	575	575	0	0.0%	575	0	0.0%	0.0%			Low	Low	Low	Low	Low	Diag
TOTAL NET	166,200	167,080	(880)	-0.5%	176,092	(9,892)	-5.6%	-5.1%								

Sample Insurance Company

Company 1: Commercial Lines - Risk Assessment on an Actuarial Review Segment Basis

Appendix B

Note * Detail for only two segments of business are shown in the example. Loss, ALAE and ULAE Total represent sum of all segments.

Sheet 4

Line of Business	Estimates as of 12/31/2013				Auditor Estimates as of 12/31/2013				Runoff Change in Estimate	R = Auditor Reviewed	Examination Team Risk Assessment					Phase Five Test Plan
	Company				\$ Difference % Difference % Difference						Risk 5.1	Risks 3.1, 3.2, 4.2, 4.3, 4.4, 4.5	Risk 4.6	Overall		
	MBE	ACE	Difference \$	Difference %	Select	to Booked	to Booked	to ACE			MBE Difference	Auditor vs ACE Difference	Inherent Variability	Runoff Risk	Residual Risk	
DIRECT																
Loss	661,438	674,194	(12,756)	-1.9%	681,626	(20,188)	-3.0%	-1.1%								
CMP	291,724	291,724	0	0.0%	292,099	(376)	-0.1%	-0.1%	(2,169)	R	Low	Low	Moderate	Low	Low-Moderate	Peer
Commercial Auto Liability	101,761	101,761	0	0.0%	105,268	(3,507)	-3.3%	-3.3%	(500)	R	Low	Moderate	Moderate	Low	Moderate	Peer
*																
ALAE	83,806	85,899	(2,092)	-2.4%	89,614	(5,808)	-6.5%	-4.1%								
CMP	32,090	32,090	0	0.0%	32,987	(897)	-2.7%	-2.7%	871	R	Low	Moderate	Moderate	Moderate	Moderate	Ind
Commercial Auto Liability	9,667	9,667	0	0.0%	9,905	(238)	-2.4%	-2.4%	(40)	R	Low	Moderate	Moderate	Low	Low-Moderate	Peer
*																
Total Loss & ALAE	745,245	760,093	(14,848)	-2.0%	771,240	(25,995)	-3.4%	-1.4%								
ULAE	79,373	80,903	(1,531)	-1.9%	80,903	(1,531)	-1.9%	0.0%			Low	Moderate	Moderate	Low	Moderate	Ind
*																
TOTAL DIRECT Loss & LAE	824,617	840,996	(16,379)	-1.9%	852,143	(27,526)	-3.2%	-1.3%								
TOTAL CEDED	5,546	5,546	0	0.0%	5,546	0	0.0%	0.0%			Low	Low	Low	Low	Low	Diag
TOTAL NET	819,071	835,450	(16,379)	-2.0%	846,597	(27,526)	-3.3%	-1.3%								