

A PUBLIC POLICY PRACTICE NOTE

# Model Audit Rule

*November 2010*

American Academy of Actuaries  
Model Audit Rule Practice Note Subcommittee  
of the Committee on Property and Liability  
Financial Reporting



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AMERICAN ACADEMY *of* ACTUARIES

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on Property and Liability Financial Reporting  
of the American Academy of Actuaries



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AMERICAN ACADEMY *of* ACTUARIES

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The American Academy of Actuaries is a professional association with more than 17,000 members, whose mission is to assist public policymakers 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.

This practice note was developed primarily by the Model Audit Rule Practice Note Subcommittee, a subcommittee of COPLFR that includes casualty, health, and life practitioners. This 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; the actuarial aspects of compliance with the requirements of MAR §16 and SOX §404 are evolving. Events occurring subsequent to this publication of the practice note may make the practices described in this practice note irrelevant or obsolete.

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## 1. Introduction

The Annual Financial Reporting Model Regulation Requiring Annual Audited Financial Reports, issued by the National Association of Insurance Commissioners (NAIC) and popularly known as the Model Audit Rule (MAR), is effective for the financial reporting year beginning January 1, 2010 (or once a state adopts it). Section 16 of the MAR (MAR §16) contains requirements related to financial statement audits of companies, including independent certified public accountant (CPA) qualifications, communication of matters related to internal control, and audit committee requirements. In addition, MAR §16 requires management to provide an assertion regarding the effectiveness of its internal controls over the financial reporting process. This is similar to current requirements of public companies concerning internal control over financial reporting requirements pursuant to Section 404 of the Public Company Accounting Reform and Investor Protection Act of 2002, popularly known as the Sarbanes-Oxley Act (SOX §404). Unlike SOX §404, MAR §16 does not require the independent audit firm to make an attestation on management's assertion.

SOX §404 was developed, in part, in reaction to so-called "accounting scandals" that contributed to the failures of large companies and an accounting firm after corporate governance issues arose surrounding their lack of robust controls. MAR §16 was developed to incorporate some of the "best practices" of companies that are subject to Sarbanes-Oxley.<sup>1</sup> For companies subject to SOX §404, MAR §16 extends the requirement for assertions to controls for statutory financial statement reporting.

This practice note is intended to assist actuaries when supporting management's assertions per MAR §16 and SOX §404, as applied to the evaluation and testing of key controls for the actuarial balances, including loss reserves for the financial reporting process. While MAR §16 and SOX §404 place requirements on the company's chief executive officer and chief financial officer and not specifically on the appointed actuary, the CEO or CFO may seek actuarial support related to the identification, execution, and testing of key controls for the actuarial balances within the financial reporting process.

This practice note provides information to:

- Actuaries who are preparing the initial documentation and control assessment of a reserving process;
- Actuaries who are supporting efforts to comply with controls assertions and are updating internal approaches to controls, such as those currently required under SOX §404;
- Actuaries who wish to evaluate and potentially to improve the control environment that surrounds their company's loss-reserving process, whether their company is required to comply with MAR §16 or SOX §404;
- Actuaries who review a company's control structure, control design, and control performance on behalf of regulators or external auditors;

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<sup>1</sup> [http://www.naic.org/Releases/2005\\_docs/financial\\_reporting\\_compromise.htm](http://www.naic.org/Releases/2005_docs/financial_reporting_compromise.htm) (last visited on Nov. 2, 2010).

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- Actuaries who, in a consulting role, may assist a company in developing and maintaining its controls structure.

The theory and steps for compliance with MAR §16 and SOX §404 in life, health, and property/casualty (P/C) practice areas are the same. The differences in application are determined by differences in the particular processes and risks of the practice areas. This practice note covers the general approach to compliance and provides some examples from each practice area. This practice note is not intended to offer an all-inclusive approach on building a process for any particular practice area. It also is not intended to provide a checklist for all possible controls that can be built into the processes for each practice area.

### ***Controls over Financial Reporting— MAR §16 and SOX §404***

SOX §404 became effective at year-end 2004 for most publicly-traded companies, and it continues to be a current requirement for public companies in the United States. Under MAR §16, CEOs and CFOs of insurers required to file an audited financial report with direct and assumed written premiums of more than \$500 million (reviewed annually by the NAIC) are required to prepare an annual report on internal controls for submission to their domiciliary insurance department. Signed by the CEO and CFO, the report's scope and assertion are similar to SOX §404 requirements for internal control over financial reporting, which applies to many publicly-traded companies. (Under SOX §404, management is required to provide an assessment of the effectiveness of internal controls, and the independent auditor is required to provide an attestation as to the effectiveness of the control framework that supports the company's consolidated financial reporting.) Smaller companies (with direct and assumed written premium of less than \$500 million) are exempt from this provision of the MAR. The text of MAR §16 is included at the conclusion of this practice note.

There are some notable differences, however, between the requirements of MAR §16 and SOX §404:

- Unlike under SOX §404, an auditor attestation of the effectiveness of internal controls is not required under MAR §16.
- The level of documentation and the amount of testing required to comply with the guidance of MAR §16 may be subject to somewhat more judgment than what might be required under of SOX §404.<sup>2</sup>
- The focus of MAR §16 is on the statutory reporting process and the resulting audited statutory financial statement; the focus of SOX §404 is on the audited consolidated financial statement.

### ***Guidance for Building Internal Controls***

For a company to prepare a report and make an assertion as to its financial reporting internal controls, it must build controls into its processes and monitor whether the controls are

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<sup>2</sup> Oberholtzer, Marc F. "Model Audit Rule and P/C Actuaries," Casualty Loss Reserve Seminar, Sept. 2009.

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working. The Committee of Sponsoring Organizations (COSO) is a private sector organization comprised of accounting, auditing and financial professionals that sponsors and disseminates frameworks and guidance for improving the effectiveness and efficiency of business operations.<sup>3</sup> The framework prepared by COSO may serve as a basis for how to build controls for an individual company. The COSO framework has five components: Control Environment, Risk Assessment, Control Activities, Information and Communication, and Monitoring. These are described in Section 2 of this practice note.

### *Actuarial Involvement in Key Control Evaluation and Testing*

An insurance company's actuarially determined balances may be viewed as significant items within the scope of its implementation of SOX §404 and MAR §16. Professionals tasked with complying with these statutes and regulations within a company are responsible for addressing the risk assessment and control activities surrounding the actuarial balances. In the context of SOX §404, the actuaries who audit these companies may review these risk assessments and control activities as well. Most companies establish an implementation team that handles initial and ongoing compliance with SOX §404 and MAR §16 requirements. Actuaries may be members of—or even lead—these teams as they relate to specific actuarial processes. Initial participation may include documentation of existing processes, risk assessment, identification of existing controls, and establishment of new controls.

In the years since SOX §404 was implemented, companies have experienced improved actuarial processes, controls, and documentation. Based on these results at public companies complying with SOX §404, actuaries new to working with MAR §16 may see outcomes such as these:

- Increased documentation for many companies, as the reserving process is documented in detail for the first time;
- Formalization of processes and procedures become more formal, consistent from time period to time period, and subject to more review both within and outside of the actuarial department;
- Increased focus on evidence that specific steps in the process were completed instead of focusing only on the ultimate result;
- Increased focus on possible risks of misstatement, which is not limited to what has gone wrong in the past;
- Increased focus on the identification, use, and enhancement of controls that mitigate the risk of misstatement;
- Enhanced communication between actuaries and financial reporting staff resulting from more structured and more collaborative interactions between financial reporting professionals and actuaries;
- Increased focus on the accurate booking of the intended actuarial balance—not just reconciliation of actuarial and management views of the actuarial balance.

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<sup>3</sup> <http://www.coso.org/> (last visited on Nov. 2, 2010).

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- Increased reconciliation of actuarial indications and actual recorded actuarial balances that result from the controls established under SOX §404 and MAR §16, which often require a reconciliation between the actuarial analysis and the assumptions adopted by management for the recorded balance or reserve.

Throughout the process of establishing and maintaining an internal approach to SOX §404 and MAR §16 compliance, many companies seek the comments of their external auditors on the robustness of the approach. Their reasons for doing this include:

- For a company subject to SOX §404, the external auditor also will be required to provide an opinion on management's control design and performance. The views of management and the external auditor ideally will be consistent.
- While the external auditor is not required to opine under MAR §16, in the course of an audit of statutory financial statements, the auditor may be able to place more reliance on a company's internal controls if he or she views the controls as effective and if it is more cost-effective to use a control reliance approach to the audit.

## 2. Overview of Control Structure

The control structure for the actuarial processes of the company generally will be the same as the overall control structure in the organization. For that reason, it is unlikely that actuaries will need to create a new control structure. While MAR §16 does not require the use of COSO, many companies have adopted the COSO control structure.

The COSO framework consists of five basic building blocks:

- 1 The ***Control Environment*** of an organization or entity is the “tone at the top,” the values and ethics that influence the controls consciousness of its people, as well as competence consistent with strong internal controls.
- 2 ***Risk Assessment***, the first step in using these building blocks. It identifies areas within the financial reporting system in which errors, misstatements, and fraud could occur so that controls can be established and maintained in these areas.
- 3 ***Control Activities*** are the control procedures themselves that detect and prevent risk issues.
- 4 ***Information and Communication*** is a feedback system for taking actions when control activities identify problems.
- 5 ***Monitoring*** is intended to assure that the controls are working at all levels.

The control environment building block may not be assessed separately for the actuarial processes. Actuarial processes, instead, are an important part of an overall assessment. For



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the other building blocks, such as risk assessment, control activities, information and communication, and monitoring, specific actuarial processes may need to be assessed.

Once key risks are identified through a risk assessment, controls are developed and evaluated. Control activities are likely to be supported by formal documented controls. These may be key controls—those that are critical to operate effectively to mitigate key risks appropriately. There also will be other controls, or those that contribute to the overall control structure but are not, themselves, critical. These may be contributing controls, which perhaps are effective in catching an error earlier than the key control, but the key controls must be effective against identified primary risks.

There are several different types of controls discussed later in the practice note. Controls may be detective or preventive. They may take the form of reconciliations, technical reviews, peer reviews, technical qualifications of personnel, existing policies or guidelines, the performance of analysis, or controls around end-user computer applications. Actuaries in larger companies subject to MAR §16 generally will have controls around enterprise computer systems separately documented and performed by information technology (IT) professionals. Such controls on enterprise systems, related to security as well as the completeness and accuracy of data, illustrate that the actuary may be able to rely on controls work done by other parts of the organization related to aspects of actuarial data.

The major steps involved in performing and assessing the controls and the resulting feedback system include designing the controls, performing the controls, assessing the controls, testing the controls, identifying deficiencies, remediating deficiencies, and reporting on the results. These areas will be discussed later.

### **3. Covered Processes in Determining Actuarial Balances**

Actuarial balances to consider for MAR §16 control reporting may include those that are calculated by actuaries and are reported in the financial statements. Effective internal controls around financial reporting consider information and processes that are used in compiling balances reported in the subject financial reports, or provide significant input into the calculation of those balances. Actuarial processes that are subject to MAR §16 therefore include any actuarially calculated balances that either are reported in financial statements or have provided significant input to financial statement balances.

#### ***Materiality***

Only processes that are material are subject to MAR §16. Materiality may be defined at a corporate level and applies to all in-scope balances resulting from the in-scope processes, which possibly include actuarial, finance, underwriting, claims, and other processes. Actuaries normally work closely with accounting professionals to determine materiality standards. The determination of materiality considers risks involved in determining the balance, as well as the amount of the balance. For example, a reserve balance of \$1 million that has a risk of resulting in \$100 million of adverse development may be in-scope, while a larger reserve balance of \$5 million that could, at worst, develop to \$6 million may not. Materiality as defined here is likely to be different, and in many cases lower, than the

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materiality a P/C actuary uses to define materiality in the context of a risk of material adverse deviation in a Statement of Actuarial Opinion.

Materiality also can be applied to processes forming part of a financial statement balance. For example, for a company with loss reserves in-scope, a company writing business such that 99 percent of reserves are personal lines and 1 percent are commercial lines may elect not to apply control testing procedures to the commercial lines.

An additional reference on determining materiality is the discussion paper on materiality developed by the Council of Professionalism.<sup>4</sup>

### ***Determining In-Scope Balances***

The first step to determine in-scope processes is to identify in-scope balances. Balances to consider are discussed by type of insurer later in this section. Determination of in-scope balances usually is done at the enterprise level, based on enterprise materiality standards. This is another step during which actuaries work closely with accounting professionals.

Balances resulting from third-party reporting present an interesting challenge to a company. For example, a pool or association may report an amount determined by the company to be a material balance that is simply recorded by the company. The company will consider whether its own review of the amounts reported by the pool or association constitutes sufficient control or if there is a basis to rely on controls operating at the third party. In this context, consultation with the overall internal control program and with accounting professionals is important. Similar situations include third-party administrators (TPA), managing general agents (MGA), foreign or domestic affiliates, or other reinsurance arrangements.

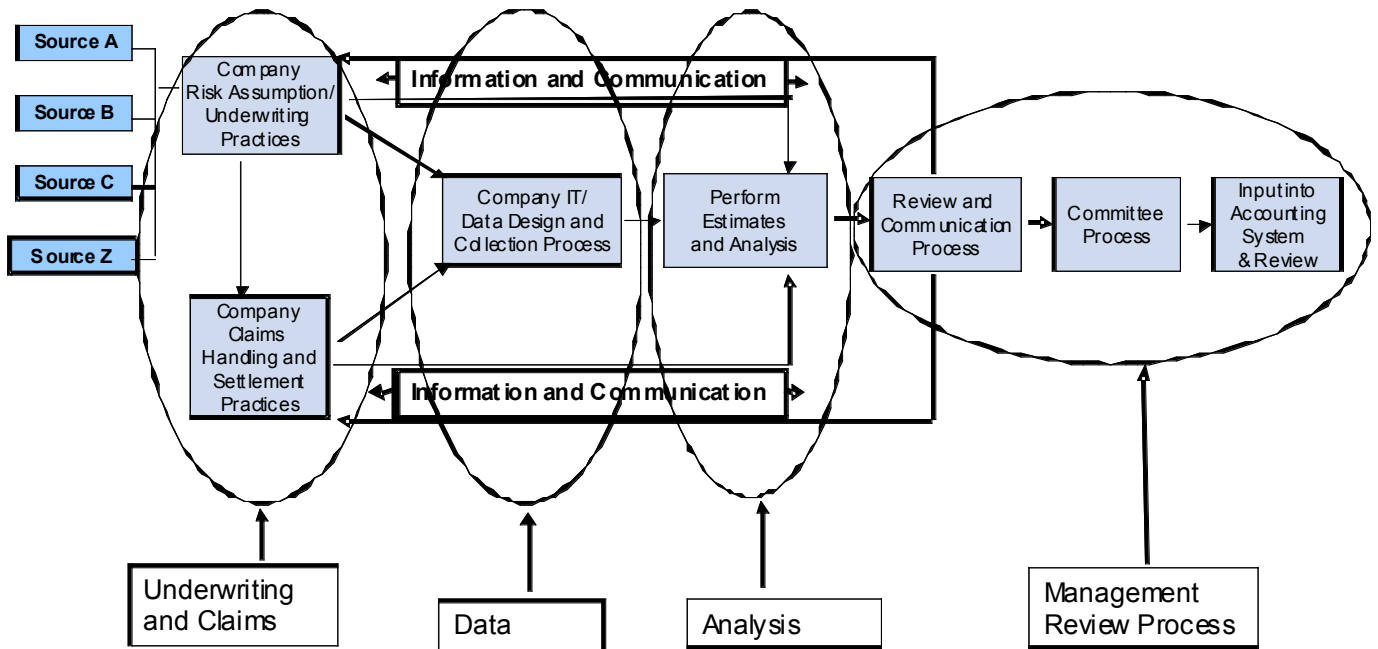
Controls are not focused always on numbers. For example, it may be important when calculating individual health reserves if significant changes were made in underwriting guidelines covering the health of individuals eligible for the program, or if changes in regulations have affected the treatment of preexisting conditions for new policyholders. In these cases, the risk would be a lack of knowledge by the reserve analyst. The failure to consider underwriting changes in the reserve analysis may be a key risk, and designing a control to mitigate the risk (that underwriting changes could affect the contract losses but not be quantified in the analysis) may be a key control.

Once the in-scope balances are determined, many professionals find a process-flow diagram is helpful to determining the resulting in-scope processes. A diagram like the one on the following page is illustrative.

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<sup>4</sup> Task Force on Materiality, *Materiality: Concepts on Professionalism*, [http://www.actuary.org/pdf/prof/materiality\\_06.pdf](http://www.actuary.org/pdf/prof/materiality_06.pdf) (last visited on Nov. 2, 2010).

## Actuarial Reserving Process Flow and Key Control Points



Source: <http://www.casact.org/pubs/dpp/dpp06/06dpp37.pdf> (last visited on Nov. 2, 2010).

This diagram suggests four main categories as a convenient way to classify and consider processes that may have significant effects on the calculation of the in-scope balances. These include the initiation and handling of risk acceptance (underwriting) or acceptance and handling of resulting claims, the flow of quantitative and qualitative data related to policies and claims, the analysis performed, and the management process to determine the balance based on that analysis. Each of these categories of processes may have controls, such as reconciliations, technical reviews, peer reviews, technical qualifications of personnel, existence of policies or guidelines, performance of analysis, or controls around end-user computer applications. Major IT data processes generally will have controls around enterprise computer systems documented and performed by IT professionals. In some companies, end-user computing controls are also standardized across the company. But in other cases, these controls are determined separately for each process.

Accurate data rendered with appropriate detail are critical to producing correct estimates. The controls designed to produce this outcome, therefore, are generally in-scope. This includes the production of data used in the analysis, such as premium, loss, exposure, and claim-count

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data. It also includes data used to evaluate and interpret the analysis. For example, data on the movement and adequacy of prices obtained in the marketplace can be critical to understanding the recorded losses.

Data on the distribution by classification may be important—even if these breakdowns are more detailed than reserve analysis lines—since premium adequacy may vary by class. Detail also is important. For example, production of large loss data to use in interpreting the analysis is crucial, and producing these data and the processes to control quality and completeness also may be in-scope.

Not all data are processed and maintained directly by the insurance company. MGAs and TPAs may handle premium and claims processing and provide data to the company related to these specific processes. The materiality of the portion of a company's data processed by these outside vendors may be considered in determining if the associated data are within the scope of the review of the company's controls. Companies sometimes request that a Statement on Auditing Standards (SAS) 70 (a report prepared by an independent auditing firm relating to the effectiveness of the controls surrounding the service organization's processes) be provided to them concerning the specific processes and procedures performed by the MGAs and TPAs.

The actuarial analysis is expected to have the depth and breadth to support the resulting estimates. Important controls include:

- Use of appropriate and sufficient actuarial procedures;
- Use of analysts with appropriate skills;
- Sufficient investigation of unexpected results;
- Appropriate review and sign-off procedures.

In addition, appropriate data-reconciliation activities take place both before the analysis occurs and, with respect to ensuring the final reserve selections are recorded, after the analysis is complete.

The analysis conducted to test the quality of prior estimates retrospectively often can be a source of improving current estimates and uncovering bias; retrospective analysis often is considered an in-scope process.

Some companies may outsource the core actuarial analysis related to determining actuarial balances to an outside consulting firm that they believe is qualified with appropriate knowledge and experience in the specific area. Such firms may be viewed by the company as outside experts and the company may not consider the core actuarial analysis as within the scope of MAR §16. While the work of the outside actuary may not be subject to company controls, the company will have controls in place around the data that are provided to the consulting actuary and around the results provided by the actuary. The controls around the actuary's results include ensuring that the data provided to the actuary are used by him or her and that the resulting balances provided make sense in the context of the company's business. Even when the outside actuary provides an analysis, company management takes ownership of the financial statements, including the outside actuary's work.

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The controls around management review and sign-off helps allow management to take responsibility for the actuarial balances. This includes a review of the estimates and the management selection process. To confirm that final reported balances are consistent with the analysis and estimates, the approval of final selections should be documented. To the extent that selections are not consistent with actuarial estimates, management needs to document the reasons for the departure and, to the extent possible, quantify the differences.

### **Examples of P/C Actuarial Balances**

As part of the overall process to develop management's report of internal control over financial reporting, actuaries work with their accounting colleagues to determine in-scope balances. Each balance has an associated level of risk. Actuarial balances are usually management estimates. All else being equal, an actuarial balance that includes a significant element of management estimation usually is considered to have more risk than a balance that can be compiled directly from reporting systems, such as premiums collected.

#### Unpaid Loss and Loss-Adjustment Expense (LAE)

Loss and loss-expense reserves are likely to be considered in-scope, due to the importance of these balances to both the balance sheet and income statement.

#### Contingent Commission

Consider carefully any contingent commission arrangements. These may have significant dependencies on the loss ratios recorded by the company, as well as on loss reserves. Contingent commissions may be assets or liabilities. They may arise in reinsurance arrangements or with producing agencies or MGAs.

#### Premium-Deficiency Reserves (PDR)

Calculations to verify whether there is any need to establish PDR may be in-scope.

#### Earned-but-Unbilled (EBUB) and Earned-but-not-Reported (EBNR)

Premium accruals often require significant calculations. These might be EBUB or EBNR premiums, which generally arise when premium audits are expected to result in net additional or return premiums. Retrospectively rated contracts also may require accrual based on loss expectations. These can arise, for example, on large retrospectively rated accounts or swing-rated reinsurance contracts.

Reinsurers may estimate total premiums expected under reinsurance contracts using estimation techniques, which may be significant to the balance sheet or income statement. These premium estimates may be in-scope.

#### Policyholder Dividends

Outstanding policyholder dividends may be determined based on actuarial calculations that also depend on loss estimates. Based on the company's determination of the materiality of the dividend balances, the company may choose to consider them in-scope.

#### Due and Deferred-Net Premiums

These are actuarially determined and can be material to a company's balance sheet.

### Examples of Health Actuarial Balances

Many categories of potential in-scope balances overlap between the P/C and health practice areas. The names and function of the balances generally are similar. The list of potential in-scope balances below includes terminology that is unique to the health practice area:

- Estimates of unpaid claims liabilities and loss adjustment expenses;
- Analysis of premium deficiency reserves;
- Development of retrospective rated premium reserves, including Part D liabilities and Patient Protection and Affordable Care Act Medical Loss Ratio liabilities;
- Development of provider assets and liabilities;
- Development of policy reserves;
- Estimates of experience-rated balances for experience-rated groups.

### Examples of Life Processes In-Scope

Life processes in-scope include the calculation and reporting of actuarially determined reserve balances.

#### Policyholder Reserves

These include both the formulaic reserves for life insurance and fixed annuities and reserves for variable annuities under Actuarial Guideline (AG) 43. This brings into scope both a typical valuation process and a company's modeling software, if used to calculate AG 43 reserves.

#### Asset Adequacy Testing

This process likely would be in-scope because it could lead to additional reserves being recorded. While the result of testing in many cases is that no additional reserves are required, the process must be controlled because the potential certainly exists. .

#### Risk-Based Capital (RBC) Calculations

Processes to calculate RBC may be in-scope because they are published in the annual statement. This would include models for the calculation of C-3, Phases I and II.

## 4. Documentation of Processes

Once the key processes have been determined, the next step is to document them. The documentation describes the steps to understand the data flow and deliberative steps in the process. The primary goal of the documentation process is to provide sufficient background and information for the reader to logically follow the next steps, in which key risks and controls are identified. The documentation typically focuses more on flow and transfer of data and conclusions than on the elements necessary to determine appropriate assumptions. Documentation generally includes the following elements:

- **Flowcharts of the process**, including where information comes from and where conclusions from each step are used later in the process. The flowchart's level of

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sophistication varies significantly from the relatively basic to the very complex. The relatively basic include data warehouse, actuarial analysis, peer review, and recording liabilities. The very complex include multiple information sources, complex decision trees indicating the specific actuarial analysis to be undertaken in a given circumstance, multiple levels of reviews and sign-offs, and outputs of the process going to multiple sources. An example of a flowchart is included as Appendix 2.

- **Narrative descriptions of the process**, which start with the purpose of the process and then go on to identify those who perform and review the process, the level of experience and authority required of those individuals, the user(s) of the results of the process or the process substeps, the timing of the process, and what the process depends upon. The narrative description concludes with the outputs of the process and how the outputs are entered into the financial statements. An example of such a narrative is included as Appendix 1.

Documentation of the processes may be performed by a special finance team assigned to address MAR §16 and SOX §404 compliance. Such a team typically would prepare this documentation through a series of interviews with key individuals involved in the process. In this scenario, the actuary's role in the development of documentation would be to participate in the interviews and review the documentation to ensure that it is accurate. The actuarial team also would be aware of the processes that have been documented and would be responsible for ensuring that the documentation is updated appropriately when changes are made to the processes.

In other cases, the actuarial team would be asked to document its own key processes. In this situation, the company is likely to have a specific format to ensure consistency across all company documentation. In such circumstances, it is most common to assign one individual from the actuarial team to serve as documentation leader, interviewing other team members and developing appropriate documentation. The role of other actuarial team members is to participate in the interviews and review and modify the initial documentation drafts, as necessary. It is worth repeating that the documentation must be updated as processes change.

### 5. Identify Risks

Once the actuarial reserving process is documented appropriately, the next critical step in the MAR process involves the identification of key risks in the actuarial reserving process that could lead to potential misstatements of the actuarial balances and the financial results. The listing of these key risk/control mechanisms typically is captured in a risk/control matrix (example included as Appendix 3).

The key risk elements of the actuarial reserving process can be segmented into three major phases:

- Preliminary data input,
- Analysis of model or valuation system results,
- Reporting of the actuarial reserving process results.

### ***Preliminary Data Input Phase***

The capabilities and integrity of the company's established data collection processes are the key risk elements of this phase of the actuarial reserving process. A highly centralized operations and IT-controlled data warehouse infrastructure would greatly reduce the potential risks during this phase. A highly decentralized and regionally organized company with varying legacy claims/operations systems would have an increased level of potential key risks.

Some potential risks may include:

- Data may be inaccurate or incomplete;
- Data integrity may not be consistent across regions and/or lines of business;
- Data may not reconcile to reported financial data;
- Data transfer from data warehouse (IT-driven applications) to the actuarial data storage files may be inaccurate and incomplete;
- Data loading from the actuarial storage files to the reserving model/application may be inaccurate and/or incomplete.

The level of data input and the corresponding risks depends on the type of reserve and applicable model. Data input by region and/or line of business may include:

- Historical incurred and paid claims data (claims triangles or claims lag reports);
- Monthly membership/premium earned files by line of business;
- Claims inventory/backlog reports;
- Preauthorized hospital admissions (or days);
- Non-lag based accruals (for example, large/catastrophic claims).

### ***Analysis of Model Results***

The capabilities and integrity of the established actuarial reserving models/applications are the key risk elements of the actuarial reserving process.

Some potential risks may include:

- Inadvertent corruption of the model/application formulae by unauthorized personnel.
- Model/application not updated correctly for current valuation, including
  - Prior valuation balances,
  - Prior valuation actuarial assumptions,
  - Current valuation preparations,
  - Current program/policy features,
- Model/application worksheets not security protected (may be an IT protocol), including
  - Worksheet formulas are not password- range-protected,
  - Model/application stored on "open access" network drives.
- Improper actuarial assumptions/judgments/manual adjustments in analysis phases because the actuary is not experienced in the analysis of a particular program or coverage.



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- Improper documentation of manual adjustments or peer review processes, including
  - Lack of adequate documentation of subjective manual adjustments to model-driven results (i.e., claims, trend, and completion factor manual adjustments),
  - Lack of formal documentation of the peer review process (if not written, the assumption is that the process was not performed).

The breakdown of data into segments to determine a financial statement balance may bring the segmented data elements into scope for MAR §16, even if the breakdowns do not themselves appear in the financial statements. If the accuracy of the breakdown provides significant input into determining a financial statement balance, that breakdown becomes subject to an analysis of its risks and controls.

For example, the controls over accuracy of a detailed breakdown of reserve analysis segments for determining reserves likely may be in-scope—even if these specific detailed breakdowns are not reported in a public financial statement—because the reserves so determined are reported at a higher level of aggregation. If the breakdown is only for management reporting and does not play a role in determining a balance reported in a public financial statement, on the other hand, it may not need to be in-scope. The accuracy of a breakdown or segment actually reported in a public financial statement that is subject to MAR §16 or SOX §404 is considered in-scope.

### ***Reporting of the Process Results***

The financial reporting needs of the company are the key risk elements of this phase of the actuarial reserving process.

The level of the actuarial balance for financial reporting includes but is not limited to financial reporting requirements by region (NAIC and state departments of insurance) and by product type.

Some potential risks may include:

- Inaccurate reporting of the resulting actuarial balance;
- Inappropriate aggregation of resulting actuarial balances based on reporting requirements;
- Lack of reconciliation of the recorded actuarial balance with the indicated balance/approved or prepared by the actuary.

## ***Examples of Key Risks***

### **Examples of Health Key Risks**

Key risks for health companies are similar to the risks described above and relate to the overall key risks involved in actuarial processes. Some areas specific to health relate to particular types of data that may be used within the health process or particular portions of models.

### **Examples of Life Key Risks**

Many of the key risks for life companies are similar to those of health and P/C companies. The following listing expands upon a few of the risks described above, with specific life company examples:

- Manual transfer of data may be incomplete or inaccurate. This has been an important item for asset adequacy testing but becomes a higher risk due to AG 43 and C3, Phases I and II. These calculations require a high number of important inputs that may not be provided by an automated feed from administrative systems or a data warehouse.
- Model assumptions or methodologies may be inconsistent with accounting/actuarial guidance. With the advent of new reserving methodologies (e.g., AG 43), there is a risk that the process will not reflect evolving views on relevant aspects of the regulations.
- The output from spreadsheets may be incorrect (see below).
- Data received from third parties (e.g., reinsurers, TPAs, etc.), may be incomplete or inaccurate. For example, if a company relies on a reinsurer for analysis of mortality to set Life Model Regulation X factors for life reserves, the actuary may need to review the data and analysis to ensure he or she can rely on the work.

### **Examples of P/C Key Risks**

There are many specific risks that could affect P/C insurers and health insurers similarly but are known by different terminologies. A few examples using P/C terminology include:

- Overreliance on a single actuarial methodology,
- Management reserve adjustments,
- Tracking of aggregate deductibles and excess/stop loss/clash reinsurance;
- Loss-sensitive accruals.

These examples are discussed below in more detail.

### **Potential Overreliance on a Single Actuarial Methodology**

This examination will focus on the use of the expected loss ratio methodology and the reported loss development method in the context of a P/C insurer's recorded reserves, recognizing that similar considerations may apply to overreliance on any individual actuarial methodology.

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Initial expected loss ratios (IELRs) commonly are utilized for actuarial unpaid claim estimates related to immature exposure periods. For longer-tailed exposures, the IELR for many years can affect the estimate of ultimate claims associated with the exposure period. The IELR, therefore, is a critical assumption in the reserving process, and, by extension, it is a critical assumption underlying the company's recorded reserves. IELRs typically represent the combined input of pricing actuaries, underwriters, and senior management. A company with good controls has a process in place to document the key assumptions (e.g., rate level changes, loss trends, benefit changes, etc.) that underlie the IELR. For P/C insurers, such price monitoring is not always captured in a formalized manner, and, thus, documentation may be lacking. This is a potential risk factor to consider in the context of the MAR.

As mentioned above, similar considerations apply to the reliance upon other commonly used actuarial methodologies. As an example, a reserving actuary may rely heavily upon the reported loss development methodology for a particular reserve segment. If the reserving actuary is alerted to recent case reserve strengthening by the claims department in this segment, it could affect the reported loss development assumptions made by the reserving actuary. As this is likely to have a direct effect on the company's recorded reserves, the company could document the underlying changes in case reserve strength. The actuary, in turn, could have documentation that validates the claims department's assertions through quantitative testing. In addition, the actuary may consider using alternative actuarial methodologies in such a situation—not doing so could be considered a risk factor.

### **Management Reserve Adjustments**

Insurers are required to record management's best estimate of reserves at the close of each accounting period. For a variety of reasons, management's best estimate may differ from the aggregate reserve level resulting from the actuarial department's recommendations. Information could become available to management subsequent to the valuation date underlying the actuarial recommendation. Management's judgment could be different than that of the company's actuarial department. Under such circumstances, management often will book an adjustment to record management's best estimate. Given the timing requirements of the financial closing process, such an adjustment often can be the only means by which a company may accomplish the requirement of recording management's best estimate. This efficiency, however, may increase the risk of misstatement in other financial statement items.

As an example, if management decides to book an adjustment of \$25 million because it believes new information related to the damages from a hurricane suggest the loss will be higher than previously believed, the adjustment could imply that a corporate reinsurance cover will be triggered, resulting in a net loss of less than the \$25 million adjustment. While this might be an obvious example likely to be considered by the company, there can be situations in which the impact of an adjustment is less obvious. Management adjustments can lead to inconsistencies in the company's recorded reserves and, as such, will be documented as part of the company's reserving and closing process.

### **Tracking of Aggregate Deductibles and Non-Proportional Reinsurance**

P/C insurers may issue deductible policies with aggregate limits or provide reinsurance that is triggered by the erosion of an occurrence and/or aggregate limit. In such cases, the company needs to track losses underlying the limits. To the extent that this process is not automated, the company may not appropriately recognize its exposure to loss and, therefore, may misstate its recorded reserves.

### **Loss-Sensitive Accruals**

In addition to loss reserves, P/C insurers often require loss-sensitive accruals, which are directly related to actuarial loss estimates. Common loss-sensitive accruals include retrospective premium reserves, commissions that are linked to loss performance, and policyholder dividends. Actuaries may estimate these accruals on an account-by-account basis. As an alternative, actuaries may attempt to group accounts and estimate the appropriate accrual in the aggregate. The company may establish a process that allows for consistency between the actuarial assumptions underlying the loss-sensitive accrual and the actuarial assumptions underlying the recorded reserves. The company's documentation of the process by which these accruals are estimated verifies that such consistency is present.

### **Examples of Key Risks that Cross Practice Areas**

Many key risks cross practice areas. Some of the details differ, but the risks are similar. An example is provided below:

#### **Accurate Claim Reporting from MGAs and TPAs**

Many P/C, life, and health insurers contract with entities outside of the organization to manage and report claims. These arrangements may be with MGAs, which typically perform both the underwriting and claims functions under guidelines set by the company. TPAs are entities that perform the claims function. Insurers that underwrite a significant volume of program business through MGAs particularly are exposed to this risk. Appropriate controls need to be in place to ensure that the MGAs and TPAs provide accurate and timely claim information to the company. This process is in-scope for documentation and testing.

## **6. Identify and Design Key Controls**

A control in this context generally can be defined as a check either to prevent or to detect a misstatement in a company's financial reporting. Controls often are focused around specific processes, in which a process is defined as a series of actions that contribute to the ultimate recording of an amount in the financial statements. A control may be associated with a specific action in a process or with a process as a whole.

Management has sole responsibility for the company's financial reporting controls and financial statements as a result of MAR §16 and SOX §404. Therefore, the internal control framework should not be dependent upon any activities performed by the external auditor.

A common first step in defining a control framework is to identify the controls that are in place. One approach is to begin with the documentation of relevant processes, as well as associated risks, and use the existing controls to mitigate the identified risks or to otherwise

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maintain the integrity of the processes. Some examples of controls that are likely already in place include reconciliations, technical reviews, and peer reviews.

Management's assertion of the effectiveness of these controls over the financial reporting process likely will require documentation of how each control operates to mitigate the associated risk. During the initial implementation to meet the needs of management in making the assertion, this documentation likely either will need to be created or remediated.

In addition to the operation of a specific control, several other aspects of the control's operation are documented. The documentation will include details on what is to occur when an issue or exception occurs related to that control. Inclusion of the process in place to resolve those issues or exceptions leads to a more robust control. The documentation also speaks to whether a specific control is intended to prevent or detect misstatements.

Once an identification and review of all existing controls has been completed, the focus turns to any risks that do not have controls in place. When there are risks without any mitigating controls, new controls will need to be designed. The distinction between prevention and detection controls is worth noting when designing them. In some cases, both prevention and detection controls are appropriate and necessary.

The combination of both existing and new controls comprises the control structure. Given this control structure, the following questions should be considered:

- Are the risks that were defined as "key risks" minimized by the control structure?
- Which specific controls are defined as "key controls"?
- If any "key risks" do not have associated controls, are there other compensating controls?
- Is there any redundancy between controls? If so, is that redundancy intended?
- Are the controls that have been identified deemed to be effective?

After the initial identification and design of the controls, the structure may be revisited on a periodic basis. This maintenance includes a review of any changes to the underlying process, a review of the observed effectiveness of the existing controls, an assessment as to whether any new controls are needed, and a general recapitulation of the issues listed above that were considered in the review of the control structure.

As a final note regarding controls and their documentation, current technology likely will have an impact on both. The nature of controls will be affected by the types of systems and software in use. For instance, spreadsheet-based applications (sometimes called end-user applications) often require certain controls, such as security and a review process, to avoid inadvertent errors. Another technology-related consideration is the medium of control documentation, which has been shifting away from paper toward electronic documentation.

## 7. Testing of Controls

### *Testing Framework*

A control framework that has been implemented will require periodic testing to confirm that all controls are functioning as designed and that they remain effective to control or mitigate the associated risks. Several considerations related to this testing are described below.

**Frequency**—The frequency of this review must be determined by each company. It may be on a monthly, quarterly, or semi-annual basis, depending on the type and size of the company and the nature of the risks and controls, as well as the frequency of controls. In addition, testing may be performed on all controls at a given point or on a sampled or select basis. Because the testing is being done in support of management's assertion, the testing for a particular reporting period is completed before the assertion for that reporting period has to be made.

**Parties involved**—The testing is performed by a party that was not directly involved in the underlying process or with the documentation of the performance of the control. The testing of controls often is performed by the internal audit function. This may not be appropriate in the case of the loss reserve process, however, due to the actuarial nature of some controls, as well as the inherent professional experience and judgment that is involved. In these cases, an actuary either may assist the internal audit function in the testing of controls or review the testing performed by the internal audit function.

**Testing approach**—Depending on the nature of each individual control, it may be most appropriate to test it either by inspection or by reperformance. One of these two approaches may be naturally suited for a certain type of control. For instance, it may be appropriate to reperform a reconciliation control, while, in the case of a peer review control, it may be more appropriate to inspect the documentation.

**Documentation**—Because management likely will consider the testing documentation before making an assertion as to the effectiveness of the controls, the documentation of the testing is as important as the documentation of the control structure itself. The manner of documentation will depend on the nature of the control, as well as the approach to testing. Regardless of the manner of documentation, the testing's work product typically will be a consolidation of the support of the functionality of all controls (in paper or electronic form).

**Deficiency handling**—The testing may identify cases in which the controls did not function as intended. In cases in which any deficiencies are identified, an assessment is performed to determine if the deficiency or deficiencies result in a more than remote likelihood of material misstatement. If such a situation exists, the deficiency or deficiencies will need to be remedied and may result in either a change in the operation of the control or a change in the design of the control itself. This feedback between the control testing and the control framework is an important aspect of the process.

**Test Plan**

The overall testing procedure considers each of the points above and may be summarized in a test plan. The test plan is a document that describes the steps for the testing of each of the controls. Separate testing may be performed for the control design and the control effectiveness. As described above, the test plan also considers the actions that will be taken when exceptions or deficiencies are identified. Like the controls themselves, the test plan can be expected to change over time as the risks and associated controls evolve.

If the test plan is designed comprehensively and clearly, then the actual testing of the controls is a straightforward process. The results of this testing are documented and may include an overall conclusion on control effectiveness, control exceptions, deficiencies in documentation of control performance, and any other observations.

**8. Input to the Attestation**

Pursuant to the MAR, the result of the processes described earlier is a report, and, in some cases, an assertion from management on its internal controls over financial reporting.

**Levels of Deficiency**

To provide context for the types of disclosures required under the MAR, it is helpful to refer to the levels of deficiencies and implications of these deficiencies as implemented in SOX §404:

Type of Deficiency	Criteria
Deficiency	Neither a significant deficiency nor a material weakness
Significant Deficiency	Results in a more than remote likelihood of a more than inconsequential misstatement
Material Weakness	Results in a more than remote likelihood of a material misstatement

Under MAR §16, management’s report shall include:

Disclosure of any unremediated material weaknesses in the internal control over financial reporting identified by management. Management is not permitted to conclude that the internal control over financial reporting is effective to provide reasonable assurance regarding the reliability of the financial statements in accordance with statutory accounting principles if there are one or more unremediated material weaknesses in its internal control over financial reporting...<sup>5</sup>

<sup>5</sup> NAIC Annual Financial Reporting Model Regulation, Section 16, Part D

### **Control Failures in Actuarial Processes**

Actuarial processes result in recommendations that materially affect financial statement results. Control failures within actuarial processes, therefore, can lead to material misstatements of the financial statements.

There are several aspects of actuarial processes that can result in control failures. Actuarial processes frequently make use of data that are different from the data underlying the financial statements (often included in the list of key risks). Examples of these data include limited loss- development triangles, historical underwriting performance of renewal books of business, and large loss runs. There are legitimate reasons for the differences in actuarial data and data underlying the financial statements. Such differences present a risk of inconsistency between the information used to derive actuarial estimates of unpaid claims and the information that flows into the financial statements. Control failures generally are found through the testing process. The testing may reveal that a control is not working or that the documentation related to the operation of the control is not found.

Control failures within actuarial processes can occur in areas other than data integrity.

Examples include:

- Spreadsheet errors in actuarial analyses;
- Incorrect qualitative and/or quantitative information from claims, underwriting, and pricing actuaries;
- Missing or ineffective peer review.

Actuaries are an integral part of the company's process for designing and testing internal controls related to actuarial processes. Processes such as peer review, sign-off, and others described earlier can be effective means of mitigating the risks of control failures in actuarial processes.

### **Materiality of Control Failures**

A control failure within an actuarial process does not necessarily imply a significant deficiency or material weakness for the company at a specific financial reporting date. This assessment is dependent on the impact of the control failure on the financials relative to the company's level of materiality. The actuary is involved in the determination of the impact of any identified control failures related to actuarial processes and the resulting assessment of their materiality. Such involvement allows the actuary to play a key role in assisting company management with fulfilling its obligations under MAR §16 and SOX §404. In turn, the actuary will be part of remediation efforts intended to repair the conditions leading to control failures and will monitor the continual improvement in processes involving risks that can cause control failures.

## **9. End-User Computing**

Spreadsheets and databases are used extensively by actuaries in the financial reporting process. Appropriate controls are necessary to prevent material misstatements of financial results. Due to the volume of files generated, some companies will vary the extent of controls on spreadsheets and databases, based on their inherent risk. Spreadsheets and databases can



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be identified as high- or low-risk, based on the potential financial impact, the complexity and functions, the number of users, and the frequency and extent of changes made.

For low-risk spreadsheets and databases, controls may be limited to access, backup, and password protection. Controls for high-risk files are more extensive and may include:

- A general documentation tab identifying the owner and purpose of the file;
- A change log listing changes to the file and documented review;
- Periodic retesting to verify that the data are being processed as anticipated and that unintended changes have not been made to critical calculations;
- Backup of all spreadsheets used to develop in-scope balances with all source data and formulas intact, rather than allowing dynamic spreadsheets to be overlaid and actual source spreadsheets to be lost;
- Strict version control.

Testing depends on the controls that are in place but generally consists of verifying access and backup, that files are password protected, that changes have been logged, and that reviews and recalculations have been performed and reviewed.

A company may conduct an initial testing of all spreadsheets and databases and, in subsequent periods, test only a sample. In the alternative, if the files are risk-rated, more testing can be performed on high-risk files as compared to low-risk files. Because spreadsheets are extremely difficult to control, the peer-review process that tests for the reasonableness of the results may act as a compensating control for some direct spreadsheet controls. Whatever the approach taken, adequate controls will require sufficient testing to provide management with the assurance that the process is well-controlled.

## 10. Potential Key Areas of Actuarial Involvement

Actuaries may play a role in assisting companies to comply with such companies' obligations under MAR §16 and SOX §404. Key actuarial responsibilities that have been discussed in this practice note include:

### *Documenting Recorded Actuarial Balances and Related Balance-Sheet Items*

Actuaries help companies determine the recorded balances in the financial statements, which typically have a significant impact on the financial results of the company and on its perceived financial strength. As such, actuaries are in a position to assist senior management in documenting the methodology and thought processes underlying these carried balances, as well as other balance-sheet items that are influenced by actuarial estimates.

### *Identifying Key Risks*

Actuaries are in an ideal position to identify key risks that materially could affect the results of the actuarial reserve review process and, by extension, the company's carried balances.

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### Designing and Documenting Controls (High-Level)

Actuaries are prepared to design and document the high-level controls surrounding the actuarial reserve review process that address the key risks, including:

- Preliminary data input,
- Analysis of model results,
- Reporting of process results.

### Designing and Documenting Controls (Detailed Items)

Actuaries also are prepared to advise management and implement the control process associated with the reserve review process, including:

- Data reconciliations;
- Technical reviews;
- Peer reviews;
- Technical qualifications of personnel;
- Existence of policies or guidelines;
- Performance of analysis;
- End-user computer applications.

## 11. Conclusion

Compliance with MAR §16 and SOX §404 is an ongoing process complicated by the continually changing dynamic of the actuarial valuation process and the company's changing insurance risks. The compliance cycle will be implemented each year and will include updating documentation, risk assessments, and control design as companies change. Some circumstances that may require more than a cursory update include:

- New policy and claims processing systems;
- New actuarial software;
- New methodologies or processes for valuing reserves;
- New products;
- Reorganizations within the company;
- Newly recognized risks;
- Changes in booking procedures for reserves;
- New and evolving accounting standards, such as International Financial Reporting Standards.

While significant time and resources may be required initially, there usually are significant savings in future periods with the development of a sound control process. The resource commitment required for a company to comply with MAR §16 will be more significant for companies not already compliant with SOX §404. Nevertheless, it is important to consider the additional staffing and time commitment necessary to assure compliance under the new MAR requirements.

Actuaries may be able to significantly contribute to the financial oversight and regulatory compliance of insurance companies. For many actuaries, particularly those who have not been directly affected by SOX §404, there may be significant changes to the documentation

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requirements and controls associated with the actuarial balance determination process as a result of the MAR. This practice note is intended to assist all actuaries in supporting management's assertion per MAR §16 and SOX §404 as it relates to the evaluation and testing of key controls around the actuarially determined amount of assets and liabilities within the financial reporting process.

## Section 16 of the Model Audit Rule

### Section 16. Management's Report of Internal Control over Financial Reporting

- A. Every insurer required to file an Audited financial report pursuant to this regulation that has annual direct written and assumed premiums, excluding premiums reinsured with the Federal Crop Insurance Corporation and Federal Flood Program, of \$500,000,000 or more shall prepare a report of the insurer's or Group of insurers' Internal control over financial reporting, as these terms are defined in Section 3. The report shall be filed with the commissioner along with the Communication of Internal Control Related Matters Noted in an Audit described under Section 11. Management's Report of Internal Control over Financial Reporting shall be as of December 31 immediately preceding.
- B. Notwithstanding the premium threshold in Subsection A, the commissioner may require an insurer to file Management's Report of Internal Control over Financial Reporting if the insurer is in any RBC level event, or financial condition as defined in (include reference to Corrective Action statute).
- C. An insurer or a Group of insurers that is
- (1) directly subject to Section 404;
  - (2) part of a holding company system whose parent is directly subject to Section 404;
  - (3) not directly subject to Section 404 but is a SOX Compliant Entity; or,
  - (4) a member of a holding company system whose parent is not directly subject to Section 404 but is a SOX Compliant Entity

may file its or its parent's Section 404 Report and an addendum in satisfaction of this Section 16 requirement provided that those internal controls of the insurer or Group of insurers having a material impact on the preparation of the insurer's or Group of insurers' audited statutory financial statements (those items included in Section 5B through 5G of this regulation) were included in the scope of the Section 404 Report. The addendum shall be a positive statement by management that there are no material processes with respect to the preparation of the insurer's or Group of insurers' audited statutory financial statements (those items included in Section 5B through 5G of this regulation) excluded from their Section 404 Report. If there are internal controls of the insurer or Group of insurers that have a material impact on the preparation of the insurer's or Group of insurers' audited statutory financial statements and those internal controls were not included in the scope of the Section 404 Report, the insurer or Group of insurers may either file (i) a Section 16 report, or (ii) the Section 404 Report and a Section 16 report for those internal controls that have a material impact on the preparation of the insurer's or Group of insurers' audited statutory financial statements not covered by the Section 404 Report.

- D. Management's Report of Internal Control over Financial Reporting shall include:

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- (1) A statement that management is responsible for establishing and maintaining adequate Internal control over financial reporting;
- (2) A statement that management has established Internal control over financial reporting and an assertion, to the best of management's knowledge and belief, after diligent inquiry, as to whether its Internal control over financial reporting is effective to provide reasonable assurance regarding the reliability of financial statements in accordance with statutory accounting principles;
- (3) A statement that briefly describes the approach or processes by which management evaluated the effectiveness of its Internal control over financial reporting; and
- (4) A statement that briefly describes the scope of work that is included and whether any internal controls were excluded;
- (5) Disclosure of any unremediated material weaknesses in the Internal control over financial reporting identified by management as of December 31 immediately preceding. Management is not permitted to conclude that the Internal control over financial reporting is effective to provide reasonable assurance regarding the reliability of financial statements in accordance with statutory accounting principles if there is one or more unremediated material weaknesses in its Internal controls over financial reporting.;
- (6) A statement regarding the inherent limitations of internal control systems; and
- (7) Signatures of the chief executive officer and the chief financial officer (or equivalent position/title).

E. Management shall document and make available upon financial condition examination the basis upon which its assertions, required in Subsection D above, are made. Management may base its assertions, in part, upon its review, monitoring and testing of internal controls undertaken in the normal course of its activities.

- (1) Management shall have discretion as to the nature of the internal control framework used, and the nature and extent of documentation, in order to make its assertion in a cost effective manner and, as such, may include assembly of or reference to existing documentation.
- (2) Management's Report on Internal Control over Financial Reporting, required by Subsection A above, and any documentation provided in support thereof during the course of a financial condition examination, shall be kept confidential by the state insurance department.

## Section 404 of Sarbanes-Oxley

Sec. 7262. Management assessment of internal controls

-STATUTE-

(a) Rules required

The Commission shall prescribe rules requiring each annual report required by section 78m(a) or 78o(d) of this title to contain an internal control report, which shall -

(1) state the responsibility of management for establishing and maintaining an adequate internal control structure and procedures for financial reporting; and

(2) contain an assessment, as of the end of the most recent fiscal year of the issuer, of the effectiveness of the internal control structure and procedures of the issuer for financial reporting.

(b) Internal control evaluation and reporting

With respect to the internal control assessment required by subsection (a) of this section, each registered public accounting firm that prepares or issues the audit report for the issuer shall attest to, and report on, the assessment made by the management of the issuer. An attestation made under this subsection shall be made in accordance with standards for attestation engagements issued or adopted by the Board. Any such attestation shall not be the subject of a separate engagement.

-SOURCE-

(Pub. L. 107-204, title IV, Sec. 404, July 30, 2002, 116 Stat. 789.)

# Appendix 1

## Example of Actuarial IBNP Narrative

### A. Summary of Activity

The medical claims liabilities (commonly known as unpaid claims liabilities or UCL) are liabilities for all medical claim amounts incurred but not yet reported (IBNR) and incurred and reported but not yet paid (pending claims). The combination of these liabilities commonly is referred to as liabilities for claims incurred but not yet paid (IBNP). IBNP liability estimates are developed using actuarial principles and assumptions that consider, among other things, contractual requirements, historical utilization trends and payment patterns, benefits changes, medical inflation, product mix, seasonality, membership, and other relevant factors. Actuarial standards of practice generally require the actuarially developed medical claims estimates to cover obligations under an assumption of moderately adverse conditions. The company has a stated policy of including an explicit margin (i.e., provision for adverse deviation—PAD) in its estimation process. Medical claims liabilities are recorded at an amount the company determines to be appropriate.

IBNP (as of 12/31/20XX)

\$ YYY,YYY,YYY

### B. Key Definitions/Acronyms

Expression	Definition
IBNP	Incurred but not paid
Completion Factor	Percentage paid of total estimated incurred claims
Lag Tables	Excel spreadsheet models that track and calculate claims incurred and either paid, not paid, or not reported
Provision for Adverse Deviation (PAD)	Explicit margin included in the reserve estimate to protect against adverse deviation from expected results
Loss Adjustment Expense (LAE)	Liability for the administrative cost of processing claims associated with the IBNP liability

## C. Key IT Applications

Application Name	Purpose
Data Warehouse	Database storage of claims and membership information
Impromptu	Functionality within data warehouse that allows user to run various summary reports and queries

## D. Process Narrative

### *Data Collection*

1. A current-month folder is created on the company actuarial drive. All folders and files from the previous month's folder are copied into the folder for the current month, changing the names of the folders and files to indicate the current month. Before the current-month load is added, verify that the prior-month balances agree with the prior-month file.
2. After the data warehouses have been updated with the current-month claims data, impromptu queries are run to pull down the year-to-date monthly paid claims and membership data by line of business and region into a ".csv" file. Before these queries are run, they must be updated to query the appropriate range of dates.

### *Data Formatting and Model Setup*

3. At the beginning of each calendar year, the "UpdateYearEnd" macro in the reserving model is run to format the sheet to accommodate the monthly data for the current year. For the year-end reserve analysis, data from the prior 60 months are used in the reserve calculation. The macro configures the model to handle the most recent 60 months of data by shifting historical data and calculations and creating areas for current-year data and calculations. When the macro has finished updating the file, the analyst reviews the lag formulas and historical data for accuracy.
4. The analyst then imports the data into the Excel-based reserving model to form the claim triangles. The loaded claims triangles then are peer-reviewed by a different analyst. The peer reviewer verifies the data by balancing the lag to the unaltered data from the queries to determine that the information was loaded completely and accurately into the model.
5. The membership reporting team within actuarial services is responsible for developing a monthly enrollment report for each line of business in each region. This report is developed by an analyst on the membership reporting team and is peer-reviewed by



another analyst on the team. The reviewer records the review by electronically signing and dating the enrollment report. The actuarial analysts reconcile the membership data from their lag tables to the enrollment report produced by the membership reporting team. Enrollment data are reconciled at the regional-line-of-business level. Any discrepancies are investigated and resolved before the financial statements are finalized.

### ***Initial Analysis and Managerial Review***

6. The reserve model used by the company is an Excel-based model that applies actuarial algorithms to develop claims using a lag/completion factor methodology. Each lag is copied into an Excel worksheet containing the reserve model for the specific lag through the process described above. To maintain the integrity of the reserve model, key formulas are password-protected, and all others are periodically reviewed for accuracy. The reserve models and related reports are maintained on network drives restricted to authorized personnel only, while read-only documents are maintained on the main actuarial drive for analysis purposes.
7. The model calculates completion factors for the current claims triangle. The calculation engine is capable of calculating completion factors using four different methods. Two of these methods use either six or 12 of the most recent months of historical-paid-claim data. The other two methods exclude the minimum- and maximum-paid-claim amounts from the most recent six months or most recent 12 months of historical-paid-claim amounts.
8. Upon review of these completion factor tables, the analyst runs the “UpdateReserveMonth” Excel macro. In this macro, the analyst chooses the reserve valuation month along with the completion factor method that he or she would like to apply to the reserve calculation. After these choices are made, the macro places these completion factors into the reserve calculation section of the model.
9. The calculated completion factors using the chosen method then are compared to a basic completion factor derived by dividing the amount paid on claims through the prior year on claims incurred in a given month by the amount paid on claims incurred in that same month through the current date. The default methodology is to choose the smaller of these two numbers, which produces a more conservative reserve. This process produces a preliminary reserve estimate.
10. Once a completion-factor method is chosen, the analyst has the ability to manually adjust monthly completion factors as he or she deems appropriate. Changes to the completion factors can be made by overwriting or by adding/subtracting a desired amount from the completion factors produced in the preceding step.
11. In choosing the completion-factor method, and in making any changes to the specific monthly completion factors, the analyst injects a measure of professional judgment into the process. Along with the claims and membership data, the analyst will draw on known operational factors that are not input directly into the IBNP model. Information used may

include knowledge of specific operational challenges that may affect the rate of claim settlement for a given region or line of business, as well as any information from the claims department concerning large claim amounts. This knowledge is supplemental to the actuarial judgment process and may be used to support deviations from internally developed reserving standards. This information is documented within the file for clarification during management's review.

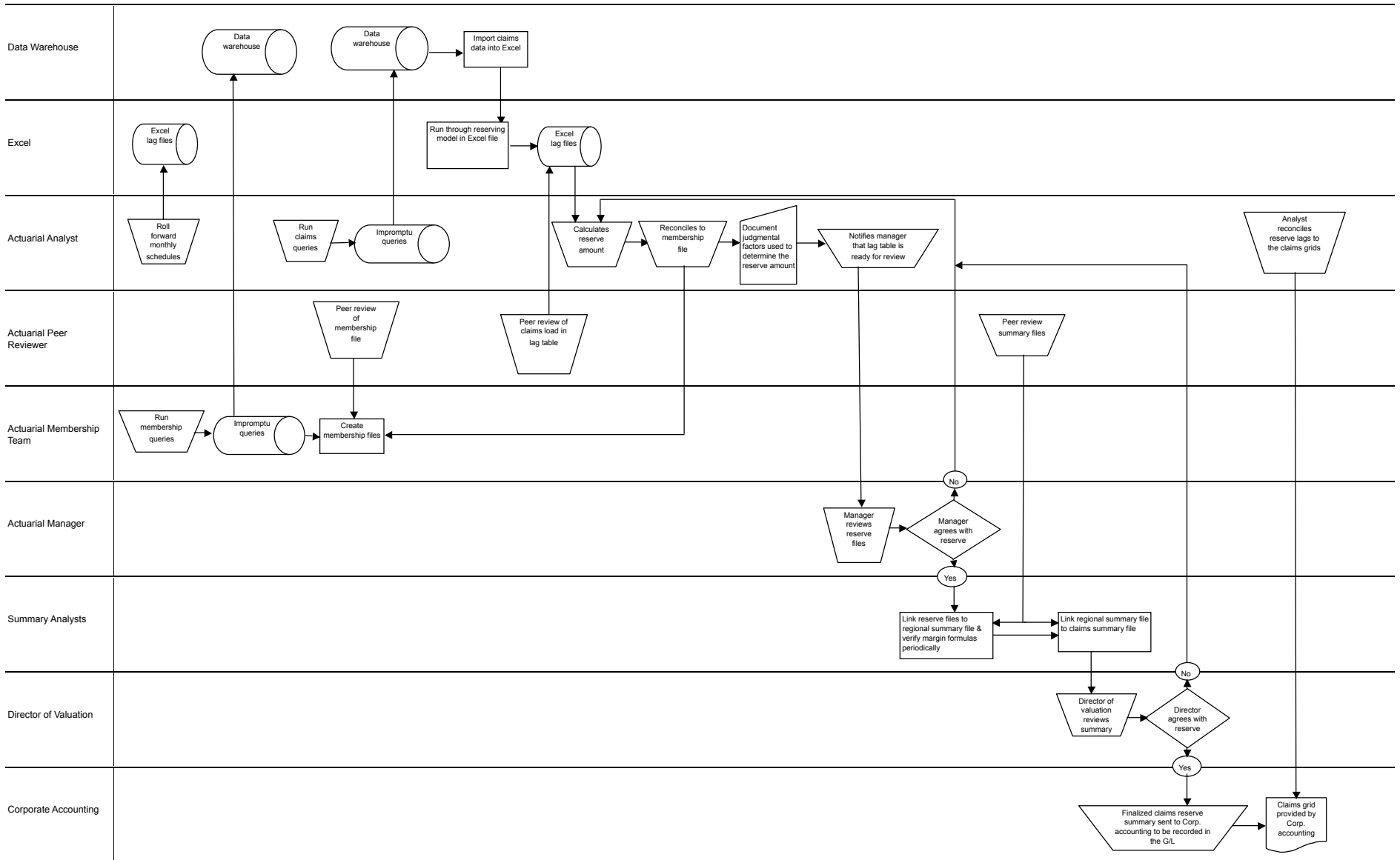
12. Using the completion factors, the model calculates an estimate of the IBNP reserve. The model only calculates one reserve estimate, as the impact of only one set of completion factors can be displayed at a time.
13. When the analyst is satisfied that he or she has developed his or her best estimate, the analyst signs and dates the report and notifies his or her manager that the reserve calculation is ready for review.
14. The manager reviews the work of the analyst and recommends any changes that he or she would like to see made. Like the analyst, the manager uses a measure of professional judgment in the review process. Along with the considerations taken into account by the analyst, the manager utilizes an aggregate-claims-inventory report by region, prepared by operations, as well as a pending-claims report provided by the Treasury Department. If necessary, the analyst revisits the reserve calculation and makes any changes requested by the manager. Once the changes have been made, the analyst again signs and dates the reserve calculation. The manager then reviews the report for final approval, which is indicated by the manager signing and dating the report.
15. Once the manager is satisfied with the reserve estimates, he or she notifies the analyst that the estimate is ready to be included in the regional-claims summary used to compile all reserve estimates for the specific region.
16. A regional-claims summary is compiled by a valuation analyst in that region. These summary sheets contain links to the specific cell in each reserve calculation sheet that contains the final reserve estimate. After the summary has been updated, it is peer-reviewed to verify that the correct reserve values have been included.
17. After the reserve estimates are verified, a PAD, or reserve margin, is calculated for each line of business in the region within the summary sheets. The levels of PAD used vary by types of business, with a 10 percent PAD used for fully insured lines of business, 5 percent PAD for partially insured lines of business (for example, minimum-premium plans), and 0 percent PAD for New York state government programs, including Medicaid, Child Health Plus, and Family Health Plus. The analyst who compiles the regional claims summary sheets is responsible for reviewing the PAD calculation periodically to verify that the appropriate margin percentages are applied correctly to various lines of business.
18. Once the regional summaries have been completed, another valuation analyst links the current-month summaries to the company claims reserve summary, which encapsulates

all lines of business from all regions. After the summary has been updated, it is peer-reviewed to verify that the correct reserve values have been included.

### ***IBNP Finalization of Results***

19. The claims reserve summary is sent to the director of valuation for review. The reserve estimates are reviewed for reasonableness, with special attention paid to the lines of business with large IBNP reserves. Using professional judgment, the director may review individual lag tables for reasonableness. Any changes requested by the director are sent to the manager and then passed back down the chain to the analyst, who makes the requested changes.
20. Once the director of valuation is satisfied with the reserve estimate for all lines of business, he or she signs off on the finalized claims reserve summary, and it is sent to the corporate accounting department to be recorded in the general ledger. (Refer to the Ledger Interface Process.)
21. Once the corporate accounting department records its journal entries for the month, it creates the monthly claims grid from the general ledger system (refer to the ledger interface process), which is the paid claims by region and line of business for the month. The actuarial analysts reconcile the paid claims data from their lag tables to the claims grid. Data are reconciled at the regional line-of-business level. Any discrepancies are investigated and resolved before the financial statements are finalized.
22. Loss adjustment expense (LAE) is a liability for the cost of administration for the IBNP claims. The amount of LAE is determined as a flat percentage of the IBNP liability estimates. The determination of the LAE percentage and the correct application of the percentage to the IBNP liability estimates is the responsibility of the corporate accounting department. Please refer to the appropriate corporate accounting control process.

**Appendix 2  
Actuarial Process  
Example of IBNP Flowchart**



### Appendix 3: Example of Actuarial Process IBNP Risk Control Matrix

Cycle	Paragraph	Control #	Control Activities	Control Objective	Control Risk	Evidence	Walkthrough Gap Identified
9		1	Formulas within the model are reviewed on a periodic basis for accuracy.	IBNP models are calculated properly and as designed.	IBNP models (Excel files) have not been adjusted or inadvertently corrupted, which could lead to a miscalculation (e.g., formulas missing, corrupted macros, etc.).	<b>Signed and dated review of IBNP models</b>	No evidence of review
9		2	Reserve models and related data and summaries are stored on network drives, which limit access to authorized personnel.	IBNP models are calculated properly and as designed.	IBNP models (Excel files) have not been adjusted or inadvertently corrupted, which could lead to a miscalculation (e.g., formulas missing, corrupted macros, etc.).	<b>Limited access to network drives storing lag tables and data</b>	Access not currently limited
9		3	Read-only access to reserve models and related data and summaries is provided on a separate drive for analysis purposes.	IBNP models are calculated properly and as designed.	IBNP models (Excel files) have not been adjusted or inadvertently corrupted, which could lead to a miscalculation (e.g., formulas missing, corrupted macros, etc.).	<b>Read-only access provided to non-authorized personnel</b>	Access not currently limited
9		4	Key formulas in the model are password-protected	IBNP models are calculated properly and as designed.	IBNP models (Excel files) have not been adjusted or inadvertently corrupted, which could lead to a miscalculation (e.g., formulas missing, corrupted macros, etc.).	<b>Spreadsheet password-protected</b>	Not currently range protected
9		5	The prepared lag tables are reviewed by an actuarial manager for reasonableness.	IBNP models are calculated properly and as designed.	IBNP models (Excel files) have not been adjusted or inadvertently corrupted, which could lead to a miscalculation (e.g., formulas missing, corrupted macros, etc.).	<b>Signed and dated review of IBNP models by management</b>	No evidence of review
9		6	Each lag table is balanced to the claim grid from the general ledger system. Refer to ledger interface process.	Claims lag reports are complete and appropriately bucketed by both date of service and type of service.	Claims lag reports are not complete or appropriately bucketed by both date of service and by type of service.	<b>Signed and dated acknowledgement of balancing on lag tables</b>	No evidence of balancing
9		7	Prior month balances are verified as the first step of calculating the current month models.	Claims lag reports are complete and appropriately bucketed by both date of service and type of service.	Claims lag reports are not complete or appropriately bucketed by both date of service and by type of service.	<b>Signed and dated review of IBNP models</b>	No evidence of review

### Appendix 3: Example of Actuarial Process IBNP Risk Control Matrix

Cycle	Paragraph	Control #	Control Activities	Control Objective	Control Risk	Evidence	Walkthrough Gap Identified
9		8	After the paid claims are loaded into the lag tables for the current month, they are peer reviewed by balancing the loaded table to the raw data from the data warehouse to verify that the claims were loaded accurately and completely.	Data elements (paid claims, membership, bed days, etc.) are accurately entered into each IBNP model.	Data elements (paid claims, membership, bed days, etc.) are not accurately entered into each IBNP model.	<b>Signed and dated acknowledgement of balancing on lag tables by peer reviewer</b>	No segregation of duties. The person loading the claims also performs the reconciliation.
9		9	Each lag table is balanced to the claim grid from the general ledger system. Refer to ledger interface process.	Data elements (paid claims, membership, bed days, etc.) are accurately entered into each IBNP model.	Data elements (paid claims, membership, bed days, etc.) are not accurately entered into each IBNP model.	<b>Signed and dated acknowledgement of balancing on lag tables</b>	No evidence of the agreement with accounting
9		10	IBNP membership is reconciled with the monthly membership report.	Data elements (paid claims, membership, bed days, etc.) are accurately entered into each IBNP model.	Data elements (paid claims, membership, bed days, etc.) are not accurately entered into each IBNP model.	<b>Reconciliation of membership maintained</b>	
9		11	Standard baseline deviations are documented.	Judgmental factors that are included in the IBNP calculations, such as seasonality adjustments, demographic adjustments, and projection method selection, are reasonable and appropriate.	Judgmental factors that are included in the IBNP calculations, such as seasonality adjustments, demographic adjustments, and projection method selection, are not reasonable or appropriate.	<b>Documented reasons for deviation included in reserving methods</b>	Reasons for deviation from baseline are not documented on the lag tables.
9		12	The prepared lag tables are reviewed by an actuarial manager for reasonableness.	Judgmental factors that are included in the IBNP calculations, such as seasonality adjustments, demographic adjustments, and projection method selection, are reasonable and appropriate.	Judgmental factors that are included in the IBNP calculations, such as seasonality adjustments, demographic adjustments, and projection method selection, are not reasonable or appropriate.	<b>The finalized lag tables are signed and dated by the reviewing manager.</b>	No evidence of review
9		13	The monthly claims reserve summary report is reviewed by the director of valuation. The review includes comparison with prior month data.	Judgmental factors that are included in the IBNP calculations, such as seasonality adjustments, demographic adjustments, and projection method selection, are reasonable and appropriate.	Judgmental factors that are included in the IBNP calculations, such as seasonality adjustments, demographic adjustments, and projection method selection, are not reasonable or appropriate.	<b>The finalized claims reserve summary report is signed and dated by the director of valuation before it is sent to accounting.</b>	No evidence of review

### Appendix 3: Example of Actuarial Process IBNP Risk Control Matrix

Cycle	Paragraph	Control #	Control Activities	Control Objective	Control Risk	Evidence	Walkthrough Gap Identified
9		14	The analyst signs and dates the prepared lag tables. Any subsequent changes are saved to another version of the file and again signed and dated by the analyst and the appropriate level of management.	The monthly reserve estimates provided to accounting by actuarial are correct.	Incorrect monthly reserve estimates are provided to accounting.	<b>Version control of lag tables and signatures with dates for changes made</b>	No version control or evidence of review or changes to lags
9		15	The completed regional reserve summary is peer reviewed after preparation to the reserve files to verify its accuracy.	The monthly reserve estimates provided to accounting by actuarial are correct.	Incorrect monthly reserve estimates are provided to accounting.	<b>The peer reviewer analyst signs and dates the regional reserve summary after his/her review.</b>	No evidence of review
9		16	The completed claims reserve summary is peer reviewed after preparation to the regional reserve summaries to verify its accuracy.	The monthly reserve estimates provided to accounting by actuarial are correct.	Incorrect monthly reserve estimates are provided to accounting.	<b>The peer reviewer analyst signs and dates the claims reserve summary after his/her review.</b>	No evidence of review
9		17	Each lag table is balanced to the claim grid from the general ledger system. Refer to ledger interface process.	The monthly reserve estimates provided to accounting by actuarial are correct.	Incorrect monthly reserve estimates are provided to accounting.	<b>Signed and dated acknowledgement of balancing on lag tables</b>	No evidence of review
9		18	The analyst that compiles the regional claims summary sheets periodically reviews the PAD calculation to verify that the margins applied to various lines of business are correct.	The monthly reserve estimates provided to accounting by actuarial are correct.	Incorrect monthly reserve estimates are provided to accounting.	<b>Analyst signs and dates file once calculations have been checked.</b>	No evidence of review
9		19	The monthly membership report is peer reviewed for accuracy.	Data elements (paid claims, membership, bed days, etc.) are accurately entered into each IBNP model.	Data elements (paid claims, membership, bed days, etc.) are not accurately entered into each IBNP model.	<b>Peer reviewer signs and dates the membership report after reviewing.</b>	