

CASUALTY ACTUARIAL AND STATISTICAL (C) TASK FORCE

Casualty Actuarial and Statistical (C) Task Force Dec. 6, 2009, Minutes
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Casualty Actuarial and Statistical (C) Task Force Nov. 10, 2009, Conference Call Minutes (Attachment Two)
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Casualty Actuarial and Statistical (C) Task Force
San Francisco, CA
December 6, 2009

The Casualty Actuarial and Statistical (C) Task Force met in San Francisco, CA, Dec. 6, 2009. The following Task Force members participated: Thomas R. Sullivan, Chair, represented by Richard Marcks (CT); Mary Jo Hudson, Vice Chair, represented by Mary Miller (OH); Linda S. Hall represented by Sarah McNair-Grove (AK); Jim L. Ridling represented by Charles Angell (AL); Steve Poizner represented by Ron Dahlquist (CA); Gennet Purcell represented by Nathaniel Kevin Brown (DC); Michael T. McRaith represented by Robin Westcott (IL); Sandy Praeger represented by Larry Bruning (KS); Scott J. Kipper represented by Marie Holt (NV); Teresa Miller represented by Rae Taylor (OR); Joel Ario represented by Dave DelBiondo (PA); Scott H. Richardson represented by Leslie Jones (SC); Kent Michie represented by Tomasz Serbinowski (UT); Mike Kreidler represented by Lee Barclay (WA); and Jane L. Cline represented by Mike Riley (WV). Also participating were: Al Wickman (NE); and Alan Seeley (NM).

1. Catastrophe Modeling Handbook Proposal

Mr. Marcks said the recommendations for changes to the *Catastrophe Modeling Handbook* were exposed for comment until Dec. 1; no comments were received. Reid Edwards (Risk Management Solutions) said he thought the Subgroup did a fine job updating the handbook. Mr. Barclay moved to adopt the proposed changes (Attachment One). The motion was seconded by Mr. Angell and passed unanimously.

2. 2007 Homeowners Report

Mr. Barclay moved to adopt the *2007 Dwelling Fire, Homeowners Owner-Occupied, and Homeowners Tenant and Condominium/Cooperative Unit Owner's Insurance* (Homeowners Report). The motion was seconded by Ms. Miller and passed unanimously. The report will be available for purchase from the NAIC.

3. Competition Database

Mr. Barclay said that, pursuant to the NAIC Policy Statement on Open Meetings, the Statistical Issues Subgroup will have a regulator-to-regulator call Dec. 15 to discuss and potentially recommend the 2009 *Competition Database Report* for adoption by the Task Force.

4. Uniform System for Medical Professional Liability Closed Claim Reporting

Mr. Barclay said NAIC staff is evaluating the cost to build a uniform system of reporting claims in support of the *Medical Professional Liability Closed Claim Reporting Model Law* (#77). Lisa Smego (WA) met with NAIC staff via webinar to show Washington's reporting system. Mr. Barclay said there is tension, and perhaps some pushback, from the states that collect more information than what is required by the model law. Because the model law is not yet adopted by states, it is not clear what reporting will be required by the states. Ms. Miller said she was not sure that Ohio would modify its law, given this is not a hot topic. Mr. Wickman said some states will not adopt the model law because they have already enacted broader requirements. He said the focus should be on a baseline of reporting prior to building in modifications to encompass those states with different reporting requirements.

Mr. Barclay moved to ask the NAIC staff to provide an estimate of the feasibility and cost to create a medical professional liability closed claim reporting system suitable for multiple states to receive data required by the model law. The motion was seconded by Ms. Miller. With notation from Mr. Marcks that the motion does not include a study of the issue of confidentiality, the motion passed unanimously.

5. Principles-Based Reserving

Mr. Bruning said Plenary passed the *Standard Valuation Law* contingent upon the Valuation Manual and formulaic floors being completed by the end of 2009. The Valuation Manual has been created for variable annuities and credit life and disability. The Life and Health Actuarial Task Force has asked the Life Insurance and Annuities (A) Committee if they are willing to grant an extension so that the Valuation Manual can become more complete, by including life insurance and health insurance. The Task Force proposes that these lines of business can be added by August 2010.

6. Title Insurance

Mr. Seeley said that from a survey answered by every state, the Title Insurance Issues (C) Working Group found that more than half have authority to collect data from title agents. The Working Group established a subgroup to design a nationwide statistical plan. The Working Group also developed a state page to obtain key information from title insurers that will be implemented with 2010 annual reporting.

7. Solvency Modernization Initiative

The International Solvency (EX) Working Group met jointly Dec. 3 with the International Association of Insurance Supervisors' (IAIS) Solvency and Actuarial Issues Subcommittee. Discussion centered on enterprise risk management (ERM) and own risk and solvency assessment (ORSA) requirements implemented or proposed throughout the world. After Ms. Miller explained the U.S. risk-focused surveillance process, the IAIS ERM and ORSA requirements and implementation of those requirements in Australia, Canada, Switzerland and the United Kingdom were described.

Numerous Solvency Modernization Initiative (SMI) documents were released for comment. The International Solvency (EX) Working Group released two documents for comment, with comments due by March 1, 2010: 1) a consultation paper on capital requirements and high-level accounting/valuation issues; and 2) a consultation paper on corporate governance and risk management. The Group Solvency Issues (EX) Working Group released numerous documents for comment: *Insurance Holding Company System Model Act* (#440), *Insurance Holding Company System Model Regulation* (#450), Holding Company Best Practices, a draft memorandum discussing the concept and perspectives on group-wide supervision, and the IAIS Draft *Guidance Paper on Treatment of Non-Regulated Entities in Group-wide Supervision*. The Financial Condition (E) Committee released a draft document to describe the current U.S. solvency framework and principles. Once the Committee adopts this document, the Task Force will discuss whether changes are needed to the framework and principles going forward in the SMI.

8. Premium Deficiency Reserves

Ms. Miller said the Blanks (E) Working Group exposed the Task Force's premium deficiency reserve proposal.

9. Financial Sector Assessment Program

Mr. Bruning said the NAIC participated in the International Monetary Fund's (IMF) Financial Sector Assessment Program (FSAP). The program assesses an insurance supervisory system based upon the IAIS' insurance core principles. He said he and other regulators and NAIC staff met with the IMF team in Kansas City. A report is expected to be issued in 2010.

10. Profitability (C) Working Group

Ms. Taylor said the *Profitability by Line by State in 2008* (Profitability Report) should be released before the end of 2009. The Profitability (C) Working Group plans to consider expansion of the lines of business in the report and to examine how premium deficiency reserves are handled in the calculations. The Working Group requests any documentation about decisions made regarding changes to the report in 2000/2001 when the annual statement was changed significantly.

11. American Academy of Actuaries

Craig Hanna (American Academy of Actuaries—AAA) said the Committee on Property and Liability Financial Reporting (COPLFR) should publish its annual Practice Note on Loss Reserve Opinions by year-end; the Property/Casualty Loss Reserve Law Manual is in peer review; another successful Opinion Seminar just concluded in Baltimore; COPLFR set up a subcommittee to address premium deficiency reserves and is taking a proactive stance to study possible recommendations; COPLFR is monitoring the International Financial Reporting Standards (IFRS) insurance contracts paper and will be involved in the AAA's Financial Reporting Council's response to the paper once it is issued in April 2010; and COPLFR is in the early stages of drafting a practice note on the *Annual Financial Reporting Model Regulation* (#205), commonly referred to as the Model Audit Rule.

12. Statistical Issues Subgroup

Mr. Barclay noted the Statistical Issues Subgroup met via conference call Oct. 20 to review the draft *Guideline for Implementation of Medical Professional Liability Closed Claim Reporting*, which supplements the model law. Comments were received from David Hyman (University of Illinois) and Ken Stoller (American Insurance Association—AIA). The Subgroup continues to discuss Parts B through E of the draft guideline. A conference call of the Subgroup is scheduled for Dec. 15 to continue discussion of the proposed guideline.

13. Workers' Compensation Large Deductible Subgroup

Ms. McNair-Grove said the Workers' Compensation Large Deductible Subgroup has not met since Aug. 31. The Subgroup received a summary of the group's recommendations and the pros and cons of the suggested solutions from Jane Conard (NAIC) and will meet soon to discuss that document.

14. Catastrophe Reserve (C) Working Group

Mr. Marcks said that Mike Moriarty (NY) still plans to ask the Task Force to determine how a pre-event catastrophe reserve might affect pricing. The Task Force will await a formal request. Mr. Hanna said the AAA's Property/Casualty Extreme Events Committee's National Catastrophe Subcommittee said there are a lot of variables to consider; every company has different considerations. Mr. Hanna said that if the AAA is asked to assist, it would be beneficial to have members of the Task Force assigned to work with them.

15. Conference Call Minutes

With a motion from Mr. Bruning and second from Ms. Miller, the Task Force adopted interim meeting minutes from the Nov. 10 and Oct. 13 conference calls (Attachments Two and Three).

Having no further business, the Casualty Actuarial and Statistical (C) Task Force adjourned.

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Annotated Bibliography of Selected Presentations on Catastrophe Models at Recent CAS Seminars:

Introduction

The use of Catastrophe models in Ratemaking is an issue of concern to the NAIC Casualty Actuarial and Statistical Task Force, CASTF. The use of Catastrophe Models for various purposes has been an issue of continuing interest and concern to P&C Actuaries for many years. The most current thoughts and concerns are often addressed in CAS Seminars and meetings before they are presented more formally.

What follows is a review of selected handouts from presentations that appear to be relevant to the use of Catastrophe models for ratemaking. These are taken from materials available at the CAS website. Links to the presentations are included in the computer file or the presentations can be found by starting at <http://www.casact.org/education/index.cfm?fa=houts>

In general, the three most recent seminars or meetings were reviewed. The focus of the review and the selection criteria were the limitations of these models and what an actuary and/or business person should do when using the models or considering the output from a model. A regulator reviewing a rate filing that uses the output of a Cat model is also concerned about these or related issues.

Sessions

In the fall of 2002 the CAS had a special Interest Seminar --- Catastrophe Risk Management. One session at the seminar is described as follows:

— *Dealing With the Differences in Hurricane Models* —

[Download Handout 1](#)

[Download Handout 2](#)

When comparing the results of the various models widely used today, many differences can be found in expected catastrophe losses. Regulators and others involved in public policy issues are becoming more and more concerned about the impact these differences can have on consumers. Panelists will discuss the implications of this variability from the perspective of primary insurers and reinsurers.

Moderator:

Ronald T. Kozlowski, *Consulting Actuary, Tillinghast-Towers Perrin*

Panelists:

Martin M. Simons, *ACAS, Public Actuarial Consultant*

William Gardner, *FIAA, Vice President, AON Re Services*

The two handouts cover the following three topics.

- Kozlowski - ASOP #38 - Using Models Outside the Actuary's Area of Expertise
- Simons - Why are hurricane models different?
- Gardner - Quantification of model uncertainty and variations in model results

These presentations can provide a useful background. Many of the issues remain relevant for ratemaking today. Kozlowski describes the development of and expectations in ASOP #38 which is one of the two most relevant ASOPs for cat modeling. Since a revision of this June 2000 standard is pending, this over view of the ASOP provides a useful background for a regulator.

Simon describes the general components of a hurricane model in the 2nd part of the first handout. He provides information on what is behind the models and how the models can be tested

Gardner's presentation is in the 2nd handout. He also examines hurricane models. His presentation has three parts: Modeling based on historic losses, Quantification of Model Uncertainty, and Variations in Licensed Model Results. He starts section one with a definition of a catastrophe (in terms of frequency and severity) and then characterizes models in terms of complexity. He proposes the theory that more complicated models produce more accurate results (with less error). He then shows how PMLs and return periods can be developed from historical data. The second part of the presentation looks at the components of a hurricane model and their contribution to variation in the model results. The last section compares 5 different "licensed" models.

A second session in the Special Interest Seminar is titled and described as follows:

— ***New Developments in Modeling of Catastrophic Events*** —
[Download Handout](#)

After September 11, companies are paying more attention to exposure concentrations from more than just property risks. A number of catastrophe models are being built for workers compensation losses and terrorism events. Representatives from two modeling firms will discuss the mechanics of these new models, citing the development of terrorism event databases and vulnerability functions. There will also be a discussion on how predictable or reliable the modeling of events such as terrorism can be. A modeling cynic will present an alternative view that terrorism models are pure conjecture.

Moderator:

John Flatley, *Employers Reinsurance Corporation*

Panelists:

Jack Seaquist, *Terrorism Model Project Manager, AIR Worldwide Corporation*

Gordon Woo, *Catastrophe Risk Consultant, Risk Management Solutions, Ltd.*

The handout describes efforts to provide models for additional catastrophes, terrorism, and additional lines of insurance, workers compensation. The research and development described is not the most current; however, a sense of the issues involved in developing a model is provided. This knowledge may prove very useful when the next “black swan” wanders across your desk. Unfortunately, the modeling cynic’s view of terrorism models is not captured in a handout.

In the 2007 Ratemaking Seminar there was a session on Hurricane Modeling.

PL-2: Hurricane Modeling 🍊

[Download Handout](#)

After the historical hurricane seasons of 2004 and 2005, the use of hurricane models by insurance and reinsurance companies for decision-making were heavily scrutinized. Modeling companies reacted by providing event sets that reflected short-term estimates of increased frequency and severity and many insurance and reinsurance companies took steps to decrease exposure concentrations in hurricane prone areas.

A relatively calm 2006 hurricane season provides an opportunity for reflection on steps that could enhance hurricane models. In this

session, the panelists, who include a modeling expert from a reinsurance broker and a representative from one of the modeling firms, will discuss modeling from both a technical and a practical point of view. They will also discuss recent changes to the models, as well as the importance of data quality.

Moderator/Panelist:

David Langdon, Vice President, Towers Perrin Reinsurance

Panelist:

David LaLonde, Senior Vice President, AIR Worldwide Corporation

Langdon's talk was titled Hurricane Modeling Using Multiple Modeling Methodologies. He looks at how various hurricane models performed in 2004 and 2005. He then lists issues raised from recent history and considers possible additional analyses such as concentration /mapping, multiple event seasons, TVAR/TCE, and RDS. TVAR is Tail Value at Risk and TCE is Tail Conditional Expectation. RDS is an acronym for Realistic Disaster Scenario. Lloyd's has put a substantial effort into developing these RDSs and expects their managing agents to consider them in their planning and reporting to Lloyds. The first issue concentration / mapping is considered outside the models. He asks the basic question, "What is next door to your insured?" Much of the presentation is terms of a case study. He considers a property insurer focused on largely on commercial business that writes in most of the hurricane exposed states. He says 30% of their exposures are in the Gulf region and Florida and that they have about \$50 billion in hurricane exposed value.

The talk concludes with six issues the property insurer is struggling with. The first two are differences between the answers from the AIR and RIMS models when the inputs are held constant. Three other issues are tied to the consideration of specific scenarios.

In the 2008 Ratemaking Seminar John Rollins gave a presentation as part of the regulatory track, <http://www.casact.org/education/ratesem/2008/handouts/rollins.pdf> which examined the regulatory environment and AIR's current model. Much of the focus on regulatory issues was Florida specific.

One specific Florida organization that can serve as a resource to regulators in other states is the Florida Commission on Hurricane Loss Projection Methodology (FCHLPM) <http://www.sbafla.com/methodology/index.asp> . This group was created during the 1995 Florida Legislative session as an independent panel of

experts to evaluate computer models and other recently developed or improved actuarial methodologies for projecting hurricane losses.

In addition to performing annual evaluation of Hurricane models applied for Florida and determining the acceptability of the models for projecting hurricane loss costs for residential rate filing in Florida, they have performed comparison of the various models using identical input, (see the report to the Florida House of Representatives dated 11/5/07 and the presentation dated 1/24/08 at the following url.

<http://www.sbafla.com/methodology/announcements.asp?FormMode=Call&LinkType=Section&Section=0>)

In the CAS 2007 Spring Meeting there was the session described below:

C26: Uses of Modeling in Workers Compensation

[Download Handout 1](#)

[Download Handout 2](#)

This session discusses how computer modeling was recently applied for use in Workers Compensation ratemaking and how statistical modeling is currently being explored for predicting loss development. First, we will discuss recent modifications made in NCCI ratemaking methodology to handle a) large individual claims, and b) catastrophic events related to the perils of industrial accidents, earthquake, and terrorism. Included within the discussion is how the modeling was done for each peril. Then we will discuss a Bayesian statistical model of loss development and tail factor estimation.

Moderator:

Jeffery Hay

Panelists:

Tom Daley, Director and Actuary, NCCI

Frank Schmid, Director and Senior Economist, NCCI

The 2nd handout is a presentation of a paper in the CAS 2007 Winter Forum describing NCCI's new treatments of catastrophes in estimating the overall rate need in WC ratemaking. A very similar power point slide show was presented by Tom Daley at the CAS 2007 Ratemaking Seminar.

At the time of the presentation the new methodology for large individual losses had been filed in 32 states and approved in 30 states. Cat modes

are developed for terrorism, earthquake, and industrial accidents in various states. All 34 NCCI states allow a provision for foreign terrorism net of federal backstop per TRIA. Twenty-eight of the 33 NCCI states where a DTEC provision (Domestic Terrorism, Earthquake, Cat. Industrial Accidents) was filed allow the provision. The pros and cons of using stochastic models in WC is discussed. List of industrial accident & terrorism cats is included in the appendices.

At the 2008 Spring meeting of the CAS, there was a session titled Catastrophe Modeling Update. It was a presentation below:

C6: Data Quality and the Impact on Cat Modeling Results

[Download Handout](#)

The importance of accurate exposure data in ensuring the accuracy of CAT model output is now recognized by most insurers. While many companies have begun to improve the accuracy of replacement cost estimates, coding of risks and geocoding of addresses, there are still other critical data elements that can have a significant impact on model results.

In this panel discussion, catastrophe modelers will address the most important data quality factors for their catastrophe models and highlight how various levels of data quality can affect the results for the same portfolio.

Moderator:

Benoit Carrier, Actuarial Director, Zurich North America

Panelists:

Hesaam Aslani, Senior Catastrophe Risk Modeler, Risk Management Solutions, Inc.

David Lalonde, Senior Vice President, AIR Worldwide Corporation

The handout is from the talk by David Lalonde, Senior Vice President AIR Worldwide Corporation. He presents some information on the data that insurers had available

Rick Anderson, Chief Actuary, Risk Management Solutions, Inc, gave a similar talk focused on data quality at the 2002 Casualty Actuaries in Reinsurance (CARE) Limited Attendance Seminar on Catastrophe Pricing and Risk Management. The organizers of the Seminar characterized his topic as follows:

The fourth topic of the seminar will address issues related to data quality and catastrophe modeling. GIGO (Garbage In, Garbage Out) is an age-old phrase meaning that a model is only as good as the input data. This part of the seminar investigates some of the issues regarding portfolio data, including the following:

- Geographic resolution
- Known vs. unknown building characteristics
- Quality control
- Ways to measure data quality
- The effects of data quality on the results of catastrophe models.

[Download Handouts](#)

Anderson's presentation consists of the power point slides and extensive presenter notes. He shows how to develop a scoring system so a company can focus their efforts on the data issues that have the most impact on the model results.

At the CAS 2006 Spring Meeting there was a session titled Why Don't Catastrophe Models Work or Do They? The description of the session follows:

Why Don't Catastrophe Models Work or Do They?

[Download Handout 1](#)

[Download Handout 2](#)

The United States has experienced unprecedented catastrophe activity in the last two years. In 2004, we experienced an unusual frequency of hurricanes. 2005 educated us on the severity. As a result, today, insurers and reinsurers are questioning the credibility of the catastrophe models they have been using over the last decade.

Do catastrophe models work? What is in the "black box"? Why didn't we anticipate the 2004 and 2005 events, or were they within the predicted range of the models?

The panel will present the view points from a major modeling firm as well as a user's perspective, and there will be room for questions at the end.

Moderator:

Benoit Carrier, Actuarial Director, Zurich North America

Panelists:

David A. Lalonde, Senior Vice President, AIR Worldwide Corporation

Maria Kovas, Catastrophe Manager, Zurich North America

Lalonde's presentation, the 2nd handout, looks at the 2004 & 2005 hurricane seasons and considers understanding model results. Understanding model results leads to adjusting model output for additional sources of loss and questions about input data. He considers the interactions of the various construction characteristics and says

" It is important to understand how characteristics work together. For a given construction, simultaneously selecting the best vs worst level for each characteristic can yield losses from 26% lower to 54% higher than the base loss for a total loss range of 80%."

The Kovas presentation, the first handout, appears to question the role of models and suggests a return to basics; however, without hearing the presentation the viewer of the slides is left uncertain of her thesis and arguments.

The 2008 Seminar on Reinsurance had a session on Workers Compensation Cat Pricing. One presentation describes the AIR model for terrorism [Download Handout 1](#) . This appears to be relevant to primary insurance pricing. The other presentation is very specifically focused on reinsurance contracts.

Another session at the seminar addresses terrorism and considers open issues in the Terrorism Risk Insurance Program Reauthorization Act of 2007 and best practices. [Download Handout 1](#) & [Download Handout 2](#)

The website does not provide descriptions of the session for this seminar.

The 2007 Casualty Actuaries in Reinsurance (CARE) Reinsurance Boot Camp on Pricing Techniques had a session on Catastrophe modeling.

Catastrophe Modeling

[Download Handout](#)

This session will review the basic elements of cat modeling, including a review of the meteorological, engineering, and insurance modules that comprise nearly all catastrophe models. The speaker will discuss the differences between the various commercial models and evaluate the key lessons learned from Hurricane Katrina and other recent catastrophe events. He will review the key elements to look for when evaluating the quality and completeness of cat data provided, and he will also consider potential needed adjustments to model inputs and outputs to reflect growth in a portfolio, underinsurance, un-modeled perils, and other items. Finally the speaker will discuss how catastrophe models are used for portfolio management and the allocation of risk capital to individual contracts and/or lines of business.

Speaker:

James M. Maher, FCAS, Chief Risk Officer, Platinum Underwriters Reinsurance, Inc.

The information that a reinsurer would want to know about a primary company's use of cat models overlaps what a regulator would want to know. Maher provides comparison of the predictions from various commercial models and forecasters. He addresses data/modeling issues list modeling tips that can bias the model's output.

The 2007 Seminar on Reinsurance had a session entitled:

The Cat Model Finally Ran. Now What?

[Download Handout 1](#)

[Download Handout 2](#)

[Download Handout 3](#)

With the recent changes in the vendor catastrophe models, are they now correct? The panelists will review their thought process in determining the proper loss costs for the catastrophe element of deals and the adjustments they apply to the modeled results. Perils covered will include hurricane, earthquake, tornado/hail, winter storm, flood, wildfires, and more.

Moderator/Panelist:

Sean R. Devlin, Senior Vice President, Swiss Re

Panelists:

Charles S. White, Senior Vice President, Benfield

The 1st handout is from Devlin's presentation, titled Adjustments to Cat Modeling, looks at the advantages and issues in using multiple models. It discusses adjustments that a reinsurer would want to consider. One such adjustment would be for unmodeled exposure which he says includes tornado/Hail, winter storm, wildfire, flood, terrorism, fire following, and other. The 2nd handout is from White's presentation The presentation focuses on answering a series of questions that starts with "What is the modeler trying to do?"

What are you trying to do with the model?

What perils are you modeling?

What models are you running?

What features of the model are you using? Not using?

What do you do if you are using more than one model?

What other adjustments to the output should you make?

What else can you do with the output?

This is useful information for a regulator who is considering how a company is using cat modeling results in their rate filing. The 3rd handout appears to be a duplicate of the 2nd handout.

The description of the 2006 Limited Attendance Reinsurance Seminar on Catastrophes started with this session:

Statistical limitations of cat modeling: How accurate can cat models be?

[Download Handout 1](#)

[Download Handout 2](#)

[Download Handout 3](#)

Given the limited Atlantic hurricane sample size, speakers discuss the limitations of predictive modeling from three perspectives:

- a. a frequentist (broker) approach using bootstrapping techniques
- b. an Bayesian (modeler) approach incorporating new events into a prior assumption framework
- c. a practical (insurer) approach reconciling the politics of actual claims experience with model-based expectations.

Moderator:

Timothy P. Aman, Managing Director, Guy Carpenter & Company, Inc.

Panelists:

Richard R. Anderson, Chief Actuary, Risk Management Solutions, Inc.

Mark Cravens, Wellington Underwriting Inc.

The 1st handout is from Anderson's presentation titled "Statistical Limitations of Hurricane Modeling." It considers the source of three of the parameters that go into estimating frequency and severity for hurricanes. The three parameters are central pressure, translational velocity, and radius of maximum winds. He also goes into some detail on the different estimates of hurricane frequency and the different time periods that can be used to generate these estimates.

Craven's presentation, summarized by the 2nd handout, is titled "Predictable Unpredictability: Thoughts on Reconciling Model Results With Actual Experience" He says "Losses invariably higher than modeled estimates." The presentation examines some of the reasons for the differences. He identifies three problems:

Problem #1: Data, Garbage in, guess what...

Problem #2: Outliers drive performance Risks do not respect the law of large numbers

Problem #3: Damage \neq Loss Social and economic variance from modeled performance envelopes

The 3rd handout is from Aman's presentation. The presentation gives some background for the session but primarily examines the confidence that can be placed in model results. He takes a frequentist's approach and examines 2 studies of the confidence that can be placed in model point estimates. One of the studies is David Miller: "Uncertainty in Hurricane Risk Modeling and Implications for Securitization", (Guy Carpenter, 1998) CAS Forum 1999, Securitization of Risk. The second study is John Major: "Uncertainty in Catastrophe Models: Part I: What is it and where does it come from?" and "Part II: How bad is it?", (Guy Carpenter, 1999). He focuses on the statistical limitations of Cat models.

There is an additional session at this seminar that is described below:

Prediction of Hurricane Frequency and Intensity

[Download Handout](#)

The last two Atlantic hurricane seasons have been much more active than average. In addition, a large number of intense hurricanes made landfall in 2004 and 2005, resulting in substantial insured losses.

The first panelist will explore the driving factors for the track, intensity and frequency of the last two years. In addition, he will give insight to their methodology and predictive skill of their forecasts, as well as how the insurance industry can incorporate this in the modeling of expected losses.

The second panelist will explain the long term changing of the climate, such as global warming. He will also explain how these changes impact hurricane activity.

Moderator:

Sean R. Devlin, Head of P&C Treaty Pricing, Swiss Re

Panelists:

Dail Rowe, Ph.D., Senior Research Scientist and Scientific Operations Manager, Accurate Environmental Forecasting, Inc.

The handout is titled "Adjustments to Cat Modeling." The presentation was prepared by the session moderator and contains much useful information; however, it does not clearly match up with the description of either presentation.

The 2006 Seminar on Reinsurance had a session titled Catastrophe Modeling.

Catastrophe Modeling

[Download Handout](#)

Catastrophe models have developed tremendously in the last ten years. How far have we gotten? What mistakes have we made? What are we doing about them? What did we learn in 2004 and 2005? The panel will discuss elements of the models as viewed from a variety of positions. We will have speakers from regulation, reinsurance, and (we hope) the primary side. We all should be aware, and some of us are probably actively involved in, catastrophe modeling. Let's all try to learn more and provide some direction for the future.

Moderator:

TBD

Panelist:

Harvey A. Sherman, Actuary, Swiss Reinsurance America Corporation

The description of the session is not consistent with the handout. The handout is titled "Regulating Hurricane Insurance Loss Costs Produced by Computer Models" The presenter is Martin M. Simons. Mr. Simon provides information about what questions a multi-disciplinary team asks regarding the application of different cat models in Hawaii.

There is another session at the seminar described below:

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[Download Handout 1](#)

[Download Handout 2](#)

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The second panelist will explain the long term changing of the climate, such as global warming. He will also explain how these changes impact hurricane activity.

Moderator:

Sean R. Devlin, Chief Actuary - Direct Reinsurance, GE Insurance Solutions

Panelist:

Thomas R. Knutson, Research Meteorologist, National Oceanic and Atmospheric Administration
Dail Rowe, Ph.D., Senior Research Scientist and Scientific Operations Manager, Accurate Environmental Forecasting, Inc.

This description and the people involved are very similar to a similarly titled session at 2006 Limited Attendance Reinsurance Seminar on Catastrophes. The 1st handout is for a presentation by Knutson titled

“Global Warming and Hurricanes.” Knutson is/was at NOAA/Geophysical Fluid Dynamics Lab, Princeton, New Jersey. His conclusions are that maximum intensities and near-hurricane precipitation will increase but future frequency changes and future regionally specific effects in seasonal Atlantic simulations are highly uncertain.

The 2nd handout is from a presentation by Rowe, titled Climate Effects on Hurricane Frequency and Severity.” Rowe is with Accurate Environmental Forecasting. AIR includes their index in two of their models. He makes the points

- Hurricane frequency and severity are modulated by climate.
- His firm has uses a peer-reviewed, GLM approach to quantify the relationship between climate variability and hurricane activity.
- Their results can be incorporated into cat models.

The 2005 CLRS had a session on Catastrophes --- Models and Reserving:

Catastrophes—Models and Reserving

[Download Handout 1](#)

[Download Handout 2](#)

[Download Handout 3](#)

This panel will discuss the issues and pitfalls involved in reserving for known catastrophes. The session will cover the use of vendor catastrophe models, including their limitations and historical accuracy. The implications of the use of models outside the actuary's area of expertise will also be discussed. An approach to reserving for known catastrophes using reported loss data will also be presented, with a focus on the 2004 Florida hurricanes.

Moderator:

John R. Forney Jr., Vice President-Actuarial, Penn National Insurance

Panelists:

Paul J. Kneuer, Senior Vice President and Chief Actuary, Holborn Corporation

John W. Rollins, Consulting Actuary, Watson Wyatt Insurance & Financial Services

The 1st and 3rd handouts from Kneuer's presentation address the limitations of the various models and what an actuary who is using a

model outside their area of expertise is expected to do. Rollins' presentation on the use of "models of loss development" from hurricanes in Florida in 2004 provides useful insights although it may not be directly relevant to ratemaking issues.

In the 2004 CAS Ratemaking Seminar there was the following topic

PL-4 Incorporating Catastrophe Models in Property Ratemaking

[Download Handout 1](#)

[Download Handout 2](#)

Discover how the output from simulation models is used in property insurance lines. The treatment of hurricanes and earthquakes will be reviewed from the perspectives of advisory organizations and companies with independent rate filings. The panelists will present applications at both the statewide and the territorial levels.

Moderator/Panelist:

Robert J. Curry, Assistant Vice President, ISO

Panelist:

David R. Border, Senior Actuary, Allstate Insurance Company

This seminar discussed how to incorporate catastrophe model results in ratemaking.

The first handout is Curry's presentation. He compares the traditional approach to including catastrophes in ratemaking to using a hurricane model in ratemaking. He describes the steps in using a hurricane model in some detail. His example is ratemaking for Homeowners. He says the use of the model is consistent with ASOP 38 (Using Models Outside the Actuary's Area of Expertise) and complies with the standards of Florida Commission on Hurricane Loss Projection Methodology.

The second handout is Border's presentation on incorporating earthquake models into earthquake ratemaking.

Starting in 2009 the CAS replaced the Ratemaking Seminar and the Special Interest Seminar on Predictive Modeling with the Ratemaking and Product Management Seminar, RPMs. The first RPMs included three workshops offered in conjunction with the Seminar. One workshop

focused on Catastrophe Modeling. Workshop had six hours of material in four sessions. Power Point presentations for the first three sessions are available and worth reviewing. Links to the sessions and descriptions of the sessions follow:

Session 1: Modeled Catastrophes, Basic Concepts and Commonalities

This session is a basic survey of catastrophes and coverage's that have been modeled. Participants will be introduced to the common concepts that are needed to think about and use the models and their output.

Earthquake and hurricane models for property insurance are very popular, but what other events and lines of business are modeled? Just what, does the model output mean?

[Download Presentation 1](#)

[Download Presentation 2](#)

[Download Presentation 3](#)

Session 2: Your Input and the Modelers' Input

This session will explore questions surrounding the input from you and the modeler. How do you ensure that your model input data is accurate? Your data was not collected for use in a cat model. How do you massage the data to get a good answer? The modeler makes choices when designing and developing the models that you use. We look at different choices that the modelers make in building their model and choices the modeler allows you to make in using the model. What do you need to know, to ask, and consider in choosing and using a model?

[Cat Modeling: Your Input and the Modelers' Input](#)

Session 3: Different Uses for the Model Output

This session will look at various ways that outputs from the models can be used and misused. Possible topics include:

- Policy terms and conditions
- Loss and profit components of the overall rate indication

- Territorial and class ratemaking
- Compliance with Standards of Practice 38 and 39
- How a company can use the analyses regulators have already done in choosing a model
- Regulatory constraints on use of models in ratemaking
- Solvency regulation
- ERM, capital management and allocation, reinsurance issues, etc.
- Rating agency issues
- Underwriting new and existing risks
- Risk mitigation

[Cat Modeling: Different Uses for the Model Output](#)

David Lalonde, Senior Vice President, AIR Worldwide Corporation prepared and presented session 1. Richard Anderson, Chief Actuary, Risk Management Solutions, Inc prepared and presented session 2. Session 3 was prepared and presented by Martin Simons, Public Actuarial Consultant, Larry Johnson, Retired Actuary, Shawna Ackerman, Principal & Consulting Actuary, Pinnacle Actuarial Resources, Inc. and Stephen Russell, Assistant Vice President, AON Benfield Analytics

Thomas G. Hess, FCAS, MAAA, ARM
Assistant Actuary
Office of Product Regulation and Actuarial Services
Ohio Department of Insurance

April 13, 2009

SECTION VII

Please note that this section primarily relates to hurricane and earthquake property loss. The suggested questions could be adapted for other catastrophic events (tornado, hail, freeze, etc) and for other types of loss such as workers compensation. Readers are directed to the Working Definitions section of this handbook for further clarification of terms.

The questions and interrogatories in this section should not be viewed as a recommended requirement for first response on a submission by a company or modeling firm. Prior to action on a submission the regulator may ask these questions of him or her self to determine what areas of attention are most relevant for further exploration. Following such a preliminary assessment the regulator is likely to be in a better position to conduct an effective and efficient review.

EVALUATING MODELS

This section contains three sets of questions. Section VIIa: General Questions contains questions that can be applied to earthquakes and hurricanes. Section VIIb: Questions Specific to Earthquakes contains questions that are specific to earthquake modelers. Section VIIc: Questions Specific to Hurricanes contains questions that are specific to hurricane modelers.

SECTION VIIA: GENERAL QUESTIONS

This section contains some questions a regulator may want to consider when reviewing a filing. The intent is to assist a regulator in formulating and implementing a set of questions and procedures that will be appropriate for the task at hand. Some questions may not be applicable for the filing or model under review.

The perspective taken is that of a regulator reviewing a rate filing that involves the use of a catastrophe model output. The questions are divided into three categories: those about input to the model, those about the model itself, and those about model output. The categories were not designed to be either mutually exclusive or all-inclusive, but provide a method of organizing questions and information.

A. Data Sources

1. What are the sources of the data, both within and outside the company? Where appropriate, do the various sources reconcile with each other?
2. To what extent has the company relied on data supplied by others? How did the company review the data for reasonableness and consistency?
3. Describe the exposure data provided to the modeling firm(s) by XX. Which data elements are modified or not used by the modeling firm(s)? Was bulk coding used?
4. At what level of detail is the data being supplied to the model?

- a. Has the data been summarized or block coded in some way. - how much is real data and how much is default coding? (Example: If don't know construction type, the default is "frame")
 - b. Is the output of the model in less detail than the model input? (Example – street address input; output by entire territory)
5. Is the data comprehensive (does it include all data elements required by the model)?
- a. Were all data elements summaries of raw data, or were interpolations, estimations, or other inferences or assumptions made to provide the model with the required input?
 - b. If there are estimates, describe the estimates. What percentage of the property values has been assigned estimated characteristics? For hurricanes and earthquakes, what percentage of the property values within XX miles (i.e. 20 miles) of the coast and/or fault have estimated characteristics (geocode, construction, property value, etc)
6. Is the type of data appropriate for the analysis and model being used?
- a. Is the data over a year old? If so, how old is the data and why isn't it more recent? How have changes in exposure been accounted for in evaluating the results?
7. Does the data appear appropriate when compared to similar data from other companies?
8. Will the company provide the regulator with an electronic copy and/or summary of the data supplied to the modeler(s)? If not, why not? *[Note: This is a good question particularly if the regulator has a catastrophe model for comparison.]*

B. Accuracy of Data

9. Are there material inaccuracies due to imperfect data?
- a. What elements of the data set used in the analyses were evaluated for materiality?
 - b. What is the threshold of materiality and whose threshold is it?
 - c. Are there any inaccuracies that could affect the output of the model and the expected range of possible outcomes?
10. Are there limitations to the data?
- a. For example, have some buildings and locations been left out?
 - b. How have other coverage's, such as business interruption been accounted for?
 - c. How accurately are properties located, by zip code, geocode, county, etc.?
 - d. Are there limitations of the types of construction allowed in the model?

C. Insurance Data

11. Addressing/Geocoding:
 - a. What percentages of insured properties were coded to the following levels of detail: street address, zip code, city, or county?
 - b. Is the model based on exposures by zonal aggregates or at geocodable street level data?
12. Is the type of construction included in the model? Was the occupancy class included? When was this last reviewed? How was the building stock determined and evaluated?
13. Is the commercial property insured in a single location or does it have multiple locations? If it is a multi-location policy were all addresses included in the model?
14. For the homeowners policy form, please provide the number of policies, the average amount of insurance, the current average premiums and average rate changes for each of the categories below. Please calculate the premiums and rate changes.
 - a. By county and deductible
 - b. By county and with/without masonry veneer
 - c. By county and year built
15. Are there significant deductibles? If so, how are these handled by the model?
16. What role if any does the model play in the calculation of the net cost of reinsurance?
17. Is pre-event preparedness and post-event loss minimization taken into account? Was post event cost surge taken into account?

ASSUMPTIONS IN MODEL AND CALCULATION

D. Appropriateness of Model Selection

18. How did the company evaluate the model for appropriateness and applicability to the problem at hand?
19. Have any modifications been made to the model to accommodate the rate filing in question?
20. Has the model been updated or changed in any way since the rate filing analysis was done? Have all applicable catastrophic events been incorporated in the model?

21. Have actual events been compared to the model. If the results of the model differ materially from actual losses, explain what subsequent changes to the model have been made.
22. What simulation model(s) did XX utilize for the currently effective XX's Homeowner's coverage rates?
23. Are the results based on one model or an average of multiple models? If multiple models:
 - a. What are the individual answers to each model?
 - b. Was one of the models an internal model?
 - c. Was any model excluded? Why?
 - d. What are the advantages and disadvantages of each model?
24. Has the company disclosed the extent of reliance on experts in the use of the model? What is the level of expertise in the applicable field of those experts?
25. What is the insurer's largest probable maximum loss (PML)? Is a 1-in-100 year standard or 1-in-250 year standard or some other standard being used?
 - a. What threshold is used for calculating PML, 1-in-100, 1-in-250, or some other standard?
 - b. Which model was used? Was more than one model used? If so what is the PML from the other model?

E. Assumptions

26. What are the major scientific assumptions of the model? (What scientific papers, etc., have been relied upon as a foundation for the model? Also, are there other reasonable, alternative assumptions that have been rejected? Who made the selection, and why?)
27. What are the major actuarial assumptions of the model? (Also, are there other reasonable, alternative assumptions, which have been rejected? Who made the decision and why?)
28. What are the model's basic algorithms? (How are the major components inter-related?) [*Note: This also would tell how the model is structured.*]
29. What are the material limitations of the model? Are there some types of loss that are excluded from the model? Are some catastrophic events excluded? Are some property locations, large property values, or construction types excluded from the model?
30. Does the model simulate and isolate appropriate causes of loss? For example, a model may produce both hurricane and other windstorm loss costs. In a rate filing, each of these components may have separate provisions.

31. Was the target a mean value or some other parameter (e.g. a probability distribution)? Do the iterations performed in the modeling reflect the mean values, stay within one standard deviation of the mean, or reflect the entire distribution? What is the range of modeled catastrophic events in terms of standard deviations from the mean?
32. Did the model take into account successive events (e.g. multiple hurricanes in a short timeframe, aftershocks in earthquake) in a region?
33. How has demand surge been taken into account? If so, what is the expected % increase in costs due to the demand surge? Describe how demand surge is used in the models. Provide the data and methods used to determine the effects of demand surge. What is the impact of demand surge?
34. Because not all damage is included in a standard model, has your company taken into account how these items will affect your overall catastrophe risk? If so how, and which perils are not in the model and which ones were accounted for?
35. Will any of the following “switches” be turned “on”? What switches are in the model?
 - a. Time dependency
 - b. Demand Surge
 - c. Storm Surge
 - d. Fire following earthquake
 - e. Secondary uncertainty
 - f. Business interruption
 - g. Automobile damage
 - h. Loss Adjustment Factors

F. Validation

36. What validation and testing has been performed with the model?
37. How long has the model been in production? Who has reviewed the model? Have any enhancements been made to the model?
38. Are there any significant differences of opinion among experts concerning material aspects of the model?
39. Describe sensitivity tests of the models. What was the most sensitive aspect of each model and the basis for making this determination. What is the degree to which these sensitivities affect expected loss costs results.

40. Has the model been certified or acknowledged to comply with a specified set of standards. If so, who certified it and what are the standards with which the model was required to comply?
41. Is the model based on generally accepted practices within the applicable field of expertise? *[Note: This is more than just an actuarial question...structural engineering, etc.]*

OUTPUT

G. What are the Outputs

42. What are the outputs of the model? (Are the model outputs reasonable and what analysis or evaluation was performed to evaluate the reasonableness of the output? How were the model's calculations verified? Have the model and its outputs been peer-reviewed? Has the model output been validated? To what extent has other data been used in verifying the reasonableness of the output data?)
43. Were any other models evaluated? Are the results being relied upon consistent with similar output provided by different vendors? If not, please explain the differences. Please explain the differences between the historical indications and the model results? Please provide a summary of the modeled homeowners loss estimates produced by each of the simulation models by policy form, territory, and deductible. Please explain if one model was used or if more than one model was used and if so please provide a comparison of those models.

H. Adjustments to Outputs

44. Please describe the adjustments made for changes in risk, such as the coverage provided or the insurer's geographic distribution, to reflect the anticipated exposure for the period being priced? How was the model recalibrated to account for changes in the coverage provided?
45. Does the model produce loss costs for all classes or is a base loss cost produced and then adjusted for various risk characteristics? If adjustments are made, are they made by the model or afterward? Please provide support for any classification adjustments?
46. Is the level of detail in the filing the same as the model output? If not, what adjustments were made?
47. Have there been changes to the output data provided? What are the reasons for and effects of these modifications? Is the company willing to provide the output

of the model before any changes were made as well as what is contained in the rate filing? If not, why?

48. Did the model vendor make any interpretations of the model output? If so, what were those interpretations and how were they incorporated into the filing?
49. How sensitive are the output results to changes in the input data, assumptions and model parameters?

I. Application of Outputs in Filing

50. How has the model output been used in the filing? Are results used for statewide indications, territorial indications, etc.?
51. What credibility is being assigned to the model output? How is the credibility determined? What is used as the complement of credibility?
52. How was Loss Adjustment Expenses (LAE) treated? How does the catastrophe LAE compare to the non-catastrophe LAE?
53. Other than the results of the simulation models, are there any changes to the data or assumptions that resulted in the overall average rate change to XX's Homeowners coverage?
54. To what extent is XX relying on the data, methods and assumptions underlying the currently effective Homeowners coverage rates?

SECTION VIIIB: QUESTIONS SPECIFIC TO EARTHQUAKE MODELERS

55. Describe external independent peer reviews that have been performed on the following components as currently functioning in the models:
 - Seismology
 - Engineering (resulting damage or vulnerability)
 - Actuarial Science
56. Are the model estimates of earthquake frequency, earthquake intensity, and earthquake loss costs time-independent or time-dependent? Please provide a comparison of the results if more than one model is used or if both time dependent and time independent assumptions were considered.
57. How are shake intensity and duration measured? What is the minimum shake intensity that could generate property damage in your state? How do the models determine shake intensity and duration at one location for an earthquake

occurring at another location? How does this compare with currently accepted scientific literature depicting land composition? What database was used by the models? Are the modeled results logical and consistent? How do the modeled shake intensities compare to the historic record?

58. In modeling earthquake risk, how are the parameters for the seismic activity and attenuation determined?
- What are the seismic attenuation relationships used? Do they differ throughout the state (perhaps by earthquake source depths)?
 - What are the impacts on the parameters from other seismology and geology influences (other than the summary of historic earthquakes)?
59. What is the model's "track record?" (How has the model performed in predicting the recurrence and magnitude of earthquakes, both in the mid-continent U.S. and elsewhere? Has well has the model predicted the insured damage caused by these earthquakes?)
60. How sensitive are the model estimates to assumptions about tectonic plate movement? Please state the tectonic plate movements that were incorporated and their affect on the modeled estimates.
61. Did the model take into account or apply only one type of earthquake? For instance, strike slip or dip slip.
62. How were the following factors taken into consideration in the earthquake model?
1. Building construction – unreinforced masonry vs. seismic designed
 2. Building height
 3. Building location – soil type
63. What analyses have been done on different soil types?
64. Provide a list of past earthquakes that were capable of causing property damage in your state. What other characteristics are used to model earthquake frequency, location, intensity and duration? Describe the historical earthquake data used for each of these characteristics identifying all earthquakes data included. Describe the dependencies among variables and how these are represented in the model. For the earthquake characteristics modeled as random variables, describe the probability distributions being considered in the covariance or dependency among the variables. Identify the:
- a. date
 - b. location and intensity
 - c. appropriate parameters
 - d. data source
 - e. earthquakes whose parameters are uncertain, in dispute or based on approximations.

65. How does the probability of earthquake occurrence compare to the historical and geological records with respect to frequency, intensity and geographical locations?
66. Please provide a table that shows the relationship between shake intensity and expected losses.

Use of Output

67. How were the epicenter locations, selected for iterations?
68. How has the model output been used in the filing? Are results used for statewide indications, territorial indications, etc.?
69. What data adjustments have been made for earthquakes from other regions that are incorporated in the model?

SECTION VIIC: QUESTIONS SPECIFIC TO HURRICANE MODELERS

Model

70. Are the model results near term or long term results? What definition of near term and long term is being used?
71. In hurricanes, construction, location and secondary modifiers play a role in insurer's risks. How were these factors included in the hurricane model?
72. When looking at the construction of a building in a hurricane prone area, does it have:
- a. Bracing Gable – ends in roof framing
 - b. Upgraded exterior wall opening protections
 - c. Upgraded exterior doors
 - d. Shutters
73. How is wind intensity and duration measured? How do the models determine wind intensity and duration at one location for a hurricane that makes land fall at another location? What database was used by the models? How do modeled results for wind intensities compare to the historical record?
74. What is the probable cost of loss of insured property after such a large hurricane – cite assumptions needed and used?
75. Were storm surge, demand surge, hurricane frequency distribution, off shore oil rig losses and Caribbean Clash Modeling included in the hurricane model?

Historical Validation

76. Provide a list of past hurricanes that were capable of causing property damage in your state. Identify the date, location and intensity, and appropriate parameters. Identify the data source. Identify hurricanes whose parameters are uncertain, in dispute or based on approximations.
77. What other characteristics are used to model hurricane frequency, location, intensity and duration? Describe the historical hurricane data used for each of these characteristics and identify all the hurricanes used. Describe the dependencies among variables and how they are represented in the model. For hurricane characteristics modeled as random variables, describe the probability distributions.
78. How do the modeled probability distributions of hurricane characteristics compare to those in the currently accepted scientific literature. How does the probability of occurrence of hurricanes compare to the historical record for frequency, intensity and geographical locations.
79. How do the modeled results compare to the historical results for the recurrence and size of hurricanes, both in Florida, the Gulf of Mexico and coastal areas? How do the modeled results compare to the historical losses caused by these hurricanes?)

SECTION VIII REGULATORY REVIEW AND ACCEPTANCE

The level of review by regulators is related to the impact of modeling upon policyholders. If the modeled rate is a substantial portion of the premium charged, it becomes more critical to carefully scrutinize both the process and the results of modeling.

Proprietary Information

When using catastrophe models, perhaps the greatest challenge is to balance the need for public access to information with the investment made by modelers in what they consider proprietary information. The modelers use various sources of information as a foundation and invest time and resources in additional research and analysis of the public data. The seismological or meteorological data is then merged with insurer exposure data and run through the model's various iterations. It is this added value that the modelers wish to protect.

Insurance regulators may be able to work with modelers to accomplish a mutually acceptable result. Freedom of Information or Sunshine laws provides guidance concerning what information must be disclosed to the public. Sometimes these laws allow a filer and a regulator to agree that certain information is proprietary in nature and, thus, may be withheld from disclosure as a trade secret. If a state has a trade secret exception in its Freedom of Information or Sunshine laws, insurers and modelers can ask for relief from disclosure of proprietary modeling details. The regulator can then seek information necessary to review the model and its application to insurer data without potentially placing the insurer or the modeler at a competitive disadvantage.

Another method has proved useful in some cases. Some modelers are open to site visits from insurance regulators and will assist regulators with the review and understanding of the specific model and its application to insurer data. This method offers regulators an opportunity to visit modeler sites and work with modelers to gain an understanding that is much deeper than would likely be gained from review of model input and output. In a similar manner, some states with common concerns have gotten together as a group and conducted interviews of individual modelers. In this situation, state seismologists and geologists have served as expert advisers, providing assistance to regulators in understanding scientific aspects of the modeling process. Confidentiality agreements were drafted and signed by regulatory authorities in the participating states and by the NAIC on behalf of the staff support for the group. The downside to this process is that while the regulator gains a rich and thorough understanding of how the model works, this process cannot be replicated at the regulators' offices for the public. This may result in criticism of the practice from those who believe they have a right to view whatever data exists.

A sample non-disclosure agreement is provided in Appendix 10.

Regulators may also benefit from direct communication with other regulators from states that have similar interests. Appendix 4 provides a listing of State Insurance Department Contacts.

PART A
INSURER OR RATING ORGANIZATION INTERROGATORIES - EARTHQUAKE

This form should be completed by the rating organization or independently-filing insurer if requested by the regulator and must accompany any filing for rates or rating values based in whole or in part on results from modeling.

Completion date for this form: _____, _____.
(Month) (Day) (Year)

1. Filing reference for which model results are used:
Company(ies): _____
Line or Sublines: _____
Filing Title: _____
Filing Identifier: _____
2. Name of organization that provided the model: _____
Name of Model: _____
Model Release Reference: _____
3. Has someone in your company run the model? _____ Yes _____ No
If 'Yes,' could this person replicate the model results? _____ Yes _____ No
4. Provide a contact person in your company who is familiar with the model used:
Name: _____
Title: _____
5. Which perils were included in the model used to establish rates for this filing?
_____ Earthquake _____ Tsunami
_____ Fire Following Earthquake _____ Volcanic Action
_____ Other: (specify) _____ _____ Hurricane
_____ Tornado _____ Hail
6. a. What type of data did your company supply for input to the model?
Exposure data: ___ In-force ___ policy-year ___ calendar-year ___ other: _____
for _____ (years) valued as of: ___/___/____.
Expense data: ___ policy-year ___ calendar-year ___ other: _____
for _____ (years) valued as of: ___/___/____.
Loss data: ___ policy-year ___ accident-year ___ calendar-year ___ other: _____
for _____ (years) valued as of: ___/___/____.

Describe any other data supplied by your company:

- b. Describe the level of geographical detail of your company input data:
_____ Address _____ Zip Code _____ County _____ Other: _____
- c. Did you project your company input data to a future period? ___ Yes ___ No
Briefly describe your trending method and give the projected date or period:

_____ ; $\frac{\text{_____}}{\text{(MM)}} / \frac{\text{_____}}{\text{(DD)}} / \frac{\text{_____}}{\text{(YYYY)}}$

d. If you did not supply company input data, describe the input data used to generate model results for your company and how the data were projects:

_____ ; $\frac{\text{_____}}{\text{(MM)}} / \frac{\text{_____}}{\text{(DD)}} / \frac{\text{_____}}{\text{(YYYY)}}$ (projected date)

7. **Regional Interpretation of the Model** (If you relied on the modeler to run the model with the adaptation to this region, please obtain and attach responses to the following from the modeler)

a. Attach a map for this region indicating the faults or source zones included in the model.

What is the maximum magnitude possible in this region? _____

What is your estimate of your maximum gross insured loss? \$ _____ as of $\frac{\text{_____}}{\text{(MM)}} / \frac{\text{_____}}{\text{(YYYY)}}$

b. How have damage patterns been adjusted for building environments and codes in this region?

8. List independent experts that you have contracted to provide written reviews for the model in use:

a. Seismologist/Geologist: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

b. Structural Engineer: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

c. Casualty Actuary: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

d. Other: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

PART B
MODELER INTERROGATORIES - EARTHQUAKE

This form should be completed by the modeler and supplied to the insurer or rating organization if requested by the regulator to accompany any filing for rates or rating values based in whole or in part on results from modeling.

Completion date for this form: _____, _____.
(Month) (Day) (Year)

1. Name of Modeler: _____
Name of Model: _____ Model Release Reference: _____
Date of Model Release or Latest Revision: ____/____/____
(MM) (DD) (YYYY)

This form is provided to: _____
(NAME OF INSURER OR RATING ORGANIZATION)

2. a. Provide an overview of how the model operates: _____

- b. Attach a sample step-by-step calculation for a representative structure, such as a single-family dwelling, showing formulas and definitions of variables.

3. Earthquake Hazard Model Components
- a. Describe the relationship between frequency and magnitude assumed by the model: _____
- b. Describe how the model considers attenuation over distances: _____
- c. What soil condition does the model use? _____

How detailed is the soil data? _____

What is the source of the data? _____

4. Structural Engineering Model Components
- a. What types of building classifications does the model use? _____

- b. Are damage predictions based solely on California studies? ____ Yes ____ No

5. Describe scientific studies incorporated into the latest model version and provide specific source references: _____

6. Describe how the model parameters can be altered for specific clients: _____

7. Mark the insurance considerations below for which this model is capable of adjusting loss estimates for a specific client on request:

- Distribution of different policy forms and endorsements
- Distribution of policy deductibles
- Distribution of amounts of insurance (policy limits)
- Effects of existing or proposed reinsurance contracts
- Multi-storied structures
- Appurtenant structure loss
- Contents loss
- Additional living expenses
- Business interruption coverage
- Replacement cost coverage
- Underinsured property and coinsurance provisions
- Uninsured property
- Losses attributable to public structures
- Pooling arrangements (e.g., FAIR plans)
- Non-property losses: liability, life, health, workers' compensation, etc.
- Demand surges in construction costs
- Debris removal

8. Describe the source of exposure input data used in this model: _____

9. Explain how and how far this model projects exposure or loss data to a future date:

10. Describe the geographic detail at which this model is capable of distinguishing insured exposure locations:

____ Address ____ ZIP Code ____ County ____ Other: _____

11. List your principal technical staff persons who developed and tested this model and their years of experience with modeling for insurance ratemaking:

12. List the independent experts you have contracted to provide written reviews for your current model release:

a. Seismologist/Geologist: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

b. Structural Engineer: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

c. Casualty Actuary: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

d. Other: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

13. As of the date this form is completed, are there any unresolved or outstanding problems remaining from peer reviews? ___ Yes ___ No; If 'Yes,' please describe: _____

14. Provide a contact person for the modeler who is familiar with this model:

Name: _____
Title: _____
Toll-free phone or e-mail address: _____ Fax: _____

PART A
INSURER OR RATING ORGANIZATION INTERROGATORIES - HURRICANE

This form should be completed by the rating organization or independently-filing insurer if requested by the regulator and must accompany any filing for rates or rating values based in whole or in part on results from modeling.

Completion date for this form: _____, _____.
(Month) (Day) (Year)

1. Filing reference for which model results are used:

Company(ies): _____
Line or Sublines: _____
Filing Title: _____
Filing Identifier: _____

2. Name of organization that provided the model: _____
Name of Model: _____
Model Release Reference: _____

3. Has someone in your company run the model? _____ Yes _____ No
If 'Yes,' could this person replicate the model results? _____ Yes _____ No

4. Provide a contact person in your company who is familiar with the model used:
Name: _____
Title: _____

5. Which perils were included in the model used to establish rates for this filing?
_____ Hurricane _____ Water Damage Including Flood
_____ Other Wind Damage _____ Other: (specify) _____

6. a. What type of data did your company supply for input to the model?

Exposure data: ___ In-force ___ policy-year ___ calendar-year ___ other: _____
for _____ (years) valued as of: ___/___/___.

Expense data: ___ policy-year ___ calendar-year ___ other: _____
for _____ (years) valued as of: ___/___/___.

Loss data: ___ policy-year ___ accident-year ___ calendar-year ___ other: _____
for _____ (years) valued as of ___/___/___.

Describe any other data supplied by your company:

- b. Describe the level of geographical detail of your company input data:

_____ Address _____ Zip Code _____ County _____ Other: _____

- c. Did you project your company input data to a future period? ___ Yes ___ No

Briefly describe your trending method and give the projected date or period:

_____ ; $\frac{\quad}{(MM)} / \frac{\quad}{(DD)} / \frac{\quad}{(YYYY)}$

d. If you did not supply company input data, describe the input data used to generate model results for your company and how the data were projects:

_____ ; $\frac{\quad}{(MM)} / \frac{\quad}{(DD)} / \frac{\quad}{(YYYY)}$ (projected date)

7. **Regional Interpretation of the Model** (If you relied on the modeler to run the model with the adaptation to this region, please obtain and attach responses to the following from the modeler)

a. Attach a map for this region indicating the coastal or source zones included in the model.

What is the maximum category possible in this region? _____

What is your estimate of your maximum gross insured loss? \$ _____ as of $\frac{\quad}{(MM)} / \frac{\quad}{(YYYY)}$

b. How have damage patterns been adjusted for building environments and codes in this region?

8. List independent experts that you have contracted to provide written reviews for the model in use:

a. Meteorologist: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

b. Structural Engineer: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

c. Casualty Actuary: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

d. Other: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

PART B
MODELER INTERROGATORIES - HURRICANE

This form should be completed by the rating organization or independently-filing insurer if requested by the regulator and must accompany any filing for rates or rating values based in whole or in part on results from modeling.

Completion date for this form: _____, _____.
(Month) (Day) (Year)

1. Name of Modeler: _____
Name of Model: _____ Model Release Reference: _____
Date of Model Release or Latest Revision: ____/____/_____
(MM) (DD) (YYYY)

This form is provided to: _____
(NAME OF INSURER OR RATING ORGANIZATION)

2. a. Provide an overview of how the model operates: _____

b. Attach a sample step-by-step calculation for a representative structure, such as a single-family dwelling, showing formulas and definitions of variables.

3. Hurricane Hazard Model Components

a. Describe the relationship between frequency and category assumed by the model: _____

b. Describe how the model considers decay rate over distances: _____

c. Does the model consider terrain roughness or land cover? _____

d. How detailed is the soil analysis? _____

e. What is the source of the data? _____

4. Structural Engineering Model Components

a. What types of building classifications does the model use? _____

b. Are damage predictions based solely on Florida studies? ____ Yes ____ No

5. Describe scientific studies incorporated into the latest model version and provide specific source references: _____

6. Describe how the model parameters can be altered for specific clients: _____

7. Mark the insurance considerations below for which this model is capable of adjusting loss estimates for a specific client on request:

- _____ Distribution of different policy forms and endorsements
- _____ Distribution of policy deductibles
- _____ Distribution of amounts of insurance (policy limits)
- _____ Effects of existing or proposed reinsurance contracts
- _____ Multi-storied structures
- _____ Appurtenant structure loss
- _____ Contents loss
- _____ Additional living expenses
- _____ Business interruption coverage
- _____ Replacement cost coverage
- _____ Underinsured property and coinsurance provisions
- _____ Uninsured property
- _____ Losses attributable to public structures
- _____ Pooling arrangements (e.g., FAIR plans)
- _____ Non-property losses: liability, life, health, workers' compensation, etc.
- _____ Demand surges in construction costs
- _____ Debris removal

8. Describe the source of exposure input data used in this model: _____

9. Explain how and how far this model projects exposure or loss data to a future date:

10. Describe the geographic detail at which this model is capable of distinguishing insured exposure locations:

_____ Address _____ ZIP Code _____ County _____ Other: _____

11. List your principal technical staff persons who developed and tested this model and their years of experience with modeling for insurance ratemaking:

12. List the independent experts you have contracted to provide written reviews for your current model release:

a. Meteorologist: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

b. Structural Engineer: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

c. Casualty Actuary: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

d. Other: _____
Phone or e-mail address: _____ Date of review: (mm/yyyy) _____

13. As of the date this form is completed, are there any unresolved or outstanding problems remaining from peer reviews? ___ Yes ___ No; If 'Yes,' please describe: _____

14. Provide a contact person for the modeler who is familiar with this model:

Name: _____
Title: _____
Toll-free phone or e-mail address: _____ Fax: _____

Catastrophe Handbook Definitions

Attenuation – a decrease in a property, as energy, per unit area of a wave or a beam of particles, occurring as the distance from the source increases as a result of absorption, scattering, spreading in three dimensions, etc.

Bulk Coding – data defined by methods, programs, or procedures that assign a pre-determined or default value to a required data field when the actual value is unknown or missing.

Demand Surge – a temporary increase in repair costs above the standard levels of cost.

PML – The probable maximum loss is the estimated loss amount for any occurrence with a probability equal to or less than a threshold probability. The PML can also be calculated for a period of time such as one year. (e.g. The 95% probable maximum loss is \$300 million for an insurer's catastrophe exposure in the state of SC)

Shake Intensity - A measurement of the force of an earthquake at a specific location. This may be a scaled measurement such as the Modified Mercalli Intensity Index, or the Peak Ground Acceleration. This can also be measured in terms of an earthquake's effect on insured property such as the spectral displacement of a structure, which is the maximum horizontal displacement of a building.

Strike Slip - faults involve motion which is parallel to the strike <strike.html> of the fault--frequently described as a "side-by-side" motion. Strike-slip faults are further described as "right-lateral" (dextral) or "left-lateral" (sinistral) depending if the block opposite the viewer moved to the right or left respectively.

Dip Slip - Dip-slip faults are inclined fractures where the blocks have mostly shifted vertically. If the rock mass above an inclined fault moves down, the fault is termed normal, whereas if the rock above the fault moves up, the fault is termed reverse. A thrust fault is a reverse fault with a dip of 45° or less. Oblique-slip faults have significant components of different slip styles.

Time dependent - approach takes into account prior historical rupture . information when assessing the likelihood of future ruptures.

Time independent - time-independent approach is independent of the time that has passed since the last occurrence of an earthquake on that fault Please let me know if you have any questions.

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Draft: 11/24/09

Casualty Actuarial and Statistical (C) Task Force
Conference Call
November 10, 2009

The Casualty Actuarial and Statistical (C) Task Force met via conference call Nov. 10, 2009. The following Task Force members participated: Thomas R. Sullivan, Chair, represented by Richard Marcks (CT); Mary Jo Hudson, Vice Chair, represented by Mary Miller, Tom Hess and Brad Schroer (OH); Linda S. Hall represented by Sarah McNair-Grove (AK); Steve Poizner represented by Ron Dahlquist (CA); Gennet Purcell represented by Clark Simcock (DC); Kevin M. McCarty represented by Howard Egelfeld (FL); Michael T. McRaith represented by Sarah Fore (IL); John M. Huff represented by Brent Kabler (MO); Scott J. Kipper represented by Janice Moskowitz (NV); Neil N. Jasey represented by Boris Privman and Sam Sackey (NJ); James J. Wrynn represented by Anne Kelly and Deborah Rosenberg (NY); Teresa Miller represented by Rae Taylor (OR); Joel Ario represented by Melissa Greiner (PA); and Mike Kreidler represented by Eric Slavich and Lisa Smego (WA). Also participating were: Robin Coombs (KY); and Nicole Elliott (TX).

1. Adopt Auto Insurance Database Report

Ms. Kelly presented the Auto Database Report for adoption by the Task Force. She explained the information contained in the report, such as the average auto expenditures by state, pure premium information and various state laws. She said the Statistical Information Subgroup voted to send the report to the Task Force for adoption as a result of their Nov. 3 conference call. Ms. Miller made a motion to adopt the Auto Database Report and send it out for distribution. The motion was seconded by Ms. Kelly. The Auto Insurance Database Report 2006/2007 was adopted.

2. Catastrophe Modeling Handbook Proposal

Mr. Marcks discussed the main recommendations for changes to the Catastrophe Modeling Handbook. The first change would be the addition of an annotated bibliography as an appendix to the handbook. The annotated bibliography also adds a link to the Casualty Actuarial Society Web site, which makes the document a living document with the most current information. The second recommended change would be to replace the current Section 7 with a document that identifies a number of questions for regulators to ask themselves as they think about submissions that they get and how they are going to respond to them. The third item is a revision to Section 8 of the handbook, as the information in the handbook is outdated regarding several states. The idea is to maintain the listing of contacts for each state, but to supplement this with a regulator call each year, in which regulators can discuss things they are experiencing. It was suggested that this be a regulator-to-regulator conference call hosted by the Task Force using a similar format of that used for the Actuarial Opinion conference call. The fourth item references Appendices 11 and 12, which have updated sample interrogatories that regulators might use in questions to companies or modeling firms regarding hurricane and earthquake modeling. The fifth and final recommendation is to put additional terms in the glossary of the handbook and to revise a few of the terms that currently exist in the glossary. Mr. Marcks opened the floor for comments. None were made. Ms. McNair-Grove made a motion to expose the proposal until Dec. 1. The motion was seconded by Ms. Fore and carried.

3. Profitability (C) Working Group

Ms. Taylor stated that most of the draft 2008 Profitability Report could be found in the file repository on the NAIC Web site. The narration was posted Nov. 5. The Profitability Working Group asked for states to review the narration and the tables and to forward any comments to Anne Obersteadt (NAIC) by Nov. 13. The Working Group will meet by conference call Nov. 17 to vote on issuing the report. Ms. Taylor requested that the Task Force vote by e-mail prior to Nov. 26 so the report can be finalized in 2009. The Working Group will send a notice of the results of the teleconference to the Task Force by Nov. 18, and Task Force members will answer by e-mail ballot by the close of business on Nov. 20.

4. American Academy of Actuaries

Lauren Pachman (American Academy of Actuaries—AAA) stated that the Property/Casualty Loss Reserve Opinion Seminar is upcoming.

5. Statistical Issues Subgroup

Ms. Smego stated that the Statistical Issues Subgroup met in October regarding the Medical Professional Liability Closed Claim Reporting Guidelines and has another meeting scheduled for Dec. 15. She reported that the NAIC is exploring an application to collect these data. She said she met with members of the NAIC via webinar and walked them through Washington's data collection process, as Washington has offered to share the code used in their program. If developed, this application could be used on a multi-state basis. Ms. Smego stated that Washington's system does match up with the model law, although currently there are three elements that will be added to the existing system.

6. Workers' Compensation Large Deductible (C) Subgroup

Ms. McNair-Grove said the Subgroup received a project summary document from Jane Conard (NAIC) and will review that document.

7. Catastrophe Insurance Reserve Working Group

Ms. Kelly stated that Mike Moriarty (NY) would like to ask the Task Force to deliberate on the possible ramifications to rates if a mandatory catastrophe reserve were implemented, if the Task Force is willing. Ms. Kelly suggested that the AAA Casualty Practice Council might be able to give the Task Force their opinion as well. Ms. Kelly said writers of homeowner's insurance currently buy whatever reinsurance they need, and whatever money is left over at the end of the year that is not attached to a catastrophe can be released into profit. She asked if it would influence rates if that money were to be retained in a reserve. Opponents of the plan are arguing that it would raise rates. Mr. Dahlquist asked if tax deductibility would be considered. Ms. Kelly said Mr. Moriarty would have to state his own question, and they would not want to abandon the idea of getting tax deductibility, but she thinks Mr. Moriarty would say that he would like to know either way. Mr. Marcks suggested that tax deductibility may be a separate issue.

Mr. Marcks suggested that the AAA could provide some knowledgeable assistance and, if the AAA is willing, that a liaison could be created from the Task Force. Pending a proposal from Mr. Moriarty, Mr. Marcks would like to discuss this issue further at the Winter National Meeting.

Having no further business, the Casualty Actuarial and Statistical (C) Task Force adjourned.

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Draft: 12/11/09

Casualty Actuarial and Statistical (C) Task Force
Conference Call
October 13, 2009

The Casualty Actuarial and Statistical (C) Task Force met via conference call Oct. 13, 2009. The following Task Force members participated: Thomas R. Sullivan, Chair, represented by Richard Marcks (CT); Mary Jo Hudson, Vice Chair, represented by Mary Miller and Brad Schroer (OH); Jim J. Ridling represented by Charles Angell (AL); Steve Poizner represented by Ron Dahlquist (CA); Kevin McCarty represented by Howard Eagelfeld (FL); Michael T. McRaith represented by Sarah Fore (IL); Sandy Praeger represented by Larry Bruning (KS); John M. Huff represented by Brent Kabler (MO); Neil N. Jasey represented by Steven Umansky (NJ); Scott J. Kipper represented by Janice Moskowitz (NV); James J. Wrynn represented by Anne Kelly, Gloria Huberman, Sak Man Luk, Deborah Rosenberg, Alice Wang and Hau Michael Ying (NY); Teresa Miller represented David Dahl (OR); Joel Ario represented by Stephanie Ohnmacht and Chuck Romberger (PA); Mike Kreidler represented by Lee Barclay (WA); and Jane L. Cline represented by Aaron Baughman (WV). Also participating were: Ramona Lee (IA); Robin Coombs (KY); Mike Andring (ND); Alan Wickman (NE); Alan Seeley (NM); Kathie Stepp and Frank Stone (OK); Nicole Elliott (TX); and Kevin Gaffney (VT).

1. Premium Deficiency Reserves

Mr. Marcks asked for discussion about the blanks proposal to modify Note 29 instructions about premium deficiency reserves. With no comments by any parties, Ms. Miller made a motion to adopt the proposal (Attachment Three-A). The motion was seconded by Mr. Dahl and passed unanimously.

2. 2009 Regulatory Guidance

Ms. Elliott said regulatory guidance for Statements of Actuarial Opinion and Actuarial Opinion Summaries was updated. The new guidance includes clarification about pooling and some considerations about the risk of material adverse deviation (RMAD). Some information that is found elsewhere in the American Academy of Actuaries (AAA) Practice Note *Statements of Actuarial Opinion on P&C Loss Reserves* was deleted. Mr. Dahlquist suggested replacing “RMAD amount” with “materiality standard.” With that change, Mr. Dahlquist moved to adopt the regulatory guidance document applying to both the Statement of Actuarial Opinion and the Actuarial Opinion Summary (Attachment Three-B). The motion was seconded by Ms. Miller and passed unanimously.

3. Uniform System for Medical Professional Liability Closed Claim Reporting

At the Fall National Meeting, the Task Force discussed whether there could be a uniform system for collection of medical professional liability closed claim data to be reported under the adopted Medical Professional Liability Closed Claims Reporting Model Law. Mr. Barclay said the Task Force decided this idea has some merit and decided to seek guidance from the parent committee. He drafted a memo that could be sent to the parent committee. The Task Force will discuss the issue on its Nov. 10 call.

Mr. Seeley said the NAIC is trying to develop a model law to collect title insurance data and might consider whether the NAIC could be the collector of that data. He said the projects might have parallels.

Ms. Moskowitz said she agrees with the suggestion for title insurance but prefers Nevada’s current form for medical professional liability. She said it would be easier for companies doing business in many states to have uniform reporting, but it would cause some issues in current analyses because one needs history of claims data to see trends. Mr. Barclay said any study of a uniform system should include determination of how many states would utilize the system. Mr. Wickman reminded the Task Force that some states voted for the model law as a minimum standard, recognizing that they already had requirements at least as detailed. Mr. Kabler had similar concerns and said Missouri collects additional information not mandated by the model. He added that confidentiality issues at the NAIC are also a concern. Mr. Barclay said the issues would be identified if a feasibility study is done, but the subject at hand is whether to pursue the study rather than to identify issues at this time.

4. American Academy of Actuaries

Craig Hanna (AAA) said the AAA submitted a letter related to the qualifications needed to sign a prescribed Statement of Actuarial Opinion (Attachment Three-C). Ms. Miller said if one signs an opinion, the Actuarial Standards Board (ASB) qualification standards require a statement within the opinion that the actuary meets those qualification standards. She said not all members of the Casualty Actuarial Society can sign an opinion because the educational syllabus for associateship would not necessarily qualify someone to do so. Mr. Marcks said this should be written in the regulatory guidance document next year. Ms. Miller said the instructions could be changed to require a statement that the Appointed Actuary meets the ASB qualification standards.

5. Catastrophe Modeling Subgroup

Mr. Marcks said the Catastrophe Modeling Subgroup completed its work and will submit recommendations prior to the Task Force's Nov. 10 call. He said they will recommend an annotated bibliography, revised questions for regulators to consider when reviewing models, and separate interrogatories for companies and for modelers. They will also recommend deletion of the section on current practices of states, as that is outdated and would be difficult to maintain. The Subgroup may also recommend that an annual conference call be held to discuss models and practices of individual companies.

6. Line of Business Subgroup

Ms. Miller said the Line of Business Subgroup met to discuss the results of its survey. The course of action remains unclear, but there is universal recognition that there are issues. A summary of the survey will be submitted to the Task Force for the Nov. 10 call. She said a way forward might include discussing issues with NAIC committees about whether changes could improve regulation, as that is the focus of the project.

7. Statistical Subgroup

Mr. Barclay said the Statistical Subgroup has not met since the Fall National Meeting but will have a call soon.

8. Workers' Compensation Large Deductible Subgroup

Mr. Wickman said the Workers' Compensation Large Deductible Subgroup plans to outline the pros and cons of several courses of action to regulators. NAIC staff is working on a first draft. A call is planned prior to the Winter National Meeting.

9. Actuarial Standard of Practice No. 36

Mr. Marcks said the Actuarial Standards Board Subgroup on Reserving has a new draft of Actuarial Standard of Practice (ASOP) No. 36 that includes new wording about reliance on another actuary. Mr. Marcks requests comments for him to submit to the ASB subgroup.

Having no further business, the Casualty Actuarial and Statistical (C) Task Force adjourned.

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NAIC BLANKS (E) WORKING GROUP

Blanks Agenda Item Submission Form

	DATE: <u>Oct. 13, 2009</u>	<u>FOR NAIC USE ONLY</u>
CONTACT PERSON: <u>Kris DeFrain, NAIC Staff</u>		Agenda Item # _____ Year _____
ON BEHALF OF: <u>Casualty Actuarial and Statistical Task Force</u>		Changes to Existing Reporting [] New Reporting Requirement []
NAME: <u>Richard Marcks</u>		<u>REVIEWED FOR ACCOUNTING PRACTICES AND PROCEDURES IMPACT</u>
TITLE: <u>Chair of the Task Force</u>		No Impact [] Modifies Required Disclosure []
AFFILIATION: <u>Connecticut Department of Insurance</u>		<u>DISPOSITION</u>
ADDRESS: <u>P.O. Box 816</u> <u>Hartford, CT 06142</u>		[] Rejected For Public Comment [] Referred To Another NAIC Group [] Received For Public Comment [] Adopted [] Rejected [] Deferred [] Other (Specify) _____
TELEPHONE: <u>860-297-3815</u>		

BLANK(S) TO WHICH PROPOSAL APPLIES

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> ANNUAL STATEMENT | <input checked="" type="checkbox"/> QUARTERLY STATEMENT | <input checked="" type="checkbox"/> INSTRUCTIONS |
| <input checked="" type="checkbox"/> Life and Accident & Health | <input checked="" type="checkbox"/> Property/Casualty | <input checked="" type="checkbox"/> Health |
| <input type="checkbox"/> Separate Accounts | <input checked="" type="checkbox"/> Fraternal | <input type="checkbox"/> Title |
| <input type="checkbox"/> Other Specify | | |

Anticipated Effective Date: 2010 annual

IDENTIFICATION OF ITEM(S) TO CHANGE

The instructions for Note 29 "Premium Deficiency Reserves" are proposed to change as follows:

Instruction:

For all accident and health contracts and property/casualty contracts, the reporting entity shall disclose the amount of ~~any~~ premium deficiency reserves, the date of evaluation for premium deficiency reserves, and whether anticipated investment income was ~~considered~~ utilized as a factor in the premium deficiency calculation.

The data should be filed electronically.

Illustration:

As of _____, the Company had liabilities of \$ _____ related to premium deficiency reserves. The Company did not consider anticipated investment income when calculating its premium deficiency reserves.

	(1)
1. Liability carried for premium deficiency reserves	\$ _____
2. Date of the most recent evaluation of this liability	_____
3. Was anticipated investment income utilized in the calculation?	Yes <input type="checkbox"/> No <input type="checkbox"/>

REASON, JUSTIFICATION FOR AND/OR BENEFIT OF CHANGE**

There is some concern that companies are not performing premium deficiency reserve (PDR) analyses when they should and/or the analyses are not as thorough as they should be. Modification to Note 29 will allow collection of data on these reserves for analysis and draw more attention to the requirement for companies to be evaluating the need for these reserves.

Also, some companies have been answering “Not applicable” to Note 29 and we believe the note should always be applicable. We believe the company should report that they analyzed the need for a PDR and the amount of the PDR. We also are specifically asking that the date of the evaluation be stated so that we, first, ensure that an analysis is being done, and second, are able to request the supporting documentation for the evaluation.

There is also some potential to make modifications to the requirements for the property & casualty and health actuarial opinions, but no changes are proposed to those instructions at this time.

- For property and casualty, an actuarial opinion on PDR is currently optional; if there is a PDR opinion, the amount is listed separately in the category called “Other Premium Reserve items on which the Appointed Actuary is expressing an Opinion.” The Task Force discussed expansion of the scope of the property and casualty actuarial opinion to require a PDR opinion but settled (at this time) for the alternative of collecting data on the reserves and drawing more attention to the requirement for companies to be evaluating the need for these reserves.
- In the health annual statement, an actuarial opinion on PDR is required. The PDR is included in the line for “Aggregate health policy reserves (page 3, line 4) including unearned premium reserves and additional policy reserves from the Underwriting and Investment Exhibit – Part 2D.” The Accident and Health Working Group might consider requiring the PDR amount to be listed separately on the actuarial opinion.

NAIC STAFF COMMENTS

Comment on Effective Reporting Date: _____

Other Comments:

**** This section must be completed on all forms.**

Revised 01/18/05



REGULATORY GUIDANCE
On Property and Casualty Statutory Statements of Actuarial Opinion
For the Year 2009

Prepared by the NAIC's
Casualty Actuarial and Statistical (C) Task Force

Introduction

The Casualty Actuarial and Statistical (C) Task Force (CASTF) of the NAIC believes that the Statement of Actuarial Opinion (Opinion) is a valuable tool in serving the regulatory mission of protecting consumers. This Regulatory Guidance document supplements the NAIC's *Property and Casualty Annual Statement Instructions (Instructions)* in an effort to provide clarity and timely guidance to companies and Appointed Actuaries regarding regulatory expectations with respect to the Opinion.

An Appointed Actuary has a responsibility to know and understand both the *Instructions* and the expectations of regulators. One expectation of regulators clearly presented in the *Instructions* is that the Opinion and the supporting report and work papers should be consistent with appropriate Actuarial Standards of Practice (ASOP), including *but not limited to* ASOPs Nos. 9, 23, 36 and 43. While the Actuarial Standards Board may have been considering a repeal of ASOP No. 9, that action has been deferred. Many regulators oppose this repeal, viewing it as a clear reduction in the standards expected in an actuarial work product. Regardless of any action by the Actuarial Standards Board, regulators expect that all Opinions and the supporting Actuarial Reports continue to meet the standard of ASOP No. 9.

The CASTF consciously avoids illustrative language in the *Instructions* and encourages all actuaries to use whatever language they feel is appropriate to clearly convey their opinion *and* thought processes in reaching conclusions on a company with reference to specific characteristics of that company in both the Opinion and the supporting report.

Paragraph 1: Appointment, Definitions, Exemptions, and Special Requirements for Pooled Companies

Paragraph 1 is directed to company management and changed slightly in 2009 to clarify the interests of regulators when an initial actuarial appointment or change in Appointed Actuary is made. The CASTF expects that an actuary considering a new assignment is aware of the requirement and will request similar information from the company and the former Appointed Actuary in order to make an informed decision about accepting the assignment.

Both management and a potential Appointed Actuary should be mindful of the following:

- **Timely feedback** — The CASTF encourages management to seek feedback from a “qualified actuary” *prior to* management’s decision on establishing carried reserves. This allows management to make an informed decision with the benefit of actuarial analysis. It also helps to avoid a difficult situation in which management is committed to a decision that results in pressure on the actuary to “stretch” the range of reasonable reserve estimates.
- **Reporting to the Board or Audit Committee** — The actuary is required to report to the Board. This may be done in a form of the actuary’s choosing. The CASTF strongly encourages the Appointed Actuary to present his or her analysis in person so that the risks and uncertainties that underlie the exposures and the significance of the actuary’s findings can be adequately conveyed and discussed. As the actuarial profession makes advances in reserve methodology, such as stochastic simulation, a single deterministic indication would not be appropriate for many companies. While management is limited to single values on lines 1 and 3 of the Liability Page, the Board should be made aware of the actuary’s opinion regarding the risk of material adverse deviation, the sources of that risk, and what amount of adverse deviation the actuary judges to be material.

EXECUTIVE OFFICE	444 N. Capitol Street, NW, Suite 701	Washington, DC 20001-1509	p 202 471 3990	f 816 460 7493
CENTRAL OFFICE	2301 McGee Street, Suite 800	Kansas City, MO 64108-2662	p 816 842 3600	f 816 783 8175
SECURITIES VALUATION OFFICE	48 Wall Street, 6th Floor	New York, NY 10005-2906	p 212 398 9000	f 212 382 4207

Paragraphs 1A, 1B and 1C are unchanged for year-end 2009, but we include the following for your consideration.

Paragraph 1C: Special Requirements for Pooled Companies

Paragraph 1C applies only to those situations where there is an intercompany pooling agreement in which the lead company retains 100% of the pooled reserves and the other members of the pool retain 0%. In this situation, the Schedule P of the 0% companies is blank, and rendering an Opinion on non-existent values is virtually useless to the regulator. For these situations only, the actuary is directed to prepare an Opinion on the Pool, which is to be filed with the Annual Statement of each of the pooled companies.

Exhibits A and B should reflect values specific to the individual company. Additionally, the actuary should prepare Exhibits A and B of the Pool to be filed as an addendum to the Opinions of the 0% companies. This will allow for proper data submission for each company in the Pool while accommodating the greatest distribution of the relevant values for the Pool. The *Instructions* include specific answers for the Exhibit B questions regarding materiality and the risk of material adverse deviation. Note the distinction between pooling with a 100% lead company with no retrocession and ceding 100% via a quota share agreement. These affiliate agreements must be approved by the regulator as either an intercompany pooling arrangement or a quota-share reinsurance agreement. The proper financial reporting is dependent on the approved filings, regardless of how company management regards their operating platform.

Paragraph 2: Structure of the Opinion

Paragraph 2 is unchanged for 2009. It succinctly presents the four primary sections of the Opinion.

Paragraph 3: Identification

Paragraph 3 is unchanged for 2009.

Paragraph 4: Scope

Paragraph 4 is unchanged for 2009. Editorial changes relate to items in the exhibits. Exhibit A provides a clear picture of what items are to be opined on by the actuary. Guidance for Exhibit B disclosure items is discussed in Paragraph 6.

The CASTF calls attention to two continuing items of interest to regulators that pertain to the Scope of the Opinion:

1. **Exposure** — An Opinion on the reasonability of the carried reserves should reflect consideration and evaluation of more than just loss history. ASOP No. 36 §3.5.2 calls for the actuary to give attention to “exposures that are new or unusual and that are likely to be insufficiently reflected in the experience data or in the assumptions used to estimate loss and loss adjustment expense reserves.” The CAS Statement of Principles on Loss and Loss Adjustment Expense Reserves and other actuarial literature address the relevance of exposure to the reserve actuary’s work. The CASTF expects the actuary to probe and understand the exposure associated with the company for which the Opinion is issued. Areas of particular interest to regulators include:
 - Coverage for Service Contracts: Due to wide variation in state laws, this type of product may or may not be regulated or treated as insurance. Insurance may only come into play as excess coverage for contractual liability. The insurer and the Appointed Actuary often have no underlying data on loss experience absorbed by the policyholder. When losses break through the retention, they can be catastrophic for the insurer, particularly a specialty writer or a risk retention group with concentration in this exposure.
 - D&O and XS Coverages: For any coverage with extended emergence patterns, regulators expect that the actuary’s analysis will demonstrate attention to factors that influence the underlying exposure and potential for claims subject to the coverage provided.
 - Economic Conditions: A number of Opinions identify various economic conditions as risk factors. With the current strains on the economy—and housing markets in particular—regulators expect the Appointed Actuary of a company that faces such risks to attempt to quantify those risks in the analysis. Mere disclaimers are insufficient. Actuaries should consider the potential for premium deficiencies, particularly in long-duration contracts such as mortgage or financial guaranty products. The actuary may include the Premium Deficiency Reserve in Exhibit A and comment accordingly within the Opinion. The CASTF advises actuaries to contact the regulator of domicile for further guidance on expected disclosure.

The understanding can be disclosed in the Opinion with Relevant Comment regarding what the actuary believes to be the financial condition of the obligor(s) for service contracts, the coverages subject to increased activity within the policyholder's retention, and the emerging risk factors. These are examples of what regulators expect the actuary to address as "specific characteristics of the company."

2. **Prepaid loss adjustment expenses** — According to Interpretation 02-21 in Appendix B of the NAIC's *Accounting Practices and Procedures Manual*, the liability for unpaid loss adjustment expenses should be established regardless of any pre-payments made to third-party administrators (TPA), management companies, or other entities. The values should be recorded as loss adjustment expense reserves throughout the Annual Statement and not recorded as a write-in. Appointed Actuaries should be aware of any such arrangements, incorporate this consideration into their analysis, and include appropriate disclosures in the Opinion and the Actuarial Report.

The Scope paragraph also requires disclosure of the individual upon whom the Appointed Actuary relied for preparation of the data.

NOTE: The CASTF recognizes that the Appointed Actuary may receive data from a TPA, accounting firm or similar organization that provides service to the regulated entity. If such a relationship exists, it is informative to identify it here. However, any third party or firm is not the regulated entity. Regulators expect the Appointed Actuary's disclosure to always include the senior official(s) of the regulated entity responsible for integrity of the data.

Paragraph 5: Opinion

Paragraph 5 is unchanged for 2009. The CASTF expects points C and D of the Opinion paragraph to be the full and complete expression of the Appointed Actuary's conclusion on the type of opinion rendered. Regulators will presume that the conclusion will apply to both the net and the direct and assumed reserves. If the actuary reaches different conclusions, the actuary should use whatever language is appropriate to clearly convey a complete opinion. If faced with this situation, the actuary should prepare exhibit entries to reflect the opinion on the Net reserves. The CASTF encourages the actuary to include narrative comments to describe any differences with respect to the Direct and Assumed opinion.

Paragraph 6: Relevant Comments

Paragraph 6 is unchanged for 2009. The CASTF considers the relevant comments of the Appointed Actuary to be the most valuable information in the Opinion. Relevant comments provide the context for the regulator to interpret the Opinion and to understand the actuary's reasoning and judgment.

Risk of Material Adverse Deviation (RMAD)

The *Instructions* require the Appointed Actuary to:

- 1) Identify the materiality standard.
- 2) Identify the basis, or rationale, for establishing this standard.
- 3) **Explicitly** state whether he or she believes that there are significant risks and uncertainties that could result in MAD.
- 4) If such risk exists, the actuary should describe the major factors or particular conditions underlying the risks and uncertainties that the actuary reasonably believes could result in MAD. (Note that the actuary is encouraged to comment on the risks and other factors considered even when no RMAD is judged to exist.)

The actuary's comments regarding RMAD should be consistent with the disclosure in Exhibit B, item 6. If the actuary concludes that RMAD is present, the CASTF expects the supporting Actuarial Report to clearly address each of the risk factors identified with descriptive and quantitative information on alternate outcomes that would drive adverse development beyond the selected materiality threshold. This information will be useful to both regulators and the Board in understanding the actuary's comments on this issue.

The Appointed Actuary is reminded that each statutory entity, except for those following paragraph 1C of the *Instructions*, is required to have a separate Opinion and, therefore, its own materiality standard. Where there are no unusual circumstances to consider, it may be acceptable to determine a standard for the entire pool and assign each member their proportionate share of the total. It is **not** appropriate to use the entire amount of the materiality threshold for the pool as the standard for each

individual pool member. For those companies following paragraph 1C of the *Instructions*, the non-lead companies' materiality standard should be \$0.

The *Instructions* state that the RMAD explanatory paragraph should not include general broad statements about unspecified risks and uncertainties that could apply to nearly all companies in any situation. When considering the inclusion of risk disclosures in the Opinion, the actuary should take into account the likelihood of the event occurring. Risks and uncertainties may include items such as the uncertainty in the tail factors or the need to use industry benchmarks. *Specified* contemporary risks—such as subprime mortgage exposure or declining real estate values—may be relevant to the extent that they can be significant and directly related to adverse deviation.

When concluding whether RMAD exists, the Appointed Actuary is advised to consider the materiality standard in conjunction with the range and the carried reserves. For example, if the materiality standard when added to the carried reserves exceeds the high end of the range, it may be logical to conclude that RMAD does not exist. Likewise, if the materiality standard when added to the carried reserves is within the high end of the range, RMAD likely exists. In either case, the actuary should support the conclusion.

IRIS Ratios

The CASTF considers it insufficient to attribute an unusual reserve development ratio to reserve strengthening alone and expects relevant comment on an unusual ratio to provide reasonable insight as to the company-specific factors that caused the result. Detailed documentation should be included in the Actuarial Report to support comments in the Opinion.

Paragraph 7: The Actuarial Report

Paragraph 7 is unchanged for 2009. The CASTF believes that the *Instructions* and ASOP No. 9 provide the best guidance to actuaries regarding the Actuarial Report and supporting documentation.

Exhibits alone rarely convey professional conclusions and recommendations or the significance of the actuary's opinion or findings. A narrative section should provide clearly worded information so that readers are able to appreciate the significance of the actuary's findings and conclusions, the uncertainty in the estimates, and any differences between the actuary's estimates and the carried reserves. Sources of assumptions should be clearly supported. The CASTF has identified two notable weaknesses in the documentation of many actuarial reports.

1. **Expected Loss Ratios.** Methodologies that rely on an expected loss ratio may well be the most suitable in a given situation. When using these methodologies, particularly in a long-tailed line with high premium volume, the CASTF expects the documentation to include recognition of pricing and underwriting information in the recent years, loss costs, and loss inflation. Historical loss ratio indications have little value if rate actions, credit adjustments or program revisions have affected premium adequacy or inadequacy.
2. **Actuarial Judgment.** The use of this phrase in a Report, in either the narrative comments or in exhibits, is not considered to be proper explanation without sufficient descriptive rationale to provide meaningful context for this term.

In addition, the CASTF supports the recommendation of the Casualty Actuarial Society's Task Force on Actuarial Credibility that the Actuarial Report contain an exhibit that summarizes changes in the Appointed Actuary's estimates from the prior analysis, with extended discussion of significant factors underlying the change. The Task Force made this recommendation to improve the transparency of disclosures in actuarial work.

The CASTF recognizes that company line of business definitions may be more meaningful than Annual Statement line of business definitions. Such differences in data classification should be addressed and clearly documented within the Report. The required reconciliation should illustrate differences between the data used in the actuary's analysis and the amounts presented in Schedule P of the Annual Statement. The actuary should address the reasons for any significant differences in order to reduce questions regarding data integrity.

The CASTF recognizes that the majority of analysis supporting an Opinion may be done with data received prior to year-end and "rolled forward" to 12/31/20xx. By reviewing the Report, the regulator should be able to clearly identify why the actuary

made changes in the ultimate loss selections and how those changes were incorporated into the final estimates. A summary of final selections without supporting documentation is not sufficient.

The CASTF believes that regulators should be able to rely on the Report as an alternative to developing their own independent estimates. A well-prepared and documented Actuarial Report that is consistent with the spirit of ASOP No. 9 can provide a foundation for efficient reserve evaluation within a statutory examination. This provides benefits to the examination process and potential cost-savings to the company.

Paragraph 8: Signature

Paragraph 8 is unchanged for 2009. The CASTF requests that actuaries include a current e-mail address.

Paragraph 9: Notice regarding Errors

Paragraph 9 is unchanged for 2009.

Exhibits A and B

The reference to “Data Capture Format” merely means electronic filing. This allows for mechanical queries on demographic information and financial data. Appointed Actuaries should refer to the *Instructions* and prepare exhibits to aid the company in accurately populating the electronic submission.

Special Note on Exhibit B, Question 6: Some actuaries have commented to regulators that the wording of the question implies a probability conclusion. That is not the regulatory intention. The question intends to mirror the disclosure in the Relevant Comments regarding the Appointed Actuary’s conclusion as to significant risks and uncertainties that could result in material adverse deviation. Actuaries should respond with this guidance in mind.

For those companies following paragraph 1C of the *Instructions*, Exhibits A and B of the lead company should be attached as an addendum to the PDF file and/or hard copy being filed for the non-lead companies.



REGULATORY GUIDANCE
On the Property and Casualty Actuarial Opinion Summary
For the Year 2009

Prepared by the NAIC's
Casualty Actuarial and Statistical (C) Task Force

The Casualty Actuarial and Statistical (C) Task Force (CASTF) of the NAIC believes that the Actuarial Opinion Summary (Summary) is a valuable tool in serving the regulatory mission of protecting consumers. This Regulatory Guidance document supplements the NAIC's *Property and Casualty Annual Statement Instructions (Instructions)* in an effort to provide clarity and timely guidance to Appointed Actuaries regarding regulatory expectations with respect to the Summary.

Form

The Summary is intended to be a **confidential** document separate from the Statement of Actuarial Opinion (Opinion). The CASTF advises the Appointed Actuary to provide the Summary to their company separately from their Opinion. The Summary should be clearly labeled and identified prominently as a confidential document. The CASTF advises that, in order to avoid confusion, the Appointed Actuary should **not** attach the related Opinion to the Summary.

Not all states have adopted the Property and Casualty Actuarial Opinion Model Law that requires the Summary to be filed. Nevertheless, the CASTF recommends that the Appointed Actuary prepare the Summary regardless of the domiciliary state's requirements, so that the Summary will be ready for submission should a foreign state—having the appropriate confidentiality safeguards—request it. Most states provide the Annual Statement contact person with a checklist that addresses filing requirements. The CASTF advises the Appointed Actuary to work with the company in determining the logistic requirements for each state.

The Summary is **not** submitted to the NAIC.

Substance

The *Instructions* for the Summary are unchanged for year-end 2009.

Paragraphs 1–4 and 7 of the *Instructions* are unchanged for 2009 and are self-explanatory. The entire substance of the Summary rests in Paragraph 5. The required information for Parts A–D of Paragraph 5 is highlighted by the straightforward examples provided in the Summary section of the American Academy of Actuary's Property/Casualty Practice Note, *Statements of Actuarial Opinion on P&C Loss Reserves*. The content of the Summary should reflect the analysis performed by the Appointed Actuary, because the Summary is a synopsis of the conclusions drawn in the Actuarial Report.

Regulators expect that point or range estimates reported in the Summary are clearly supported and documented in the Actuarial Report. Without clarity, the documentation fails to meet Actuarial Standards of Practice and the expectation that another actuary can evaluate the work. Part E of Paragraph 5 of the *Instructions* addresses persistent adverse development. The actuary is in a unique position to be able to comment on the nature of this development. This section requires the actuary to do so. Comments can reflect common questions that regulators have, such as:

- Is development concentrated in one or two exposure segments, or is it broad across all segments?
- How does development in the carried reserve compare to the change in the actuary's estimate?
- Is development related to specific and identifiable situations that are unique to the company?
- Does the development or the reasons for development differ depending on the individual calendar or accident years?

Paragraph 6 was new for 2008. It is relevant **ONLY** in pooling situations as defined in paragraph 1C of the *Instructions* for the Opinion and provides more relevant information to the domiciliary regulator of the 0% companies.



AMERICAN ACADEMY of ACTUARIES

September 29, 2009

Richard Marcks, FCAS, MAAA, Chairperson
Casualty Actuarial & Statistical Task Force
c/o Kris DeFrain, Director, Actuarial & Statistical Services
National Association of Insurance Commissioners
2301 McGee Street
Suite 800
Kansas City, MO 64108

Dear Mr. Marcks:

I am writing on behalf of the Casualty Practice Council of the American Academy of Actuaries (Academy). As you are aware, the National Association of Insurance Commissioners' (NAIC) definition of a "Qualified Actuary," with respect to Statements of Actuarial Opinion (SAOs) for Property and Casualty Annual Statements, is a person who is either:

- (i) A member in good standing of the Casualty Actuarial Society (CAS), or
- (ii) A member in good standing of the American Academy of Actuaries who has been approved as qualified for signing casualty loss reserve opinions by the Casualty Practice Council of the American Academy of Actuaries.¹

The *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States (Including Continuing Education Requirements)* (Qualification Standards), issued by the Academy and effective January 1, 2008, address basic and continuing education and experience requirements for actuaries issuing SAOs.

While membership in the CAS may meet the NAIC's definition of a qualified actuary, some CAS members may not have met the basic education requirements that are specified by the Qualification Standards. For example, it may be that CAS members who:

- Completed CAS Exam 7-Canada (or other non-U.S. exams that may be offered in the future),
or
- Became members through Mutual Recognition, or
- Complete Associate Level exams under the new CAS syllabus that becomes effective in 2011,

¹ State authorities have also approved others to act as appointed actuaries, although this has become increasingly rare as the supply of qualified actuaries has grown.

may need to demonstrate that they have either completed the exam topics set forth in Section 3 of the Qualification Standards, which were not included on their exam syllabus, or met the alternative to basic education set forth in Section 3 of the Qualification Standards.

In addition, CAS members in the first two categories may lack sufficient knowledge of the U.S. laws and regulations that are covered under CAS Exam 7-United States.

With respect to the third category, the CAS Board of Directors recently approved changes to the CAS Syllabus that will go into effect in 2011. I am attaching an article, which appeared in the August 2009 edition of *The Actuarial Review*, informing CAS members and candidates that the revised exam requirements for Associateship in the CAS will not cover all of the exam requirements set forth in Section 3 of the Qualification Standards for actuaries issuing the loss and expense reserves actuarial opinion in connection with the NAIC Property and Casualty Annual Statement.

Finally, as noted above, the Qualification Standards also provide experience and continuing education requirements. Thus, while membership in the CAS is necessary to qualify under item (i) of the NAIC's definition, it may not be sufficient to meet all of the Qualification Standards.

We note that the Code of Professional Conduct, which was adopted by the five U.S.-based actuarial organizations and became effective in 2001, states that: "An Actuary shall perform Actuarial Services only when the Actuary is qualified to do so on the basis of basic and continuing education and experience" Thus, if an Associate of the CAS who had not met the education requirements were to sign a SAO, he or she may be in violation of the code and therefore could be subject to appropriate counseling and/or disciplinary procedures.

Exhibit B to the NAIC Statement of Actuarial Opinion includes a number of required disclosures, including the basis for the actuary's qualification (as follows):

3. The Appointed Actuary is a Qualified Actuary based upon what qualification?

Enter F, A, M, or O based upon the following:

F if an FCAS;

A if an ACAS;

M if not a member of the CAS, but a Member of the American Academy of Actuaries approved by the Casualty Practice Council (and attach approval letter as documentation); or

O for Other

We recommend that this language be revised to:

3. The Appointed Actuary is a Qualified Actuary based upon what qualification?

Enter CAS, AAA/CPC, or O based upon the following:

CAS, if a member of the CAS who meets the basic education, experience, and continuing education requirements of the Specific Qualification Standard for Statement of Actuarial Opinion, NAIC Property and Casualty Annual Statement, as set forth in the *Qualification*

Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States (Including Continuing Education Requirements) promulgated by the American Academy of Actuaries;

AAA/CPC if not a member of the CAS, but a Member of the American Academy of Actuaries approved by the Casualty Practice Council (and attach approval letter as documentation) who meets the basic education, experience, and continuing education requirements of the Specific Qualification Standard for Statement of Actuarial Opinion, NAIC Property and Casualty Annual Statement, as set forth in the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States (Including Continuing Education Requirements)* promulgated by the American Academy of Actuaries; or

O for Other

Alternatively, disclosure #3 could be renumbered as 3a, and new language numbered as 3b could be added as follows:

I have met the basic education, experience, and continuing education requirements of the Specific Qualification Standard for Statement of Actuarial Opinion, NAIC Property and Casualty Annual Statement, as set forth in the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States (Including Continuing Education Requirements)* promulgated by the American Academy of Actuaries.

Yes No

This would serve as an acknowledgement that the actuary is aware of the qualification requirements.

I would be pleased to answer any questions related to the above. Thank you in advance for your consideration of this important issue.

Sincerely,

Gary Josephson, FCAS, MAAA
Vice President, Casualty Practice Council
American Academy of Actuaries

Enclosure: [Excerpt from Actuarial Review \(August 2009\)](#)

w:\dec09\tf\casualty actuarial\AAA Letter Qualified Actuary.pdf