

**American Nuclear Society  
Risk-Informed Standards Consensus (RISC) Committee  
Meeting Minutes  
November 15, 2006  
Hyatt Regency Albuquerque • Enchantment B**

**Members Present:** William E. Burchill, *Texas A& M Univ. (RISC Chair)*; Paul Amico, *SAIC*; Biff Bradley, *NEI*; Allen Camp, *Sandia National Lab*; Mary Drouin, *US NRC*; John Gaertner, *EPRI*; Dennis Henneke, *General Electric*; Rick Hill, *ERIN*; Jeff Julius, *Sciencetech (for Ken Kiper)*; Gareth Parry, *NRC*; Ray Schneider, *Westinghouse (for David Finnicum)*; Pat Schroeder, *ANS*; Daniel (Bill) Stillwell, *South Texas Project Nuclear Operating Company*

**Members Present by Phone:** Gene Hughes, *ENTRANCO*; Stanley Levinson, *AREVA NP*

**Members Absent:** Robert Bari, *Brookhaven National Laboratory*; Richard Black, *US DOE*; Robert Budnitz, *Lawrence Livermore National Laboratory*; Frederick Emerson, *GE Nuclear Energy*; David Finnicum, *Westinghouse (alternate attended)*; Wayne Holmes, *HSB Professional Loss Control*; Yehia Khalil, *Yale University*; Kenneth Kiper, *FPL (alternate attended)*; M. K. (Ravi) Ravindra, *ABS Consulting, Inc.*; Mark Rubin, *NRC*; Jean Savy, *Risk Management Solutions*

**Others Present:** Timothy Dennis, *Consultant*; Mary Beth Gardner, *ANS*; Rick Grantom, *South Texas Project Nuclear Operating Company*; N. Prasad Kadambi, *US NRC*; Mark Leonard, *dycoda LLC*; Keith Woodard, *ABS Consulting*; Donald Wakefield, *ABS Consulting*

## **1. Roll Call and Approval of Agenda**

Bill Burchill, RISC Chair, opened the meeting at 9:00 a.m. and the agenda was approved with no additional agenda items added.

## **2. Meeting Key Issues and Objectives**

See Attachment A for slides presented during the discussion.

Bill Burchill reviewed the agenda and highlighted key points using Attachment A.

### ANS-58.21 Rev. 1 (External Events)

Burchill explained that previous attempts to reach resolution on ANS-58.21 had been unsuccessful, thus a resolution committee lead by Allen Camp was formed during the April, 2006, RISC meeting. Burchill stated that Allen Camp would report on committee resolutions and John Gaertner would provide a status update on the pilot project.

### ANS-58.22 (LPSD)

Burchill stated that new chair, Don Wakefield, would report on ballot status and comment resolutions. Burchill explained that he would provide an update on the formation of a subgroup for qualitative requirements while John Gaertner would provide the status of the EPRI qualitative risk assessment guidance.

### ANS-58.23 (Fire)

Burchill informed the committee that Dennis Henneke would provide a summary of recent working group (WG) activities including resolution of comments, substantive changes, and an estimate for incorporating comments and completing a draft for re-ballot if necessary.

### ANS-58.24 (Level 2)/ANS-58.25 (Level 3)

Burchill stated that ANS-58.24 Chair, Mark Leonard, and ANS-58.25 Chair, Keith Woodward, would provide a status update of their projects.

## NRMCC

Burchill stated that a number of activities that have come through the NRMCC (Nuclear Risk Management Coordinating Committee formed jointly by ANS and ASME to oversee and advise on development of PRA-related standards) would be discussed. He said that he felt communications back to the Standards Board had not been complete. Burchill informed the committee that Rick Grantom would provide information about the process to develop integrated PRA standards. Burchill reported that the NRMCC had facilitated communication to the NRC and that the committee would receive copies of the letters.

### **3. Status of Standards Writing Group Activities**

#### ANS-58.21, Rev. 1 External Events

Allen Camp (SNL) explained that, in addition to himself, the resolution committee (RC) included Biff Bradley (NEI), David Finnicum (W), Rick Hill (ERIN), and Gareth Parry (NRC) with support from Bill Burchill. Camp stated that the RC framed the issues and developed three recommendations which were turned over to Burchill. Camp stated that the recommendations were based on a compromise consensus and were unanimously approved by the RC. Camp summarized the three issues and recommendations:

#1: Whether the external events standard followed the intent of the ASME capability categories: The RC felt that the external events standard was consistent with the intent of the categorization in the ASME PRA standard and recommended that RISC endorse ANS-58.21, Rev. 1 as written. Furthermore, should any supporting requirements appear on application of the standard to be too onerous, they should be dealt with in a revision to the standard.

#2: Clarity of seismic hazard analysis requirements: The RC recommended no changes to the seismic hazard analysis high level and supporting requirements but recommended that Note HA-H be clarified. The RC provided a recommended revision of Note HA-H.

#3: Possible pilot study: The RC recommended that RISC endorse a pilot study but that the revised standard be approved as soon as such a pilot study is chartered, pending resolution of other outstanding issues. The RC recommends that the standard not be held up until the pilot study is completed.

Burchill stated that the RC had extensive deliberation over the wording of Note HA-H, and the RC-recommended revision was developed with input from consultants and the WG. He said that a lot of editorial changes were made to the draft, but none were substantive. Thus the standard consensus process can proceed without a second ballot if the negative ballots are resolved. Negative balloters had considered the recommendations. Burchill reported that one negative had been reversed, and at the time of this meeting three remain. He stated that of the three remaining negatives, two are conditional. One condition requires that the NRC withhold endorsement until the pilot study is completed, and the other requested that the pilot study be chartered prior to the standard being published. Burchill informed the committee that he would declare consensus should only one or two negative ballots remain.

Mary Drouin reminded the committee that ANS 58.21, the external events standard published in 2003, is endorsed by the NRC. She said that it would be better to move ahead with the revision since it corrects several issues in the published standard. Furthermore, Drouin stated that Regulatory Guide 1.200 could be modified if necessary if the pilot study shows that the standard should be revised. She explained that regulatory guides are living documents that could be changed as new information is learned. Gene Hughes strongly endorsed Drouin's recommendation.

John Gaertner explained that there are four possible sources of funding for the pilot study: (1) a utility participant, (2) the EPRI Risk & Safety Management (RSM) Advisory Committee chaired by Rick Grantom, South Texas Project (STP), (3) the EPRI EI (emergent issues) fund (which requires approval by NEI), and (4) the EPRI technology innovation fund. Gaertner reported that the first two sources have already approved funding and that he expects approval by the latter two by the end of the year. He said that if funding is not completed by the end of the year, he will appeal in January, 2007, to the EPRI Nuclear Power Council for the remaining funding. He said that he expects the project to be initiated by March 1, 2007. Gaertner said that the study will require 24 months. He stated that there will be several tasks which include a minor update of seismic PRA, data collection and assembly, study of internal

events PRA, plant walkdowns, system analysis to determine relevant equipment, streamlined hazards analysis, fragility calculations, hazard/fragility integration, and determination of core damage frequency.

Biff Bradley said that the WG stated that the Columbia seismic PRA was reported to comply with ANS 58.21 in a paper presented at PSA-05. Gaertner stated that he had approached Columbia to see if they were interested in participating in the pilot study, but they declined. He explained that EPRI members can join the pilot study as pilot plant or non-pilot participant. Gaertner stated that EPRI was about to select one plant for the pilot.

The three remaining negative balloters each clarified their position. Biff Bradley said that his ballot is actually to approve and that he only commented on the NRC endorsement, but that it is not a condition of his ballot. Burchill requested that he provide a written clarification for the record. Dennis Henneke and John Gaertner said that if the pilot study is chartered, their ballots will be positive.<sup>1</sup>

Burchill stated that there was enough certainty that he would submit ANS 58.21, Rev 1 to the NRMCC committee for the integrated Level 1 PRA standard.

#### ANS-58.22, Low Power/Shutdown (Wakefield)

See Attachment B for slides presented by Don Wakefield during the discussion.

Don Wakefield reviewed the low power/shutdown (LPSD) PRA standard RISC consensus ballot that closed 8/3/05 (8 approved, 7 not approved, 2 abstained/not returned) and the status of comment resolutions. He reported that 168 of the 298 comments had been resolved; however, four WG members had not provided their portion of comment responses yet. Wakefield explained that some members thought the project was on hold, but he has since made it clear that was not the case. He stated that WG members would be replaced if necessary and tasks reassigned.

Burchill informed the committee that the LPSD PRA standard would be re-balloted due to substantive changes.

Wakefield discussed the following three areas of contention identified in the ballot comments:

Issue #1: Qualitative Assessment – Whether qualitative assessment should be added to the standard or separated out into a second standard.

Issue #2: Detailed Guidance – The standard should focus on the “what” and not the “how to.”

Issue #3: Outage Specific vs. Time-Average – Whether the standard should be revised to include a section on the requirements for development of LPSD PRA as a configuration risk management (CRM) model for outage-specific applications.

Wakefield explained that the next steps for the WG would be to finish responses to the comments already received and modify the standard consistent with comments. Burchill added that he would work with Wakefield to determine if new WG members were needed to complete the responses.

John Gaertner expressed concern that the qualitative parts of the standard should not be extracted even if they are expected to be included in a later revision or a separate standard. Burchill read the following motion which was approved 13 to 1 at the November 2005 RISC meeting:

1. The standard should be maintained with both the qualitative and quantitative components.
2. A subcommittee of qualitative experts be appointed to the subcommittee.
3. If a way can be found to issue the quantitative part for trial use with the placeholders identifying the qualitative text is to come later, that is the preferred way of proceeding with the current draft.

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<sup>1</sup> As of 2/9/07, all negative ballots had been converted to positive ballots.

Burchill explained that the ANS Standards Board had clarified that a standard could not be issued with placeholders but that future intentions could be noted in the foreword. He stated that the WG would be consistent with the November 2005 motion if the qualitative portions are developed for a later revision.

Mary Drouin informed the committee that the NRC cast a negative vote on this draft, because they do not feel that a qualitative section should be part of a PRA standard. She noted that when NRC endorsed the external events standard, ANS 58.21, they took exception to the seismic margins. Drouin stated that from the NRC position it would be preferable to separate out the qualitative portion. Paul Amico said that anything that is risk-informed could be included in the standard. Drouin clarified that the NRC was in favor of both the qualitative and quantitative sections, but in two separate standards.

Allen Camp reminded the committee that the issue related to Configuration Risk Management (CRM) was not decided. A motion was made and seconded that the issue be left to the WG's discretion. After considerable discussion, the motion was withdrawn. Then, the following motion was made and seconded:

The LPSD standard should be revised to include the requirements for development of LPSD PRA as a configuration risk management (CRM) model for outage-specific application.

The motion was unanimously approved.

Gaertner asked if another motion on including a qualitative section was necessary. Amico said that he felt it best if the WG evaluated the viability of including the qualitative section and make the best decision to complete the standard in a timely manner. Wakefield agreed that the WG should make this decision, but after new members are appointed to the WG. After a brief discussion, the majority of the RISC members were in agreement that qualitative aspects should be included in the initial version of the LPSD PRA standard only if it did not adversely affect timely completion of the standard.

John Gaertner reported that EPRI had sponsored a project to develop qualitative risk assessment methods. The results are provided in EPRI 1013501, *Qualitative Risk Assessment Methods for Shutdown Risk Management*, dated November, 2006. Burchill asked if the LPSD WG members and the RISC Committee could be provided the report. Gaertner agreed to facilitate this distribution.

Action Item 11/06-02: John Gaertner to make arrangements for a copy of EPRI report 1013501 to be distributed to the RISC and LPSD WG members.

Burchill took an action item to find new WG members for the LPSD qualitative section.

Action Item 11/06-03: Bill Burchill to find new WG members for the LPSD qualitative section.

Ray Schneider informed the committee that the WOG (Westinghouse Owners Group) had nearly completed an LPSD guidance document on steady-state shutdown models. Schneider stated that the WOG is also conducting a parallel activity to understand how to model transitions; he said a draft will be completed by the end of the year. Burchill asked that Dave Finnicum be the RISC contact for a more detailed update on the WOG guidance documents.

Action Item 11/06-04: Pat Schroeder to contact Dave Finnicum for an update on the WOG guidance documents.

#### ANS-58.23 Fire PRA (Henneke)

See Attachment C for slides presented by Dennis Henneke during the discussion.

Dennis Henneke reported that the fire PRA standard ballot closed 8/19/06 with 7 approved, 8 approved w/comments, and 3 not approved (2 not returned) votes that included 329 comments from RISC and the public. He informed the committee that the WG had held two meetings (in Denver 9/25-29/06 and Albuquerque 11/13-16/06) to resolve comments and had been through several iterations completing a

new draft that is currently being reviewed by the WG. Henneke estimated that 90% of the comments were accepted and some new high level requirements were added while a few sections were moved around.

Henneke anticipated that the WG would have a draft ready for reviewers and negative balloters within a week and a final draft back to RISC for ballot in January 2007. At this point, Henneke expected the draft would need to be re-balloted due to the new requirements but hoped that the next set of comments would not result in additional requirements and a third ballot. Burchill informed the committee that the re-ballot would be concurrent with a second public review. He recommended giving advance notice to potential public reviewers so they were prepared to review the draft within the specified time frame.

Henneke stated that the pilot application of NUREG/CR-6850/EPRI TR-1011989 and NFPA-805 continue. He explained that changes made to NUREG/CR-6850 after completion of the pilot could require changes to the fire PRA standard. Henneke stated that the plan was to incorporate necessary changes in Revision 1.

Henneke asked for feedback from the committee on a comment from Ravi Ravindra regarding determining if PRA team members are knowledgeable about fire analysis tools. Henneke explained that the WG did not feel the comment should be incorporated, and the RISC Committee agreed.

The committee discussed the conflicting classification of internal fires as an external event in ASME Addendum B and ANS-58.21 while Draft Regulatory Guide 1.200 called internal fires an internal event. Mary Drouin explained that over time, the definition had changed and that the NRC was trying to clean up the language. Gareth Parry thought that ASME voted not to change the definition.

Burchill questioned the necessity of a committee vote to define internal fire. Drouin suggested waiting to see how NRC handled and took an action item to report NRC decision back to RISC.

Action Item 11/06-5: Mary Drouin to check with NRC on the current definition of internal fire as internal or external event and report back to RISC.

Allen Camp explained that a long time ago internal fires and floods were treated very similarly. He felt that we would be better off by determining this now. Paul Amico said that having conflicting definitions in two standards that were being integrated was counter-productive.

After a discussion, the following motion was made and seconded:

To endorse the WG's suggestion to define internal fires as an internal event adding historical perspective.

The motion failed with 2 in favor and 10 opposed.

Henneke reported that the NRC recommended that an internal events PRA be required as a starting point for developing a fire PRA. He stated that the WG responded to the comment by requiring background on the issue be provided and that a peer review be performed against the ASME PRA standard prior to evaluation of the fire PRA. Henneke informed the committee that NEI guidance was being developed with a similar requirement to review the internal events PRA for impact on the fire PRA.

After discussion, RISC requested the WG (1) to review the external events PRA standard, ANS 58.21, supporting requirements relative to having an existing internal events PRA and (2) to ensure that the peer review process allows either simultaneous or parallel reviews of the internal events PRA and the fire PRA.

Henneke explained a comment received from John Gaertner on Appendix B. Gaertner's comment suggested that the fire PRA standard application to NFPA 805 be deleted. It was the sense of RISC that the WG should seek another repository for the inclusion in Appendix B due to the possible changing nature of the information it contains.

Henneke stated that another comment recommended revising the draft for applicability to only light water reactors. He explained that he thought the fire PRA standard could be applicable to new reactors. Drouin

disagreed stating that she felt it could not be applicable to new fast reactors. After a brief discussion, the committee suggested that the fire PRA standard should be consistent with the ASME PRA standard.

Henneke reported that an additional requirement would be added to review the fire PRA results to ensure that spurious operations had been adequately considered. The requirement will be to look at dominant spurious operation sequences and high risk areas to determine if additional spurious operation sequences would affect the results. Gaertner expressed his opinion that it was hard to define acceptance criteria resulting in non-resolvable results. Henneke stated that acceptance criteria will be defined in the draft. After a discussion on current practice verses state-of-the-art regarding spurious operations, the committee decided to wait to review the revised draft and see what ballot comments were made.

Henneke said that the fire PRA standard would match up well with the ASME PRA standard and addendum except for fire initiating events which may not be easily merged with the internal events PRA modeling. The committee felt that the NRMCC integration team would merge the standards as appropriate.

#### ANS-58.24, Level 2 (Leonard)

See Attachment D for slides presented by Mark Leonard during the discussion.

Mark Leonard reported on the progress of the Level 2 PRA standard WG informing the committee that the only face-to-face meeting of the WG was in September 2005 at PSA-05. He explained that the WG was still seeking members. Leonard stated that John Lehner was a member in reserve because of funding. Alan Kuritzky was recently nominated by the NRC to participate on the WG. Ray Schneider was also nominated by Westinghouse. Leonard informed the committee that an inquiry was received from another member in Europe. Leonard asked for suggestions from the RISC for additional members of the reviewer/advisor group. Allen Camp suggested Fred Harper and Tom Brown as reviewers. Drouin informed Leonard that Kuritzky's participation on the committee may need to be revised as he was recently reassigned in NRC.

Leonard stated that the PINS form was completed, balloted, revised, and submitted to ANSI. He explained that technical progress had been slow, but work on an outline had begun. Leonard explained that the lack of funding for travel was a major impediment and resulted in the withdrawal of participation by Fred Torrey as he felt that the project was not supported.

Leonard explained that the WG was struggling with the appropriate requirements for interfacing with Level 1 PRA results. The slides shown by Leonard provide a detailed discussion of options. Burchill suggested that an expanded scope with supported applications be written and chartered a group to prepare a white paper on 1) whether the scope of the Level 2 standard should be linked to the integrated Level 1 standard, 2) what applications should be included, and 3) what reactors were applicable. The group was formed with Bill Stillwell as lead, Ray Schneider, and Rick Hill.

Action Item 11/06-06: Bill Stillwell (chair), Ray Schneider, and Rick Hill to prepare a white paper on 1) whether the scope of the Level 2 standard should be linked to the integrated Level 1 standard, 2) what applications should be included, and 3) what reactors were applicable. Due January/February 2007.
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Burchill stated that NRC funds presently provided for support of the Level 1 PRA standards should be reallocated to support the Level 2 and Level 3 standards. Drouin offered to research the appropriate NRC contact and provide information to Mary Beth Gardner to initiate request. Mary Beth Gardner will also poll the Level 2 and Level 3 PRA WG's to determine their travel supports needs.

Action Item 11/06-07: Mary Drouin to provide contact information of NRC staff to contact regarding reallocation of NRC grant funds for Level 2 and Level 3 PRA standards.
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Action Item 11/06-08: Mary Beth Gardner prepare and submit request to NRC for grant reallocation and possible increase for the Level 2 and Level 3 PRA standards.
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#### ANS-58.25, Level 3 PRA Standard (Woodard)

See Attachment E for slides presented by Keith Woodard during the discussion.

Keith Woodard reported that the PINS for the Level 3 standard was approved in February of this year. He explained that most comments were related to the title not being specific to nuclear power plants. Woodard stated that the first meeting was June of 2005, and a second meeting was held in November 2005 attended by two-thirds of the group. He reported that assignments were made to develop an outline. Woodard stated that he felt the 13 WG members which included an NRC representative was well balanced.

Mary Drouin stated that she had requested funding for members from labs to work on the Level 2 and Level 2 PRA standards. Woodard said that he believed it was important to have the participation of Jan Van der Steen (Netherlands), but he could not participate unless support was received.

Woodard stated that the WG needed to determine how they were going to report results and use them.

During discussion, some RISC members suggested that the Level 3 PRA standard should be applicable to any nuclear installation, not just reactors. However, no action was taken.

#### **4. Nuclear Risk Management Coordinating Committee Topics**

Bill Burchill provided the committee with a copy of the report he presented to the ANS Standards Board and a summary of a report he made to the NEI Risk-Informed Regulation Forum on 10/11/06. Burchill stated that he intends to pass ANS 58.21, Rev. 1 to the ASME CNRM (Committee for Nuclear Risk Management) to start the Level 1 PRA standard integration process; however, the fire PRA and LPSD PRA standards will not be turned over to the integration process until consensus is reached.

#### Integrated Standard Status (Burchill)

Burchill explained that the integrated standard was conceived in 2004 by the NRMCC and presented to the ANS Standards Board for endorsement. The ANS Standards Board approved a high level framework motion balloted in October 2004 for the assignment of an integrated requirements standard for a Level 1 PRA for specific plant operating conditions to ASME CNRM and the assignment of an integrated requirements standard for Level 2 and Level 3 to ANS RISC. Burchill added that the ANS Standards Board approved a decision to publish the supporting individual ANS standards last June.

Burchill stated that the consensus process to be applied to the integrated standards had not yet been completely resolved. Conceptually, the consensus committee with lead responsibility for any specific integrated PRA standard would have a cross-representation from the other society's consensus committee. For example, CNRM would have representation from RISC, and vice versa. This was explained at the 4/6/06 joint meeting of RISC and CNRM in New York City. Burchill said that business issues of copyright, legal liabilities, and revenue sharing would be resolved between the ANS and ASME staffs.

Allen Camp expressed concerned that slowly over time ANS would lose control of ANS standards. Burchill explained that there would be a contract, and all standards would be published with joint logos and shared revenue.

Burchill informed the committee that the integration team had four members: Dan McLaughlin (Westinghouse), Rick Grantom (STP), Mary Drouin (NRC), and Sid Bernsen (ASME). Burchill said that he will provide additional names from ANS to participate on the committee. He solicited interest from RISC members and the RISC WG's. Drouin said that the process so far had been simple and no requirements were added. She continued that at this point the integration team sees no need to exclude any information.

## Communication with NRC

Burchill provided the committee copies of the August 9, 2006, and November 7, 2006, letters sent jointly from ANS and ASME to the NRC. He explained that the initial letter provided specific schedules for the three standards to be integrated into the Level 1 standard fully supporting the NRC timetable. The second letter provided a further update.

Burchill explained that during the process of writing the November 7 letter to the NRC, a letter was received from NEI stating that the industry needed the fire PRA standard as soon as possible and requesting that publication of the fire PRA standard not await the integrated PRA standard. Burchill said that there had been no response from the NRC to the joint ANS/ASME letters. Drouin commented that a response was not necessary from the NRC. Burchill added that he thought the two societies may respond to the NEI letter. Biff Bradley informed the committee that NEI had a meeting with the NRC, and it was his belief that NEI was not concerned with NRC endorsement of the fire standard since the integrated standard would have identical requirements.

Action Item 11/06-09: Pat Schroeder to send NEI letter to RISC Committee.
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## Other NRMCC Activities (Burchill)

Burchill reported that the Standards Committee submitted comments on the Advance Notice of Proposed Rulemaking on Proposed 10 CFR Part 53 Approaches to Risk-Informed and Performance-Based Requirements for Nuclear Power Plants to the NRC through the Nuclear Facilities Standards Committee.

Burchill stated that ASME's training activity on the PRA standards had started. He explained that the initial meeting on this training activity was held after the joint RISC/CNRM meeting in New York last April. Burchill felt the meeting was very impressive. He informed the committee that Mary Beth Gardner would be provided direction from the Standards Board to investigate ANS participation/revenue sharing of these activities.

Burchill reported that Ray Weilder and Jim Mallay had reached the end of their terms as NRMCC co-chairs and new chairs were being considered. Burchill added that there had been a huge effort to increase communication between the two societies on the integration process.

## **5. Other Business**

Because it was felt that joint meetings with ASME CNRM were beneficial, Bill Burchill suggested that the committee consider another joint meeting. Stanley Levinson stated that the next CNRM meeting was planned for February 2007 in San Diego with the next meeting scheduled for September 2007 in Chicago. Burchill questioned whether the February meeting would be too soon for RISC. Mary Drouin thought that a February meeting would be helpful in light of the timeframe for the integrated process. Burchill stated he would consider the options.

## **6. Adjourn**

The meeting was adjourned at 5:19 p.m. MDT.