



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

June 4, 2004

MEMORANDUM TO: ACRS Members

FROM: Michael Snodderly, Senior ACRS Staff Engineer */RA/*

SUBJECT: CERTIFICATION OF THE MINUTES OF THE MEETING OF THE
ACRS SUBCOMMITTEE ON RELIABILITY AND PROBABILISTIC
RISK ASSESSMENT, MARCH 25, 2004 - ROCKVILLE, MARYLAND

The minutes of the subject meeting, issued June 2, 2004, have been certified as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

electronic cc: J. Larkins
H. Larson
S. Duraiswamy

June 2, 2004

MEMORANDUM TO: G. E. Apostolakis, Chairman
Reliability and Probabilistic Risk Assessment Subcommittee

FROM: M. R. Snodderly, Senior ACRS Staff Engineer */RA/*

SUBJECT: WORKING COPY OF THE MINUTES OF THE MEETING OF THE
ACRS SUBCOMMITTEE ON RELIABILITY AND PROBABILISTIC
RISK ASSESSMENT, MARCH 25, 2004 - ROCKVILLE, MARYLAND

A working copy of the minutes for the subject meeting is attached for your review. Please review and comment on them at your soonest convenience. If you are satisfied with these minutes please sign, date, and return the attached certification letter.

Attachment: Minutes (DRAFT)

cc: Reliability and Probabilistic Risk Assessment Subcommittee Members
S. Duraiswamy
J. Larkins
H. Larson

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MEETING OF THE ACRS SUBCOMMITTEE ON
RELIABILITY AND PROBABILISTIC RISK ASSESSMENT
MEETING MINUTES - MARCH 25, 2004
ROCKVILLE, MARYLAND

INTRODUCTION

The ACRS Subcommittee on Reliability and Probabilistic Risk Assessment (PRA) held a meeting on March 25, 2004, in Room T-2B3, 11545 Rockville Pike, Rockville, MD. The purpose of this meeting was to discuss the staff's draft plan for implementing the Commission's Policy Statement on a phased approach to probabilistic Risk Assessment (PRA) quality. The meeting was open to public attendance. Mike Snodderly was the Designated Federal Official for this meeting. There were no written comments or requests for oral presentations. The meeting was convened by the Subcommittee Chairman at 1:15 p.m. and adjourned at 4:46 p.m. on March 25, 2004.

ATTENDEES

ACRS Members

G. Apostolakis, Subcommittee Chairman	S. Rosen, Member
M. Bonaca, Member	W. Shack, Member
F. Ford, Member	J. Sieber, Member
T. Kress, Member	M. Snodderly, Designated Federal Official

Principal NRC Speakers

M. Drouin, RES	M. Reinhart, NRR
D. Harrison, NRR	M. Rubin, NRR
S. Magruder, NRR	B. Tjader, NRR
G. Parry, NRR	M. Schiltz, NRR

Other Principal Speakers

R. Bradley, NEI

There were approximately two other members of the public in attendance at this meeting. A complete list of attendees is in the ACRS Office File and will be made available upon request. The presentation slides and handouts used during the meeting are attached to the office copy of these minutes.

OPENING REMARKS BY CHAIRMAN APOSTOLAKIS

George Apostolakis, Chairman of the ACRS Subcommittee on Reliability and PRA convened the meeting at 1:15 p.m. Dr. Apostolakis stated that the purpose of this meeting was to discuss the to discuss the staff's draft plan in response to the Commission's Policy Statement endorsing a phased approach to PRA quality. He said the subcommittee would gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee. The rules for participation in the meeting were announced as part of the notice of the meeting published in the Federal Register on February 27, 2004.

DISCUSSION OF AGENDA ITEMS

Briefing on Draft Plan for Stabilizing PRA Quality Expectations and Requirements

Gareth Parry, NRR, introduced the working group which is responsible for developing the plan. The group is headed by Mike Tschiltz, PRA Branch Chief, NRR, Donald Harrison and Stu Magruder, NRR, and Mary Drouin, RES. Mr. Parry began by saying there is a lot of ambiguity over the term "quality PRA or "a high quality PRA." He said the staff was trying to get away from that term and instead say a PRA of sufficient quality to support an application. He said PRA quality is defined the same as in RG 1.174 and 1.200. Mr. Parry thought the Commission's policy statement facilitates near term progress and enhancement of safety through the use of available methods while also building the pathway to getting better methods and more broad reaching applications. He said the associated SRM directs the staff to develop an action plan to define a practical strategy for implementation and address technical issues, such as model uncertainty, external events, and human performance issues. He said the final plan is due to the Commission by July 2004. Mr. Parry then summarized the four different phases of the approach.

Mr. Parry used the flow chart on Slides 17 and 18 to explain the implementation of the approach. He discussed how Box 6 of Slide 17 would discourage adoption of PRAs without an associated standard and, thereby, it would encourage development of the standard. Mr. Parry said that the level of review for applications in which a PRA scope greater than that for which quality guidance exists was identified as a policy issue. Mr. Parry then discussed an informal program to monitor PRA quality during review of the application and periodic check against SPAR models. Mr. Parry discussed seven tasks to be completed in order to implement the action plan: (1) identify types of applications, (2) identify guidance documents needed for phase 2 for each application type, (3) identify staff activities for developing the necessary guidance documents, (4) define the schedule for transition to Phase 2 as a function of application type, (5) develop necessary guidance documents, (6) develop Phase 3 guidance, (7) continued ad hoc monitoring of PRA quality.

General Comments and Observations From the Subcommittee Members

- Dr. Apostolakis asked if the availability of standards and guidance documents distinguishes the phases. Mr Parry, generally, agreed. He went on to emphasize guidance documents for performing the application, such as Regulatory Guide 1.177 and guidance documents for assessing the appropriate quality for those applications. Mr.

Parry thought the guidance document for the application has to specify the appropriate quality for the PRA.

- Dr. Apostolakis and Mr. Rosen discussed the difference between “state of the art” and “state of the practice,” with Mr. Parry. They acknowledged that the Commission’s policy statement refers to the “state of the art” in Phase Four. It was agreed that this was a level higher than “state of the practice” because it includes innovative methods that have not yet been adopted by most practitioners. Dr. Apostolakis and Mr. Rosen agreed that “state of the art” should be encouraged but that the eventual “state of the practice” may be acceptable for all conceived applications.
- Dr. Apostolakis gave binary decision diagrams as an example of “state of the art” because you don’t need to cut off values. He said that you do not necessarily have to apply this method in order to make a regulatory decision because existing tools are good enough. Dr. Apostolakis mentioned that there have been discussions of including binary decisionmaking models in codes, such as Sapphire. He said this demonstrates that the “state of the practice” follows slowly behind, but it is aware of what the “state of the art” is.
- Mr. Parry, NRR, said that the Technical Specification 4(b) Initiative is an example where a fire PRA would be extremely useful, if not essential and yet the standards don't exist. Mr. Parry pointed out that for controversial issues which are not addressed by a standard will be decided on an ad hoc basis by an assigned reviewer.
- Mr. Tschiltz, NRR, believed there were some licensees who are going to wait till the standard is in place before they invest in developing those PRAs because they don't want to develop something that's not in accordance with the standard that's going to come out a year or two later.
- Dr. Apostolakis complained that in some cases human error probability is not appropriately considered. He gave the example where a particular action takes 42 minutes and has a human error probability of $1 \text{ E-}03$. Because of a power uprate the action must be completed in 39 minutes and the licensee assumes the human error probability goes to $1.5 \text{ E-}03$ to compensate.
- Dr. Bonaca said that the staff’s draft plan was a good interpretation of the SRM. Dr. Bonaca could see the result of incentives for the industry to develop standards. He was concerned that this would be the end of the progress in improvement of methods. He saw the draft plan as providing incentive for people to get standards in place and proceed to better models. He thought the Full Committee should comment where the plan may be counter productive by giving low priority to applications that have a scope for which a standard does not exist.
- Mr. Sieber said that the staff has developed the concept of a plan that addresses the necessary elements to fulfill the requirements of the SRM. Beyond that he did not think that the staff had addressed all of the technical issues that are outstanding at this time but they would be forthcoming.
- Dr. Ford thought that the issue of safety culture should have been addressed by the plan. Dr. Ford was concerned that the plan depends on the collaboration between the NRC,

licensee and the standards organizations, and he didn't see that interaction being there. Specifically he mentioned the amount of time it has taken to develop and endorse previous standards.

- Mr. Rosen felt the policy statement was headed in the right direction and he supported it. Mr. Rosen was concerned that Phase 3 is held hostage by the schedule for completion of the standards. Mr. Rosen felt that to have a requirement for staff review and approval as part of Phase 4 is unrealistic and well beyond anything the staff could ever do. autioned categorizing components as low with RAWs of just less than two. Mr. True responded that it also had to have a Fussell-Vesely less than 0.005. He said, as an example, the reactor core isolation cooling system had a RAW of .95 but the Fussell-Vesely was over 0.005 so it remained high safety significant.
- Dr. Kress said he liked the draft implementation plan. He said he was not as concerned about the development of holding Phase 3 hostage. He thought that industry would see the benefit in this approach and would not lag. Dr. Kress did not think the Committee was ready to make any recommendation on either safety culture or aging in PRA at this time. Dr. Kress felt that the technical issues should receive higher priority and the guidance on how to deal with uncertainty should receive the highest priority. Dr. Kress felt that the staff should review and approve PRAs as part of Phase 4.

STAFF AND INDUSTRY COMMITMENTS

The staff committed to briefing the Full Committee at the 512th Meeting.

SUBCOMMITTEE DECISIONS AND ACTIONS

Dr. Apostolakis committed to drafting bullets for possible presentation at the upcoming meeting with the Commissioners.

BACKGROUND MATERIALS PROVIDED TO THE SUBCOMMITTEE PRIOR TO THIS MEETING

1. Subcommittee status report, including agenda.
2. Staff Requirements Memorandum from Annette Vietti-Cook, Secretary, to Chairman Diaz, Subject: COMNJD-03-0002 - Stabilizing the PRA Quality Expectations and Requirements, dated December 18, 2003.
3. Letter from Gareth Parry, NRR, to Michael R. Johnson and Suzanne Black, Division of Systems Safety and Analysis, NRR, Subject: Draft Plan for Implementation of the Commission's Phased Approach to PRA quality, March 15, 2004.

Note:

Additional details of this meeting can be obtained from a transcript of this meeting available for downloading or viewing on the Internet at "<http://www.nrc.gov/ACRSACNW>" or can be purchased from Neal R. Gross and Co., Inc., (Court Reporters and Transcribers) 1323 Rhode Island Avenue, NW., Washington, DC 20005 (202) 234-4433.