



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

May 29, 2014

The Honorable Allison M. Macfarlane
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: SUMMARY REPORT - 614th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, MAY 8-10, 2014

Dear Chairman Macfarlane:

During its 614th meeting, May 8-10, 2014, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, letter, and memorandum:

REPORTS

Reports to Allison M. Macfarlane, Chairman, NRC, from John W. Stetkar, Chairman, ACRS:

- Human Reliability Analysis Models, dated May 14, 2014
- SECY-14-0016, "Ongoing Staff Activities to Assess Regulatory Considerations for Power Reactor Subsequent License Renewal," dated May 22, 2014

LETTER

Letter to Mark A. Satorius, Executive Director for Operations, NRC, from John W. Stetkar, Chairman, ACRS:

- Chapter 6 of the Safety Evaluation Report with Open Items for Certification of the US-APWR Design and Related Long-Term Core Cooling Issues," dated May 20, 2014

MEMORANDUM

Memorandum to Mark A. Satorius, Executive Director for Operations, NRC, from Edwin M. Hackett, Executive Director, ACRS:

- Draft Final Regulatory Guide 8.20, Revision 2, dated May 9, 2014

HIGHLIGHTS OF KEY ISSUES

1. Human Reliability Analysis Method Development and Progress

The Committee met with representatives of the NRC staff to discuss progress in developing a human reliability analysis (HRA) method. In a November 8, 2006 Staff Requirements Memorandum (SRM), resulting from the October 20, 2006 meeting with the ACRS, the Commission directed the ACRS to “work with the staff and external stakeholders to evaluate the different Human Reliability models in an effort to propose either a single model for the agency to use or guidance on which model(s) should be used in specific circumstances.” Substantial progress has been made toward meeting the SRM objectives. The staff’s presentation provided an overview of HRA method development and described the cognitive basis used as the foundation for HRA models. The staff decided that development of a single HRA model, the Integrated Decision-Tree Human Event Analysis System (IDHEAS), is the best approach. The staff described key features of the IDHEAS model, expert elicitation for estimating the human error probabilities, initial testing, and future development plans.

Committee Action

The Committee issued a letter to the NRC Chairman on this matter dated May 14, 2014, concluding that draft NUREG-2114, “Building a Psychological Foundation for Human Reliability Analysis,” contains valuable information to improve understanding of the theoretical basis for human cognitive performance, the causes for human errors, and a structured framework to assess the contributions to errors in the context of an evolving event scenario. It should be published. The Committee concluded that elements of the IDHEAS methodology will enhance documentation of the HRA process, reduce analyst-to-analyst variability in its use, and improve traceability of the bases for differing assessments. The Committee also made six detailed recommendations for the IDHEAS methodology for the staff to consider.

2. Overview of the Early Site Permit Process

The Committee met with representatives of the NRC staff to discuss the early site permit (ESP) process. The staff presented a general overview of ESPs and their role within the new reactor licensing process. The overview included the regulatory basis for an ESP and the ESP safety review process, including a description of the plant parameter envelope that supports finality on siting issues prior to selecting a specific reactor technology. The PSEG ESP application is currently under review by the Committee.

Committee Action

This was an information briefing. No Committee action was necessary.

3. Meeting with Commissioner Magwood

The Committee met with Commissioner Magwood to discuss several items of mutual interest including regulation of beyond-design-basis events, defense in depth, use of qualitative factors in regulatory decisions, industry's risk prioritization initiative, enhanced use of probabilistic risk assessments, and NRC long-term research.

Committee Action

This was an information briefing. No Committee action was necessary.

4. SECY-14-0016, "Ongoing Staff Activities to Assess Regulatory Considerations for Power Reactor Subsequent License Renewal"

The Committee met with the NRC staff, Nuclear Energy Institute, and Electric Power Research Institute to discuss SECY-14-0016, "Ongoing Staff Activities to Assess Regulatory Considerations for Power Reactor Subsequent License Renewal." In an SRM dated March 20, 2014, the Commission directed the ACRS to "work with the staff to reschedule its interactions on subsequent license renewal so that the Committee can provide its views on this matter to the Commission by May 31, 2014." The staff provided an overview of the licensing process, the four options proposed in SECY-14-0016, and the technical framework required for successful implementation of subsequent license renewal (SLR). The staff recommended Option 4 which would revise 10 CFR Part 54 to include changes that apply specifically to SLR such as aging management program enhancements, licensee reporting requirements, and limiting the time for SLR applications. This option includes the rulemaking changes described in Options 2 and 3. Option 1 proposed no changes to 10 CFR Part 54. Since a non-concurrence was filed regarding SECY-14-0016, a member of the NRC staff described the basis for the non-concurrence position that the Commission should be provided an option that requires an updated probabilistic risk assessment as part of an SLR application.

The Nuclear Energy Institute's presentation focused on factors supporting long term operation and SLR, steps industry has undertaken to prepare for SLR, the aging management process, and their detailed analysis of SECY-14-0016. The Electric Power Research Institute's presentation focused primarily on their Long Term Operation Program goals and objectives, research and development programs for aging management, and materials degradation issues identified for long term operation.

Committee Action

The Committee issued a letter to the NRC Chairman on this matter dated May 22, 2014, with following conclusions and recommendations:

1. Option 1 of SECY-14-0016 that recommends no change to 10 CFR Part 54 is the appropriate option for subsequent license renewal. It maintains a well understood process for life extension and it preserves regulatory lessons learned.

2. The present actions to update and maintain as current the Generic Aging Lessons Learned (GALL) and aging management programs (AMPs) provide the technical basis for acceptability for Option 1.
3. NUREG-1801, "Generic Aging lessons learned (GALL) Report," once updated for current industry experience, evolving research, and lessons learned, is the appropriate supporting guidance for SLR. It will provide the required guidance to ensure updating of the AMPs.
4. Design basis validation is important for SLR, both to confirm the validity of the design and licensing bases as well as the siting assumptions that may need revision. The design basis of operating plants can be validated using existing regulatory tools. The design basis of operating plants whose siting assumptions need revision should be assessed through the Fukushima related actions.
5. Use of risk assessment techniques is desirable to assess active and passive systems, structures, and components for internal and external vulnerabilities.

This letter also contained additional comments from six ACRS members.

5. Draft Final Regulatory Guide 8.20, Revision 2

The Committee considered the draft Final Regulatory Guide 8.20, Revision 2, "Application of Bioassay for Radioiodine," and decided not to review it. The Committee has no objection to the staff's proposal to issue this Guide.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the EDO's response of April 17, 2014, to comments and recommendations included in the March 14, 2014 ACRS letter on the Chapters 3, 9, and 14 of the Safety Evaluation Report with Open Items for the Comanche Peak Nuclear Power Plant, Units 3 and 4, US-APWR reference combined license application. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of April 17, 2014, to comments and recommendations included in the March 14, 2014 ACRS letter on Chapters 3 and 14 of the Safety Evaluation Report with Open Items for Certification of the US-APWR Design. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of April 10, 2014, to comments and recommendations included in the February 12, 2014 ACRS letter on failure of decay heat removal capability associated with the proposed rulemaking on station blackout mitigation strategies. The Committee decided that its report and the staff's response adequately describe the differing points of opinion on this matter, and no further written exchange was needed.

- The Committee considered the EDO's response of March 27, 2014, to requests included in the December 12, 2013 ACRS memorandum on proposed rulemaking on station blackout mitigation strategies. The Committee decided that its report and the staff's response adequately describe the differing points of opinion on this matter, and no further written exchange was needed.
- The Committee considered the EDO's response of February 24, 2014, to the conclusions and recommendations in the December 24, 2013, ACRS letter regarding Chapters 6 and 7 of the Safety Evaluation Report with Open Items associated with the US-APWR design and related long-term core cooling issues. The Committee decided that it was not satisfied with the EDO's response regarding Recommendations 1, 6, and 7. The Committee issued a letter to the EDO on this matter dated May 20, 2014, providing additional information to better explain their understanding of the technical issues and rationale for each of these recommendations.

SCHEDULED TOPICS FOR THE 615th ACRS MEETING

The following topics are scheduled for the 615th ACRS meeting, to be held on June 11-13, 2014:

- Overview of SHINE Application for Mo-99 Medical Radioisotope Production Facility
- Fuel Cycle Oversight Program Enhancement Project
- Update and Overview of Regulatory Analysis Guidelines
- Level 3 PRA Project Plan

Sincerely,

/RA/

John W. Stetkar
Chairman

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/RA/

John W. Stetkar
Chairman

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