



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

August 13, 2013

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

SUBJECT: SUMMARY REPORT – 606th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, JULY 9-12, 2013

Dear Chairman Macfarlane:

During its 606th meeting, July 9-12, 2013, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports and memoranda:

REPORTS

Reports to Allison M. Macfarlane, Chairman, NRC, from J. Sam Armijo, Chairman, ACRS:

- Revisions to Low-Level Radioactive Waste Disposal Requirements (10 CFR Part 61), dated July 22, 2013
- Spent Fuel Pool Study, dated July 18, 2013

MEMORANDA

Memoranda to R. W. Borchardt, Executive Director for Operations, NRC, from Edwin M. Hackett, Executive Director, ACRS:

- Proposed Draft Guide (DG-8031), dated July 17, 2013
- Draft Revisions to Standard Review Plan Sections, dated July 17, 2013

HIGHLIGHTS OF KEY ISSUES

1. Spent Fuel Pool Study

The Committee met with representatives of the NRC staff regarding the Spent Fuel Pool Study (SFPS). The primary objective of the SFPS was to determine the safety benefit of expedited transfer of spent fuel from the pool of a reference boiling water reactor (BWR) to a dry cask storage system. The study analyzed the potential radiological consequences of a postulated beyond-design-basis earthquake affecting the spent fuel pool under both high-density and low-density fuel loading conditions. The structural analysis showed that the spent fuel pool in this study had a 90% probability of surviving the postulated earthquake with no leak, a 5% probability of a small leak, and a 5% probability of a moderate leak. Further analyses showed that the likelihood of radioactive material release from the spent fuel caused by the postulated event was about 1 in 10 million years or lower, and that the health effects would be small for both low density and high density pool loadings. The insights from this study will inform the staff's broader regulatory analysis of the spent fuel pools at all U.S. operating nuclear reactors as part of the NRC's Japan Lessons learned Tier 3 activities.

Committee Action

The Committee issued a letter to the NRC Chairman on this matter, dated July 18, 2013, concluding that the SFPS

- has been performed in a thorough and systematic manner,
- provides a state-of-the-practice assessment of the consequences of a beyond-design-basis seismic event on the spent fuel pool in a reference boiling water reactor containing either high or low-density fuel loading,
- has demonstrated that health effects from seismically initiated scenarios are very low for both high and low-density pool loadings,
- provides sound approaches, tools, and insights for a broader evaluation of the consequences of severe seismic events on spent fuel pools of different design, and
- will be valuable in determining whether expedited transfers to dry cask storage systems produce substantial safety benefit for the U.S. BWR and PWR fleet.

The Committee agreed with the staff's conclusion that the expedited transfer of spent fuel from the pool to dry cask storage does not provide a substantial safety enhancement for the reference plant and recommended that the SFPS be issued. The Committee also noted that an important insight from the SFPS is that the less conventional (1x8) high-density fuel loading configuration used in the reference plant can significantly reduce the consequences of seismically induced damage and recommended that this approach be further explored as a measure to provide additional defense in depth against spent fuel pool accidents.

2. State-of-the-Art Reactor Consequence Analyses (SOARCA) Uncertainty Analyses

The Committee met with representatives of the NRC staff regarding the draft NUREG/CR-7155, "State-of-the-Art Reactor Consequence Analyses Project, Uncertainty Analysis of the Unmitigated Long-Term Station Blackout of the Peach Bottom Atomic Power Station." The primary objectives of this uncertainty analysis are to evaluate the robustness of the SOARCA project's deterministic results and conclusions and to develop insight into the overall sensitivity of the SOARCA results to uncertainty in key modeling inputs. As this is a first-of-a-kind analysis in its integrated look at uncertainties in MELCOR accident progression and MACCS2 offsite consequence analyses, an additional objective is to demonstrate an uncertainty analysis methodology that could be used in future combined Level 2/3 probabilistic risk assessment studies. The members had a range of questions on the report covering both the analysis methods and the justification for some of the parameter uncertainties used in the models and the development of the 'upper level surrogate' parameters.

Committee Action

This was an information briefing. The Committee plans to have an additional subcommittee meeting in the early fall to further discuss the SOARCA uncertainty analysis.

3. Revisions to Low-Level Radioactive Waste Disposal Requirements (10 CFR Part 61)

The Committee met with representatives of the NRC staff to discuss the draft rulemaking language to include site-specific analyses into revisions to 10 CFR Part 61, "Low-Level Radioactive Waste Disposal Requirements." The staff presented draft rule language changes based on the public comments received on the proposed rule language published in the Federal Register in December 2012. This was the third time the Committee discussed these rulemaking changes with the staff. The Committee issued letters to the Commission dated March 18, 2010, and September 22, 2011.

Committee Action

The Committee issued a letter to the NRC Chairman on this matter, dated July 22, 2013, concluding that the draft rulemaking language significantly expands the regulatory requirements for the licensing of low level waste facilities and increases regulatory burden without sufficient justification. The Committee identified its major concerns with the draft rule language and plans to hold additional meetings with the staff and others to better understand the technical justification for the elements of concern. The letter also contained additional comments from an ACRS member.

4. Meeting with the Commission

On July 11, 2013, the Committee met with the Commission to discuss the following topics of mutual interest:

- Draft Design Specific Review Standard for mPower iPWR Chapter 7, “Instrumentation and Control Systems”
- Station Blackout Rulemaking
- Next Generation Nuclear Plant Licensing Issues
- Draft NUREG-2125, “Spent Fuel Transportation Risk Assessment”
- Draft NUREG-1855, “Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decisionmaking”

5. Proposed Draft Guide DG-8031

The Committee considered Proposed Revision 1 to Regulatory Guide 8.34, (DG-8031), “Monitoring Criteria and Methods to Calculate Occupational Radiation Doses,” and decided not to review it. The Committee has no objection to the staff’s proposal to issue the Guide for public comment but would like an opportunity to review the draft final version of this Guide following the public comment period.

6. Draft Revisions to Standard Review Plan Sections

The Committee considered the draft revisions to the following Standard Review Plan (SRP) Sections and decided not to review them.

- Section 3.7.1 – Seismic Design Parameters
- Section 3.7.2 – Seismic System Analysis
- Section 3.7.3 – Seismic Subsystems Analysis

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the EDO’s response of June 20, 2013, to comments and recommendations included in the May 15, 2013 ACRS letter on the Next Generation Nuclear Plant key licensing issues. The Committee was satisfied with the EDO’s response.
- The Committee considered the EDO’s response of May 31, 2013, to comments and recommendations included in the May 2, 2013, ACRS letter on WCAP-17116-P, “Westinghouse BWR ECCS Evaluation Model Supplement 5 – Application to ABWR.” The Committee was satisfied with the EDO’s response.
- The Committee considered the EDO’s response of April 29, 2013, to comments and recommendations included in the March 19, 2013, ACRS letter on the draft design specific review standard for mPower iPWR Chapter 7 instrumentation and control systems. The Committee was satisfied with the EDO’s response.

SCHEDULED TOPICS FOR THE 607th ACRS MEETING

The following topics are scheduled for the 607th ACRS meeting, to be held on September 5-7, 2013:

- Cyber Security Related Activities at the NRC
- Assessment of the Quality of Selected NRC Research Programs - FY 2013
- Monticello Extended Power Uprate Application
- Regulatory Guide 1.79, "Preoperational Testing of Emergency Core Cooling Systems for Pressurized-Water Reactors," and Regulatory Guide 1.79.1, "Initial Test Program of Emergency Core Cooling Systems for New Boiling Water Reactors"
- NRC Staff's Proposed Response to the Staff Requirements Memorandum on SECY 12-0081, "Risk-informed Regulatory Framework for New Reactors"

Sincerely,

/RA/

J. Sam Armijo
Chairman

SCHEDULED TOPICS FOR THE 607th ACRS MEETING

The following topics are scheduled for the 607th ACRS meeting, to be held on September 5-7, 2013:

- Spent Fuel Pool Study and the Expedited Transfer of Spent Fuel to Dry Cask Storage
- Cyber Security Related Activities at the NRC
- Assessment of the Quality of Selected NRC Research Programs - FY 2013
- Monticello Extended Power Uprate Application
- Regulatory Guide 1.79, "Preoperational Testing of Emergency Core Cooling Systems for Pressurized-Water Reactors," and Regulatory Guide 1.79.1, "Initial Test Program of Emergency Core Cooling Systems for New Boiling Water Reactors"
- NRC Staff's Proposed Response to the Staff Requirements Memorandum on SECY 12-0081, "Risk-informed Regulatory Framework for New Reactors"

Sincerely,

/RA/

J. Sam Armijo
Chairman

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