



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

January 6, 2010

The Honorable Gregory B. Jaczko
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: SUMMARY REPORT - 568th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, DECEMBER 3-5, 2009, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

Dear Chairman Jaczko:

During its 568th meeting, December 3-5, 2009, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, letter, and memoranda:

REPORTS

Reports to Gregory B. Jaczko, Chairman, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Draft Final Regulatory Guide 1.205, Revision 1, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," and Draft Final Standard Review Plan (SRP) Section 9.5.1.2, "Risk-Informed, Performance-Based Fire Protection Program," dated December 15, 2009
- Report on the Safety Aspects of the License Renewal Application for the Prairie Island Nuclear Generating Plant, Units 1 and 2, dated December 10, 2009

LETTER

Letter to R. W. Borchardt, Executive Director for Operations, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Draft Final Revision 1 of Regulatory Guide 1.151, "Instrument Sensing Lines," dated December 10, 2009

MEMORANDA

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

- Draft Interim Staff Guidance Document 2 (ISG-2) Rev.1, "Fuel Retrievability," dated December 15, 2009
- Draft Final Regulatory Guide 1.40, dated December 15, 2009

- Proposed Revision 1 to Regulatory Guide 1.93 (DG-1244), dated December 15, 2009

HIGHLIGHTS OF KEY ISSUES

1. License Renewal Application for the Prairie Island Nuclear Generating Plant, Units 1 and 2

The Committee met with representatives of the NRC staff and Northern States Power Company, (NSPM or applicant) to discuss the staff's final Safety Evaluation Report (SER) related to the license renewal application for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2.

NSPM discussed its general site information and operating experience. NSPM made 37 regulatory commitments for its license renewal program. NSPM also discussed the following Subcommittee follow-up items: refueling cavity leakage, condensate storage tank inspections, and underground medium voltage cable manhole inspections. The applicant concluded that it will manage aging in the period of extended operation.

The NRC staff discussed the staff's SER overview and regional inspection results. The staff provided additional information regarding its review of the PINGP's refueling cavity leakage issue. The staff concluded that the applicant's inspections, evaluations, and commitments are adequate to close this open item. The staff also provided a brief discussion of its independent inspection of the medium voltage cable manhole. No signs of water intrusion were found.

The PINGP, Units 1 and 2, license renewal final SER contained no open items. Based on its review, the staff concluded that the requirements of 10 CFR 54.29(a) have been met.

Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated December 10, 2009, recommending that the NSPM application for renewal of the operating licenses of PINGP, Units 1 and 2 be approved.

2. Draft Final Regulatory Guide 1.205, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," and Draft Final Standard Review Plan (SRP) Section 9.5.1.2, "Risk-Informed, Performance-Based Fire Protection"

The Committee met with representatives of the NRC staff to discuss draft final Revision 1 to Regulatory Guide 1.205, "Risk-Informed Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," and the associated draft final SRP Section 9.5.1.2, "Risk-Informed, Performance-Based Fire Protection."

The NRC staff described the revisions to Regulatory Guide 1.205 including the incorporation of the public comments in the areas of Fire Probabilistic Risk Assessment (PRA), cumulative risk, sample license condition, risk of previously-approved recovery actions, and primary control station. The staff also addressed the rationale for not incorporating some of the public comments.

The staff then discussed changes to the Guide based on comments made by the ACRS Members during previous subcommittee meetings. The revised Regulatory Guide now includes a flow chart to clarify the risk of previously-approved recovery actions, a simplification of the definition of primary control station, and several changes to clarify the intent of the guidance.

Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated December 15, 2009, recommending that Regulatory Guide 1.205 Revision 1 and the associated SRP Section 9.5.1.2 be issued.

3. Long-Term Core Cooling Approach for the Economic Simplified Boiling Water Reactor (ESBWR) Design

The Committee met with representatives of the NRC staff to discuss the design basis ESBWR containment long-term pressure analysis. In a Staff Requirements Memorandum (SRM) dated May 8, 2008, the Commission directed that "the ACRS should advise the staff and Commission on the adequacy of the design basis long-term core cooling approach for each new reactor design based, as appropriate, on either its review of the design certification or the first license application referencing the reactor design."

The staff discussed the regulatory criteria contained in 10 CFR 50.46(b)(5) for long-term cooling and GDC 38 for containment heat removal. The staff described the MELCOR ESBWR plant model and design basis analysis for long-term containment cooling. A graphical profile showing the containment pressure for a main steam line break was discussed. The staff and its contractor used MELCOR to generate the profile. The drywell pressure from MELCOR was compared to that from TRACG. The maximum MELCOR containment pressure at end of passive period compared well with GEH's TRACG code. The MELCOR predicted pressure during the late intervention period (30 days) was flat with ~ 24% margin. The staff concluded that from 72 to 720 hours the MELCOR and TRACG pressure trends are similar when design/operation parameters are similarly modeled.

Committee Action

The Committee decided that no report is warranted at this time. The Committee plans to continue its review of this matter during a future meeting.

4. Draft Final Revision 1 to Regulatory Guide 1.151 (DG-1178), "Instrument Sensing Lines"

The Committee met with representatives of the NRC staff to discuss draft final Revision 1 to Regulatory Guide 1.151, "Instrument Sensing Lines." This Regulatory Guide was originally issued in 1983. NRC staff issued a revised Draft Regulatory Guide (DG1178) for public comment in December 2008.

The NRC staff described the significant regulatory position changes in Revision 1 to RG 1.151 relative to the original 1983 version; discussed some of the public comments that have been incorporated into the Guide; and proposed new changes to Regulatory Position 4. The changes to Regulatory Position 4 stem from a December 1, 2009, Regulatory Policies and Practices Subcommittee Meeting. During that briefing, several ACRS Members commented that Regulatory Position 4 did not provide sufficient guidance to stakeholders about the impact of evolved or noncondensable gasses on the accuracy of the safety-related instrument sensing lines. The Members suggested the staff verify if the endorsed *ANSI/ISA-S67.02.01-1999* Standard compensates for the lack of specificity in the proposed Guide. During the December

3, 2009, Full Committee meeting, the staff presented its proposed changes to Regulatory Position 4, after confirming that the endorsed ANSI Standard did not provide adequate guidance.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated December 10, 2009, recommending that Regulatory Guide 1.151 not be issued until the following issues are resolved: (1) the scope of the Guide should be reviewed to determine whether it should include non-safety-related systems categorized under the provisions of Regulatory Treatment of Non-Safety Systems (RTNSS) and (2) the staff should determine whether the potential for flashing should be included as a mechanism affecting instrument accuracy.

5. Draft ACRS Report on the NRC Safety Research Program

The ACRS provides the Commission a biennial report presenting the Committee's observations and recommendations concerning the overall NRC Safety Research Program.

Committee Action

The Committee plans to continue its discussion of its draft report on the NRC Safety Research Program during its February 2010 meeting.

6. Meeting with the Commission

On December 4, 2009, the Committee met with the NRC Commissioners to discuss topics of mutual interest, including the following:

- Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)/Design Acceptance Criteria (DAC) Closure Process
- Amendment to the AP1000 Design Control Document
- Three-Dimensional Finite Element Analysis of the Oyster Creek Drywell Shell
- Beaver Valley Containment Liner Corrosion
- Cyber Security Programs for Nuclear Power Plants

Committee Action

There were no requirements identified for staff action in the December 9, 2009 Staff Requirements Memorandum (SRM). No Committee action is necessary from this meeting.

7. Election of ACRS Officers for CY 2010

The Committee elected Said Abdel-Khalik as ACRS Chairman, J. Sam Armijo as ACRS Vice Chairman, and John Stetkar as Member-at-Large for the Planning and Procedures Subcommittee for CY 2010.

8. Reliability and PRA Subcommittee Report

The Chairman of the Reliability and PRA Subcommittee provided a report regarding the matters discussed at its November 12, 2009, meeting. In that meeting, the Subcommittee was briefed by representatives from the NRC, DOE, NEI, and a member of the public (David Collins). John Wreathall participated as an invited expert. The Subcommittee reviewed and discussed the following material: (1) proposed Commission policy statement on safety culture; (2) experience, issues, and lessons learned from treatment of safety culture in the reactor oversight process (ROP); (3) Industry initiatives on safety culture; and (4) expert and stakeholder perspectives. The proposed policy statement was released for a 90 day public comment period ending February 4, 2010. Additionally, Industry presented guidelines on how to foster a strong safety culture at nuclear power plants. Four pilot plant studies are currently underway that may be of interest to the ACRS.

Committee Action

The Committee plans to review the proposed safety culture policy statement and other NRC initiatives during a future meeting.

9. AP1000 Subcommittee Report

The Chairman for the AP1000 Subcommittee provided a report regarding the matters discussed at its November 19-20, 2009, meeting. Four topics were discussed: (1) Design Control Document (DCD) Chapter 7, "Instrumentation and Controls," (2) DCD Chapter 9, "Auxiliary Controls," (3) Westinghouse plans for addressing Generic Safety Issue 191 concerning the assessment of debris accumulation on PWR sump pumps, and (4) the impact of a change in pressurizer geometry on the AP1000 pressurizer drain (chugging) phenomena and small-brake loss-of-coolant-accident performance.

Committee Action

The Committee plans to continue its review of the AP1000 DCD amendment during its future meetings.

10. ESBWR Subcommittee Report

The Chairman of the ESBWR Subcommittee provided a report regarding matters discussed at its November 17-18, 2009, meeting. In that meeting, the Subcommittee was briefed by representatives of the NRC staff and GE-Hitachi on specific open items related to containment, control room habitability, human factors engineering, and PRA for the ESBWR. The main topics discussed included TRACG modeling of the containment and comparisons with MELCOR, noncondensable gases in containment, and performance of the Passive Containment Cooling

System (PCCS). The likelihood of hydrogen combustion in the PCCS due to efficient condensation is still considered an open issue. HVAC performance for the control room was discussed. Additionally, the results of the staff's audit of the ESBWR design PRA were also discussed.

Committee Action

The Committee plans to continue its review of the ESBWR Design Certification application during its future meetings.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of November 18, 2009, to comments and recommendations included in the October 23, 2009 ACRS report on NRC staff's SER with Open Items Regarding the North Anna, Unit 3 Combined License Application. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of November 19, 2009, to comments and recommendations included in the October 23, 2009, ACRS report on the Safety Aspects of the License Renewal Application for the Susquehanna Steam Electric Station, Units 1 and 2. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of November 17, 2009, to comments and recommendations included in the October 2, 2009, ACRS report on the Draft Digital System Research Plan for FY 2010-2014. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of November 17, 2009, to comments and recommendations included in the October 16, 2009, ACRS report on the 3-Dimensional Finite Element Analysis of the Oyster Creek Nuclear Generating Station Drywell Shell. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of October 29, 2009, to comments and recommendations included in the September 16, 2009, ACRS report on the Safety Aspects of the License Renewal Application for the Beaver Valley Power Station, Units 1 and 2. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of October 6, 2009, to comments and recommendations included in the July 29, 2009, ACRS report on the Applicability of the TRACE Thermal-Hydraulic System Analysis Code to Evaluate the ESBWR Design and Related Matters. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of November 16, 2009, to comments and recommendations included in the October 20, 2009, ACRS report on Draft Final Revision 2 to Regulatory Guide 1.189 (DG-1214), "Fire Protection For Nuclear Power

Plants.” The Committee decided that it was satisfied with the EDO’s response.

SCHEDULE FOR THE 569th ACRS MEETING

The following topics are scheduled for the 569th ACRS meeting, to be held on February 4-6, 2010:

- Draft Final Revision 1 to Regulatory Guide 1.141, "Containment Isolation Provisions for Fluid Systems"
- Draft Final Regulatory Guide 1.217, "Guidance for the Assessment of Beyond-Design-Basis Aircraft Impacts"
- Draft Final Revision 1 to Regulatory Guide 1.62, "Manual Initiation of Protective Actions"
- Proposed Revisions to NUREG-1520, "Standard Review Plan for Review of a License Application for a Fuel Cycle Facility"
- Draft ACRS Report on the NRC Safety Research Program

Sincerely,

/RA/

Mario V. Bonaca
Chairman

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/RA/

Mario V. Bonaca
Chairman

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