



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

November 2, 2010

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

SUBJECT: SUMMARY REPORT – 576th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, OCTOBER 7-9, 2010

Dear Chairman Jaczko:

During its 576th meeting, October 7-9, 2010, 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 Said Abdel-Khalik, Chairman, ACRS:

- Report on the Safety Aspects of the General Electric-Hitachi Nuclear Energy (GEH) Application for Certification of the Economic Simplified Boiling Water Reactor (ESBWR) Design, dated October 20, 2010
- Report on the Safety Aspects of the License Renewal Application for the Cooper Nuclear Station, dated October 26, 2010
- Report on the Safety Aspects of the License Renewal Application for the Duane Arnold Energy Center, dated October 26, 2010
- Draft Final Rule for Risk-informed Changes to Loss-of-Coolant Accident Technical Requirements (10 CFR 50.46a), dated October 20, 2010

LETTER

Letter to R. W. Borchardt, Executive Director for Operations, NRC, from Said Abdel-Khalik, Chairman, ACRS:

- Draft Final Digital Instrumentation & Control Interim Staff Guidance-06: Licensing Process, dated October 20, 2010

MEMORANDA

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

- Proposed Regulatory Guides DG-7007 and DG-1250, dated October 14, 2010
- Draft Final Regulatory Guide 8.18, dated October 14, 2010

HIGHLIGHTS OF KEY ISSUES

1. Final Safety Evaluation Report Associated with the ESBWR Design Certification Application

The Committee met with representatives of the NRC staff and General Electric-Hitachi Nuclear Energy to discuss closure of the remaining open items and issues associated with the final safety evaluation report (SER) for the ESBWR Design Certification application. The three remaining open items were associated with hydrogen in the passive containment cooling system, digital instrumentation and control, and the NRC staff's aircraft impact inspection and findings. In all cases, the ACRS agreed with the staff's resolutions of the open items.

Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated October 20, 2010, concluding that the ESBWR design is robust and there is reasonable assurance that it can be built and operated without undue risk to the health and safety of the public.

2. Final Safety Evaluation Report Associated with the License Renewal Application for the Cooper Nuclear Station

The Committee met with representatives of the NRC staff and Nebraska Public Power District (NPPD or the applicant) to discuss the staff's final SER related to the license renewal application for the Cooper Nuclear Station (CNS). The presentations of the applicant and the NRC staff primarily centered on efforts to resolve four open items and one confirmatory item. The open items were related to the scoping of a condensate storage tank per 10 CFR 54.4(a)(2), inspection of socket welds under the One-Time Inspection-Small Bore Piping Program, the incorporation of recent operating experience related to leaks in buried piping and tanks, and the management of pitting corrosion in the torus under the Containment Inservice Inspection Program. The confirmatory item dealt with the use of NUREG/CR-6335 vs. NUREG/CR-6909 for metal fatigue analysis of Alloy 600 components. A new issue was identified after the Subcommittee meeting on May 5, 2010, dealing with the aging management of 480 V - 2 kV power cables. Both the applicant and the NRC staff described the resolution for closing this issue. The applicant demonstrated that aging would be adequately managed and maintained through the period of extended operation. The NRC 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 October 26, 2010, recommending that the NPPD application for renewal of the operating license of CNS be approved.

3. Final Safety Evaluation Report Associated with the License Renewal Application for the Duane Arnold Energy Center

The Committee met with representatives of the NRC staff and FPL Energy Duane Arnold, LLC,

(FPL Energy or applicant) to discuss the staff's final SER related to the license renewal application for the Duane Arnold Energy Center (DAEC). The applicant discussed general site information, operating history, and license renewal application overview. The applicant made 53 regulatory commitments for their license renewal program. The applicant also discussed the Subcommittee follow-up items related to buried piping, small bore socket welds, and inaccessible low voltage cables. The applicant concluded that they will manage aging effectively in the period of extended operation. The NRC staff discussed the staff's final SER overview and regional inspection results. The staff provided additional information regarding its review of the open items related to buried piping and small bore socket welds. The staff concluded that the applicant's programs and commitments are adequate to close these open items. The staff also provided a brief discussion of the applicant's management of inaccessible low voltage power cables. The DAEC 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 October 26, 2010, recommending that the FPL Energy application for renewal of the operating license of DAEC be approved.

4. Draft Final Rule for Risk-informed Changes to Loss-of-Coolant Accident Technical Requirements (10 CFR 50.46a)

The Committee met with representatives of the NRC staff to discuss the proposed draft final rule for risk-informed changes to loss-of-coolant accident (LOCA) technical requirements of 10 CFR 50.46a, "Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors," (10 CFR 50.46a or the Rule). The staff presented background information, an overview of the proposed Rule, the technical basis associated with treatment of seismically induced indirect piping failures, and the applicability of the proposed Rule to new reactor designs. The staff also discussed the changes made to the proposed Rule after receiving feedback from the Regulatory Policies and Practices Subcommittee on September 22, 2010.

Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated October, 20, 2010, concluding the proposed draft final Rule provides an acceptable risk-informed alternative to the current 10 CFR 50.46(a) for operating reactors and that it is premature to extend the proposed Rule to new reactors at this time. If new reactors are included in the scope of the Rule, then the Committee agrees with the requirement that changes made possible by the adoption of the Rule should not result in a significant decrease in the level of safety. This requirement should be extended to the determination of the allowable time in configurations without a demonstrated capability to mitigate a beyond transition break size LOCA.

5. Draft Final Digital Instrumentation & Control Interim Staff Guidance-06: Licensing Process

The Committee met with representatives of the NRC staff to discuss Draft Final Revision 50 to digital instrumentation and control (DI&C) ISG-06, "Licensing Process." DI&C ISG-06 clarifies the licensing criteria that the staff will use for nuclear plant license amendments in confirming that a proposed design meets applicable requirements. This ISG clarifies which documents are needed by the staff for review, at which phase in the review these documents are needed, and

which documents need to be available for the staff to audit. ISG-06 also incorporates lessons learned from the staff's review of the Oconee and Wolf Creek DI&C system modifications. The staff's presentation described interactions with NEI and licensees to incorporate public comments as the guidance was developed. The staff highlighted changes made to ISG-06 since the Committee last reviewed this document in August 2009. The staff concluded their presentation by addressing Member comments made during the September 8, 2010, subcommittee meeting to review this ISG.

Committee Action

The Committee issued a letter to the EDO on this matter, dated October, 20, 2010, recommending that ISG-06 be issued subject to: (1) a revision of Section B to include a discussion that while process is important, it is not a substitute for a detailed review of the hardware and software architectures to ensure that they meet the fundamental principles of Independence, Deterministic Behavior, Redundancy, and Diversity and Defense in Depth; and (2) a revision of Section D to emphasize the need to review the design from an integrated hardware/software perspective in order to develop a clear understanding of the overall complexity of the system. The Committee also recommended that Software Failure Modes and Effects Analysis (FMEA) methods be investigated and evaluated to examine their suitability for identifying critical software failures that could impair reliable and predictable DI&C performance. Additionally, the Committee recommended that the staff develop an integrated process that ensures that the DI&C system will be able to meet, with reasonable assurance, the combined requirements associated with plant safety and cyber security threats.

6. Staff Efforts to Address Containment Liner Corrosion

The Committee met with representatives of the NRC staff to discuss the staff's path forward in addressing containment liner corrosion. The staff presented background information related to recent cases of through-wall liner corrosion. The staff described their activities to address containment liner corrosion since the most recent occurrence of containment liner corrosion at Beaver Valley Unit 1 in April 2009. These efforts include the following:

- Issuing Information Notice 2010-012, "Containment Liner Corrosion," in June 2010
- Initiating a discussion of liner corrosion inspection at an American Society of Mechanical Engineers (ASME) Section XI Code meeting
- Providing additional guidance to inspectors through a change to the NRC Refueling Outage Baseline Inspection Procedure
- Developing a user need to request support from the Office of Nuclear Regulatory Research (RES) to investigate the corrosion mechanisms
- Assembling an expert panel to address containment liner corrosion mechanisms

Committee Action

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

7. Assessment of the Quality of Selected NRC Research Projects

The Committee discussed the status of the ACRS Panels' review of the quality assessment of

NRC research projects on NUREG/CR-6947, "Human Factors Consideration with Respect to Emerging Technology in Nuclear Power Plants," and NUREG/CR-6997, "Modeling a Digital Feedwater Control System Using Traditional Probabilistic Risk Assessment Methods."

Committee Action

The Committee plans to discuss its report on the quality assessment of the research projects noted above during its November 4-6, 2010, meeting.

OTHER COMMITTEE DECISIONS

Other Committee decisions were conveyed to the Executive Director for Operations via memoranda from Edwin M. Hackett.

The Committee had no objection to the staff's proposal to issue the following Regulatory Guides for public comment. The Committee would like to have an opportunity to review the draft final version of these Guides after reconciliation of public comments:

- Draft Regulatory Guide DG-7007, "Administrative Guide for Verifying Compliance with Packaging Requirements for Shipment and Receipt of Radioactive Material"
- Proposed Revision 1 to Regulatory Guide 1.215 (DG-1250), "Guidance for ITAAC Closure Under 10 CFR Part 52"

The Committee recommended that this Regulatory Guide be referred to the Advisory Committee on the Medical Use of Isotopes (ACMUI). The Committee has no objection to the staff's plans to issue this Regulatory Guide as final after obtaining comments from the ACMUI:

- Draft Final Regulatory Guide 8.18, "Information Relevant to Ensuring that Occupational Radiation Exposures at Medical Institutions will be As Low As is Reasonably Achievable"

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of September 10, 2010, to comments and recommendations included in the August 9, 2010, ACRS interim letter on the Safety Evaluation Report with Open Items Related to the South Texas Project Combined License Application Referencing the Certified Boiling Water Reactor Design. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of May 18, 2010, to comments and recommendations included in the March 25, 2010, ACRS report on the Draft Final Revision 1 to Digital Instrumentation and Control Interim Staff Guidance – 07: "Digital Instrumentation and Control Systems in Safety Applications at Fuel Cycle Facilities." The Committee decided that it was satisfied with the EDO's response.

SCHEDULED TOPICS FOR THE 577th ACRS MEETING

The following topics are scheduled for the 577th ACRS meeting, to be held on November 4-6, 2010:

- Standard Review Plan for Renewal of Independent Spent Fuel Storage Installation Licenses and Dry Cask Storage System Certificates of Compliance
- Draft Final Revision 2 of NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," and NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants"
- Long-Term Core Cooling Approach for the Revised AP1000 Design
- Assessment of the Quality of Selected NRC Research Projects
- Meeting with the Commission

Sincerely,

/RA/

Said Abdel-Khalik
Chairman

- Standard Review Plan for Renewal of Independent Spent Fuel Storage Installation Licenses and Dry Cask Storage System Certificates of Compliance
- Draft Final Revision 2 of NUREG-1801, “Generic Aging Lessons Learned (GALL) Report,” and NUREG-1800, “Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants”
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/RA/

Said Abdel-Khalik
Chairman

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Letter to the Honorable Gregory B Jaczko, Chairman, NRC, from Said Abdel-Khalik, Chairman, ACRS, dated November 2, 2010

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