



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

November 15, 2011

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

SUBJECT: SUMMARY REPORT – 588th MEETING OF THE ADVISORY COMMITTEE ON
REACTOR SAFEGUARDS, NOVEMBER 3-5, 2011

Dear Chairman Jaczko:

During its 588th meeting, November 3-5, 2011, 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:

- ACRS Review of Staff's Prioritization of Recommended Actions to be Taken in Response to Fukushima Lessons Learned (SECY-11-0137), dated November 8, 2011
- Nine Mile Point Nuclear Station, Unit 2, Extended Power Uprate Application, dated November 10, 2011

LETTER

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

- Draft Final Revision 6 of Standard Review Plan Branch Technical Position 7-19, "Guidance for Evaluation of Diversity and Defense-in-Depth in Digital Computer-Based Instrumentation and Control Systems," dated November 14, 2011

MEMORANDA

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

- Topical Report NEDC-33173P-A, Supplement 2, Parts 1, 2, and 3, "Analysis of Gamma Scan Data and Removal of Safety Limit Minimum Critical Power Ratio (SLMCPR) Margin," dated November 14, 2011

- Draft Final Regulatory Guide 1.106, dated November 14, 2011
- Proposed Revision 4 to Regulatory Guide 1.52 (DG-1274), dated November 14, 2011

HIGHLIGHTS OF KEY ISSUES

1. Nine Mile Point Unit 2 Extended Power Uprate Application

The Committee met with representatives of the NRC staff, Nine Mile Point Nuclear Station, LLC (NMPNS), and their respective consultants to discuss the Nine Mile Point, Unit 2 (NMP2), extended power uprate (EPU) application and the associated NRC staff draft final safety evaluation. NMPNS has applied for an EPU of approximately 15 percent above the current licensed thermal power of 3,467 megawatts thermal (MWt) to 3,988 MWt. This uprate also represents approximately a 20 percent increase from the original licensed thermal power of 3,323 MWt. The discussion topics included the NMP2 plant modifications, the power ascension testing program, reactor thermal-hydraulics reviews, nuclear fuel analytical methods, materials and mechanical engineering issues, and steam dryer analyses. Steam dryer integrity was a key topic. The NMP2 steam lines do not have resonance-inducing dead-end branch lines and have historically been quieter than those at other plants which have experienced steam dryer cracking. NMPNS will complete repairs and structural modifications to the NMP2 steam dryer to assure that the resulting steam dryer stresses satisfy the recommended EPU margin (minimum alternating stress intensity ratio > 2.0).

Committee Action

The Committee issued a report to the NRC Chairman on this matter dated November 10, 2011, recommending that the NMP2 EPU application be approved. The Committee concluded that monitoring during power ascension testing will provide reasonable assurance that unanticipated vibration modes induced in the steam dryer will be detected, should they occur. In addition, the Committee concluded that the acoustic coupling model has limited validation; however, its use is acceptable in the NMPNS EPU application because of the large margin in predicted stress in the steam dryer.

2. Branch Technical Position 7-19, "Guidance for the Evaluation of Diversity and Defense-in-Depth in Digital Computer-Based Instrumentation and Control Systems"

The Committee met with representatives of the NRC staff to discuss Draft Final Revision 6 to Branch Technical Position (BTP) 7-19 (NUREG-0800, Standard Review Plan, Chapter 7) that incorporates digital instrumentation and control (DI&C) guidance from Interim Staff Guidance (ISG) DI&C-ISG-02, Revision 2, "Diversity and Defense-in-Depth Issues." The purpose of BTP 7-19, Revision 6, is to assure adequate diversity and defense in depth (D3) and provide guidance for evaluating an applicant's D3 assessment and D3 design. Software-based digital systems are considered susceptible to the same software error appearing in identical copies of the software-based logic or architecture that are present in redundant divisions of safety-related systems. Therefore, software-based or software-logic-based digital system development errors

are a credible source for a potential common-cause failure (CCF). While the NRC staff considers (software) CCF in digital systems to be beyond design basis, nuclear power plants should be protected against the effects of anticipated operational occurrences and postulated accidents with a concurrent CCF in the digital protection system. In addition BTP 7-19, Revision 6, provides additional clarification and acceptance criteria on the independence and acceptance of manual actions as a diverse means of actuation, on the relationship between CCFs and diverse means of actuation, on diversity considerations for diverse automated and diverse manual actions, and the diversity and CCF considerations for combining RTS and ESF Actuation Systems in a single controller or central processing unit.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter dated November 14, 2011, recommending that BTP 7-19, Revision 6, be issued subsequent to incorporation of modifications discussed in the letter regarding Sections 1.8, 3.1, 3.5, 3.7, and 4.6. The Committee also recommended that the discussion of the difference between time available and time required in SRP Chapter 18, Appendix 18A, "Crediting Manual Operator Actions in Diversity and Defense-in-Depth (D3) Analyses," be revised to be consistent with the recommendation for Sections 3.5 and 4.6.

3. ACRS Review of Staff's Prioritization of Recommended Actions to be Taken in Response to Fukushima Lessons Learned (SECY-11-0137)

The Committee reviewed the staff's report on prioritization of the NRC Fukushima Near-Term Task Force (NTTF) recommendations, "Prioritization of Recommended Actions to be Taken in Response to Fukushima Lessons Learned," (SECY-11-0137). The Committee was briefed by the staff on this report during its 587th meeting, October 6-8, 2011.

Committee Action

The Committee issued a report to the NRC Chairman on this matter dated November 8, 2011. In general the ACRS agreed with the staff's three-tier approach and criteria for prioritization of the NTTF recommendations; however, the Committee had a few additional recommendations such as expediting rulemaking activities related to strengthening of station blackout (SBO) mitigation capability; expanding the Tier 1 and Tier 2 actions in order to include the recommendations suggested in the Committee's October 13, 2011, letter report to the Commission; starting activities related to onsite emergency actions in parallel with Tier 1 activities; and reconsideration of the actions related to spent fuel pool (SFP) instrumentation beyond data collection from the licensees commensurate with the contribution made by SFPs to overall plant risk.

4. Draft Report on the Biennial ACRS Review of the NRC Safety Research Program

The Committee discussed the draft 2012 ACRS biennial report to the Commission on its review and evaluation of the NRC safety research program.

Committee Action

The Committee will continue its discussion of this report during its December 1-3, 2011, meeting.

5. Draft Final Regulatory Guide 1.106

The Committee considered draft final Revision 2 to Regulatory Guide 1.106, "Thermal Overload Protection for Electric Motors or Motor-Operated Valves," and decided not to review it. The Committee has no objection to the staff's proposal to issue this Regulatory Guide as final.

6. Proposed Revision 4 to Regulatory Guide 1.52 (DG-1274)

The Committee considered proposed Revision 4 to Regulatory Guide 1.52 (DG-1274), "Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered Safety Feature Atmosphere Cleanup System in Light-water Cooled Nuclear Power Plants," and decided not to review it. The Committee has no objection to the staff's proposal to issue this Guide for public comment. The Committee would like to have an opportunity to review the draft final version of this Guide after reconciliation of public comments.

7. Preparation for Meeting with the Commission

The Committee discussed the following topics in preparation for its meeting with the Commission on November 29, 2011:

- Overview
- Fukushima
- Low level waste disposal and site-specific analysis rulemaking
- Level III probabilistic risk assessment

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of October 12, 2011, to comments and recommendations included in the September 19, 2011, ACRS report on the Revision 19 to the AP1000 Design Control Document and the AP1000 Final Safety Evaluation Report. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of October 28, 2011, to comments and recommendations included in the August 16, 2011, ACRS letter on Topical Report NEDC-33173P, Supplement 2, Parts 1, 2, and 3, "Analysis of Gamma Scan Data and Removal of Safety Limit Minimum Critical Power Ratio (SLMCPR) Margin." The staff intends to issue the final safety evaluation for this topical report by November 30, 2011. The Committee requested that issuance of the final SE be delayed until after the staff receives the Committee's response to the October 28, 2011, letter from the EDO. The Committee intends to provide its response by December 7, 2011.

SCHEDULED TOPICS FOR THE 589th ACRS MEETING

The following topics are scheduled for the 589th ACRS meeting, to be held on December 1-3, 2011:

- Levy County, Units 1 and 2, Combined License (COL) Application
- Revised Branch Technical Position Regarding Concentration Averaging and Encapsulation of Low-Level Radioactive Waste
- Proposed Requirements for Maintenance of Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) and the associated Regulatory Guide
- Draft Report on the Biennial ACRS Review of the NRC Safety Research Program

Sincerely,

/RA/

Said Abdel-Khalik
Chairman

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Sincerely,

/RA/

Said Abdel-Khalik
Chairman

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Letter to the Honorable Gregory B. Jaczko, NRC Chairman, from Said Abdel-Khalik, ACRS Chairman, dated November 15, 2011

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