



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

SL-0517

January 9, 2004

The Honorable Nils J. Diaz
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Diaz:

SUBJECT: SUMMARY REPORT - 508th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, DECEMBER 3-5, 2003, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 508th meeting, December 3-5, 2003, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, letters, and memoranda:

REPORTS:

Reports to Nils J. Diaz, Chairman, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Draft Final Rule Revising 10 CFR 50.48, "Fire Protection," to Permit Licensees to Voluntarily Adopt Fire Protection Requirements Contained in National Fire Protection Association Standard 805 (NFPA 805), dated December 12, 2003
- Security of Nuclear Facilities (Secret), dated December 15, 2003

LETTERS:

Letters to William D. Travers, Executive Director for Operations, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Draft NUREG-0800, Standard Review Plan (SRP), Chapter 18.0, Human Factors Engineering, dated December 12, 2003
- Draft 10 CFR Part 52 Construction Inspection Program Framework Document, dated December 12, 2003

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MEMORANDA:

Memoranda to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS:

- Proposed Revisions to Regulatory Guides, dated December 9, 2003
- Proposed Rule: Fitness for Duty Programs, 10 CFR Part 26, dated December 10, 2003

HIGHLIGHTS OF KEY ISSUES

1. Safeguards and Security Matters (Closed)

The Committee discussed the Safeguards and Security matters.

Committee Action

The Committee issued a report to the NRC Chairman on this matter dated December 15, 2003.

2. Draft Final 10 CFR Part 52 Construction Inspection Program Framework

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding the draft 10 CFR Part 52 construction inspection program (CIP) document, and the staff's resolution to public comments. The staff developed the draft framework document to provide guidance for revising the construction inspection manual chapters and inspection procedures to support the 10 CFR Part 52 licensing process. The objectives of this revision are to address programmatic weaknesses in the NRC construction inspection program that had been identified during the licensing of several plants. The guidance includes a "sign-as-you-go" phased verification process, which will document conclusions on individual inspections, tests, analyses, and acceptance criteria (ITAAC) as they are completed. It also includes an electronic information tracking and scheduling system to track all inspection findings, conclusions, and any unresolved items. The Nuclear Energy Institute is supporting the staff in its development of the draft CIP document and plans to have future interactions with the staff regarding this matter.

The NRC staff has realized that it will have insufficient resources to determine that all ITAAC items have been satisfied to the desired level of confidence, and, therefore, is proposing to implement a statistical sampling process to limit the number of inspections required.

Committee Action

The Committee issued a letter to the NRC Executive Director for Operations on this matter, dated December 12, 2003, concluding that the framework document provides a good basis for the development of appropriate inspection manual chapters for the certification and licensing of new plant designs. The Committee also agreed with the staff that the use of statistical sampling to limit the number of required ITAAC inspections will be valid in only a few areas. The Committee concluded that the number of ITAACs that are subjected to minimal inspection should be small.

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3. Proposed Revisions to SRP Chapter 18.0, Human Factors Engineering

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding proposed revisions to Standard Review Plan (SRP) Chapter 18.0, Human Factors Engineering. These revisions provide the framework for the conduct of human factors engineering reviews for nuclear power plants. For more detailed guidance concerning the review process, the SRP references NUREG-0711, "Human Factors Engineering Program Review Model." For review criteria that are specifically tailored to the review of plant modifications and license amendment requests involving credited operator actions, the SRP references NUREG-1764, "Guidance for the Review of Changes to Operator Actions." For guidance concerning human-system interfaces, the SRP and NUREG-0711 reference NUREG-0700, "Human-System Interface Design Review Guidelines."

Chapter 18.0, NUREG-0700, and NUREG-0711 are fundamental human factors review documents that have been revised to support reviews of advanced reactors and digital updates to existing control rooms. NUREG-1764 is a new document that provides means to use risk information to determine the appropriate level of human factors review.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter dated December 12, 2003, concluding that the update to Chapter 18.0 of the SRP and the documents referenced properly incorporate needed changes that facilitate anticipated reviews and clarify the human factors engineering review process.

4. Draft Final Revision to 10 CFR 50.48 to Endorse NFPA 805

The Committee heard presentations by and held discussions with the NRC staff regarding the draft final rule amending 10 CFR 50.48 to permit a licensee to voluntarily adopt National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light-Water Reactor Electric Generating Plants," as an alternative to the existing fire protection requirements of 10 CFR 50.48(b). Current fire protection requirements, which are deterministic, were developed before the NRC staff or the industry had the benefit of fire PRAs and recent advances in fire modeling. NFPA 805 Standard, developed by NFPA in coordination with the NRC staff, specifies the minimum fire protection requirements for existing LWR plants during all phases of plant operations, including shutdown and decommissioning. The Standard describes a method for using risk-informed and performance-based approaches and fundamental fire protection design elements for establishing adequate fire protection procedures, systems, and features. The staff believes that the methodology specified in the NFPA 805 Standard, with certain exceptions noted in the draft final revision to 10 CFR 50.48, is an acceptable approach for satisfying existing fire protection requirements. In addition, the implementation of the performance-based alternative in NFPA 805 Standard would result in a reduction in future regulatory interactions associated with requests for license exemptions and deviations related to fire protection changes.

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Committee Action

The Committee issued a report to the NRC Chairman dated December 12, 2003, recommending that the final rule amending 10 CFR 50.48 to permit licensees to voluntarily adopt fire protection requirements contained in NFPA 805 Standard be issued. Also, the Committee agreed with the staff's proposal to work cooperatively with the industry to develop detailed guidance for implementing a risk-informed and performance-based fire protection program in accordance with NFPA 805.

5. Recent Operating Events

The Committee, in its efforts to continue awareness of recent operating events, briefly discussed the large number of scrams caused by problems beyond the main generator breaker, a failure to scram event at the Sequoyah plant, shadow corrosion and fuel channel bowing, and stability issues related to the oscillation power range monitors at the BWR plants. The Committee noted that in the four month period, July 4, 2003-November 11, 2003, of the 17 automatic scrams experienced, 8 were the result of interruption of feedwater supply. Of the 9 manual scrams during this period, two were caused by interruption of the feedwater supply. This possible trend will be monitored.

Committee Action

This was an information briefing. No Committee action was taken. The Committee may provide a letter report to the EDO in the future.

6. Subcommittee Report on the Interim Review of the License Renewal Application for the Virgil C. Summer Nuclear Station

The Plant License Renewal Subcommittee Chairman provided a report to the Committee on the Subcommittee's review of the license renewal application for the Virgil C. Summer Nuclear Station and the associated NRC staff's draft Safety Evaluation Report (SER). He stated that V.C. Summer is a three-loop Westinghouse PWR with a rated power level of 2900 MWt and it is located near Columbia, SC. The current license expires on August 6, 2022. In 1994, the applicant had replaced the steam generators. During the Subcommittee meeting, the applicant discussed the hot leg nozzle weld cracking and the corrective actions as well as the results of the inspections of the reactor vessel upper and lower heads. The NRC staff provided information on one-time inspections, time limited aging analyses, and results of the inspections. There were no open or confirmatory items documented in the draft SER. The staff plans to submit the final SER to the ACRS in April 2004.

Committee Action

This was an information briefing. No Committee action was taken at this time. The Committee plans to review the final SER during its May 6-8, 2004 meeting and provide a report to the Commission.

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7. Draft Report on the NRC Safety Research Program

The Committee discussed the draft ACRS report to the Commission on the NRC Safety Research Program.

Committee Action

The Committee plans to continue its discussion of this report during its February 5-7, 2004 meeting.

8. Election of ACRS Officials

The Committee re-elected Mario V. Bonaca as ACRS Chairman, Graham B. Wallis as ACRS Vice Chairman, and Stephen L. Rosen as Member-at-Large for the Planning and Procedures Subcommittee for 2004.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the response from the EDO dated November 7, 2003, to the ACRS report dated September 22, 2003, concerning the Draft Final Regulatory Guide X.XXX, "An Approach for Determining the Technical Adequacy of PRA Results for Risk-Informed Activities" (formerly DG-1122). The Committee decided that it was satisfied with the EDO's response.

The Committee would like to review the new regulatory guide (or NUREG) on sensitivity and uncertainty analyses. The Committee would like to be kept informed of the insights, lessons learned, and changes to be made to the Guide after the initial trial use period.

- The Committee considered the response from the EDO dated November 7, 2003, to the ACRS report dated September 24, 2003, concerning the Review Standard for Extended Power Uprates. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the response from the EDO dated November 21, 2003, to the ACRS report dated September 24, 2003, concerning the Proposed Recommendations for Resolving Generic Issue-186, "Potential Risk and Consequences of Heavy Load Drops in Nuclear Power Plants." The Committee decided that it was satisfied with the EDO's response.

The Committee would like to be kept informed of the enhancements to the NRC guidance documents and decisions in response to the recommendations proposed by RES for resolving Generic Issue-186.

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OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from November 6, 2003, through December 3, 2003, the following Subcommittee meetings were held:

- Thermal-Hydraulic Phenomena - November 19-20, 2003

The Subcommittee discussed the ongoing development by the Office of Nuclear Regulatory Research of the TRAC/RELAP Advanced Computational Engine (TRACE). This is an advanced nuclear reactor thermal-hydraulic systems analysis computer code, which is intended to replace several other, more specialized reactor analytical tools.

- Regulatory Policies & Practices - November 21, 2003

The Subcommittee discussed the "LOCA failure analysis and frequency estimation" developed by the staff in response to the Commission's March 31, 2003, Staff Requirements Memorandum on recommendations for risk informed changes to 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors."

- Human Factors - December 2, 2003

The Subcommittee reviewed the updates to draft Standard Review Plan Chapter 18, "Human Factors Engineering."

- Plant License Renewal (V.C. Summer) - December 3, 2003

The Subcommittee reviewed the V. C. Summer Nuclear plant license renewal application and the NRC staff's draft Safety Evaluation Report.

- Planning and Procedures - December 3, 2003

The Subcommittee discussed proposed ACRS activities, practices, and procedures for conducting Committee business and organizational and personnel matters relating to ACRS and its staff.

LIST OF MATTERS FOR THE ATTENTION OF THE EDO

- The Committee would like to be briefed on the results of the NRR testing of the method developed by the staff using risk-importance measures to screen licensee submissions for human factors review.
- The Committee would like to have an opportunity to review the draft final revision to 10 CFR Part 26, "Fitness for Duty Programs" after reconciliation of public comments.

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- In the future, the Committee would prefer to review proposed Regulatory Guides and any associated rulemaking as a package.
- The Committee would like to have an opportunity to review draft final revisions to the following Regulatory Guides after reconciliation of public comments:
 - Revision 33 to Regulatory Guide 1.84 (DG-1124), “Design, Fabrication, and Materials Code Case Acceptability, ASME Section III”
 - Revision 14 to Regulatory Guide 1.147, (DG-1125), “Inservice Inspection Code Case Acceptability, ASME Section XI”
 - Revision 1 to Regulatory Guide 1.193 (DG-1126), “ASME Code Cases Not Approved for Use”

PROPOSED SCHEDULE FOR THE 509th ACRS MEETING

The Committee agreed to consider the following topics during the 509th ACRS meeting, to be held on February 5-7, 2004:

- Resolution of Certain Items Identified by the ACRS in NUREG-1740 Related to the DPO on Steam Generator Tube Integrity
- NRC Safety Research Program Report
- Strategy and Metrics for Evaluating the Effectiveness (Quality) of the NRC Safety Research Programs
- ESBWR Design-Thermal Hydraulic Issues
- Subcommittee Report on the ACR-700 Design

Sincerely,

/RA/

Mario V. Bonaca
Chairman