



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

SL-0516

December 3, 2003

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

Dear Chairman Diaz:

SUBJECT: SUMMARY REPORT - 507th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, NOVEMBER 5-7, 2003, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 507th meeting, November 5-7, 2003, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, letters, and memorandum:

REPORTS:

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

- Proposed Resolution of Generic Safety Issue-189, "Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident," dated November 17, 2003
- Security of Nuclear Facilities, dated November 24, 2003

LETTERS:

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

- ACRS Review of Routine Updates to 10 CFR 50.55a, "Codes and Standards," dated November 13, 2003
- Draft Final Revision 3 of Regulatory Guide 1.32, "Criteria for Power Systems for Nuclear Power Plants," dated November 17, 2003
- Regulatory Effectiveness of Unresolved Safety Issue A-45, "Shutdown Decay Heat Removal Requirements," dated November 18, 2003

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MEMORANDUM:

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

- Draft Final Revision to 10 CFR Part 50, "Financial Information Requirements for Applications to Renew or Extend the Term of an Operating License for a Power Reactor," dated November 12, 2003

HIGHLIGHTS OF KEY ISSUES

1. Draft Final Regulatory Guide 1.32, Revision 3, "Criteria for Power Systems for Nuclear Plants"

The Committee met with representatives of the NRC staff to discuss the Draft Final Revision 3 of RG 1.32. Revision 3 of Regulatory Guide 1.32 addresses an acceptable method for licensees to satisfy Criteria 17 and 18 of 10 CFR Part 50, Appendix A when designing, modifying, operating, testing, and documenting Class 1E power systems for nuclear power plants. This Guide endorses, with one exception, IEEE Standard 308-2001, "Criteria for Class 1E Power Systems for Nuclear Power Generating Stations." The Committee agreed with the staff's exception to the IEEE Standard with regard to sharing dc power systems in multi-unit nuclear power plants.

Committee Action

The Committee issued a letter to the NRC Executive Director for Operations dated November 17, 2003, recommending that Revision 3 of Regulatory Guide 1.32 be issued.

2. Safeguards and Security Matters (Closed)

The Committee heard presentations by and held discussions with representatives of the Office of Nuclear Regulatory Research (RES) and the Office of Nuclear Security and Incident Response (NSIR) regarding safeguards and security matters. This meeting was closed pursuant to 5 U.S.C. 552b(c)(1) and (3).

Committee Action

The Committee issued a report to Chairman Diaz on this matter, dated November 24, 2003.

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3. Proposed Resolution of Generic Safety Issue-189, "Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident"

The Committee heard presentations by and held discussions with representatives of the Office of Nuclear Reactor Regulation (NRR), the BWR Owners' Group (BWROG), Duke Energy, and the Union of Concerned Scientists regarding the proposed resolution of GSI-189.

The NRR staff described the staff's technical position and basis for resolution of GSI-189. Based on further investigation and technical assessment, NRR determined that the regulatory significance was sufficient to pursue rulemaking. This option is consistent with the agency's defense-in-depth philosophy, provides a substantial safety enhancement, and is justifiable based on cost.

The BWROG stated that the differences between the Mark III containment and the PWR ice condenser containment designs contribute to higher costs and reduced benefits for backup power modifications for BWRs. The severe accident mitigation guidelines are not an option for implementing backup power requirements because power would be needed sooner than could be provided by this option. They felt that there should be further study before rulemaking is pursued.

Duke Energy stated that the required design criteria should be clearly defined if rulemaking is pursued. They suggested that this be done by issuing a draft regulatory guide which outlines the requirements for comment. Plant modifications would then be implemented in accordance with the design criteria contained in the final regulatory guide.

The Union of Concerned Scientists stated that action on GSI-189 is long overdue and should proceed as quickly as possible.

Committee Action

The Committee issued a report to the NRC Chairman dated November 17, 2003, recommending that NRR proceed with rulemaking to require a backup power supply to the hydrogen igniters for PWR Ice Condenser and BWR Mark III plants.

4. Regulatory Effectiveness of the Resolution of Unresolved Safety Issue (USI)-A45, "Shutdown Decay Heat Removal Requirements"

The Committee met with representatives of the NRC staff to discuss NUREG/CR-6832, "Regulatory Effectiveness of Unresolved Safety Issue A-45, 'Shutdown Decay Heat Removal Requirements.'" The NRC staff concluded in NUREG/CR-6832 that a significant reduction in the risk associated with the loss of decay heat removal was achieved as a result of plant changes from the implementation of several regulatory initiatives as well as from modifications made during the development of the plant-specific individual plant examinations and individual plant examination of external events.

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Committee Action:

The Committee issued a letter to the Executive Director for Operations on this matter, dated November 18, 2003. The Committee recommended that the NRC staff not continue to rely solely on the results of the Individual Plant Examinations to assess the effectiveness of NRC regulations. Better risk information is needed to more realistically assess the effectiveness of the regulations. Either more access to current licensee risk information must be obtained or further efforts to upgrade the Standardized Plant Analysis Risk (SPAR) models should be pursued. The Committee also recommended that the assessment of the effectiveness of NRC regulations is important and be continued.

5. Mixed Oxide (MOX) Fuel Fabrication Facility

The Committee heard presentations by and held discussions with representatives of the Office on Nuclear Material Safety and Safeguards (NMSS). The purpose of this meeting was to hear the status of resolution of the remaining open items related to the Mixed Oxide (MOX) Fuel Fabrication Facility construction authorization request submitted by Duke Cogema Stone & Webster (DCS) in 2001.

There are currently 11 remaining open items; 1 on nuclear criticality safety and 10 on chemical safety. The criticality safety open item concerns the code validation for plutonium and mixed oxide powders.

The 10 chemical safety open items of concern are:

- Red Oil - runaway tributyl phosphate and nitric acid exothermic reactions
- Hydroxylamine Nitrate (HAN) - spontaneous autocatalytic reaction in HAN nitric acid solutions
- Electrolyzer Titanium Fire - planned fire suppression could be inadequate
- Uranium Burnback - powder can burnback in exothermic reactions at room temperature
- Chemical Consequence Calculations - use of temporary emergency exposure limits
- Emergency Control Room Habitability - exposure times, consequence limits, and staffing issues
- Lower Flammability Limits (4 Items) - Solvent/mixtures of concern

The staff indicated that meetings have been scheduled with DCS to resolve these open items.

Committee Action

The Committee deferred action on a letter report due to the number of remaining open items. The Committee plans to continue its discussion of this matter after progress has been made by the staff and DCS in resolving the open items.

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6. Advanced Non-Light Water Reactor Licensing Framework

The Committee met with representatives of the NRC staff to discuss the development of a technology neutral, risk-informed and performance-based advanced non-light water reactor licensing framework. The framework is to be used to develop a set of technology neutral regulations.

Committee Action:

This was an information briefing. The Committee plans to write a report on the advanced non-light water reactor licensing framework prior to it being forwarded to the Commission.

7. Subcommittee Report — R. E. Ginna License Renewal Application

The License Renewal Subcommittee Chairman provided a report to the ACRS regarding its meeting with the staff and representatives from Rochester Gas and Electric on November 4, 2003. The chairman noted that the staff had continued to perform effective scoping and aging management reviews for license renewal, identifying several issues and inconsistencies that were overlooked by the applicant. The Chairman cautioned the staff to continue to evaluate whether applicants are appropriately incorporating risk when developing the rationale for One Time Inspections (OTIs) and emphasized that the use of operating experience alone is not, in all cases, adequate justification for approving OTIs.

Committee Action

The Committee decided not to write an interim report. The Committee plans to review the staff's final SER during a future meeting.

8. Early Site Permit Review Standard

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding the public comments received on the draft NRC Review Standard RS-002, "Processing Applications for Early Site Permits," and the associated NRC staff's responses. The NRC staff developed an early site permit (ESP) review standard (RS-002) to clearly define for all stakeholders the scope of the existing regulatory guidance that is necessary for reviewing an ESP application, and to provide a work-planning framework to enhance the quality and efficiency of the ESP review effort.

Draft RS-002 was released for interim use and public comment in December 2002. The ACRS issued a report on March 12, 2003, concluding that RS-002 is appropriate for review of ESP applications and will accommodate the industry's proposed use of the Plant Parameter Envelope (PPE) concept. Additional guidance on quality assurance and accident analysis was released in April 2003. The NRC staff received comments from the Nuclear Energy Institute (NEI), two ESP applicants, the Nuclear Information and Resource Service, and a

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resident proximate to the Clinton site. The staff has incorporated the comments into the revised draft RS-002, as appropriate, and also sent letters to NEI informing about staff positions regarding certain generic ESP issues. Issuance of the revised RS-002 is planned for early 2004. Lessons learned from initial reviews of the first three applicants (Exelon, Dominion, and Entergy) will be incorporated into future revisions to RS-002, as appropriate.

Committee Action

This was an information briefing and no Committee action was taken. The Committee plans to follow-up on the lessons learned from the application of RS-002 in the staff's review of the ESP applications.

9. Task Force Report on Operating Experience

The Committee heard a presentation from the NRC staff on the Draft Report of the Reactor Operating Experience Task Force, which was issued on September 30, 2003. The Task Force activities are a part of the Davis-Besse Lessons Learned Action Plan. The objectives include an evaluation of the agency's reactor operating experience program, and the development of specific program improvements which address the recommendations of the Davis-Besse Lessons Learned Task Force. The staff described recommendations to improve the collection, organization, and evaluation of operational data, and to assess the effectiveness of internal dissemination of operating experience to end users. The Task Force has prepared a plan to implement the program objectives and attributes. After the report is issued, the implementation phase should begin in late 2004. Committee members responded positively to the report, and provided the staff with several suggestions to enhance operating experience evaluation programs.

Committee Action

This was an information briefing and no committee action was taken. The Committee will consider this issue again after the implementation program has begun.

10. NRC Safety Research Program Report

The Committee discussed a 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 December 2003 meeting. The report is due to the Commission on March 15, 2004.

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RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

There were no EDO responses for consideration by the Committee during this meeting.

LIST OF MATTERS FOR THE ATTENTION OF THE EDO

- The Committee agreed with the staff's request that in the future the Committee defer its review of routine updates to 10 CFR 50.55a, which do not involve significant issues, until after public comments have been resolved. The Commission would like to be notified of routine updates to 10 CFR 50.55a at the draft proposed stage.
- The Committee plans to review the advanced non-light water reactor licensing framework prior to it being forwarded to the Commission.
- The Committee plans to continue its discussion of the construction authorization application for the MOX Fuel Fabrication Facility after the staff and DCS have made progress in resolving the remaining open items.
- The Committee plans to follow-up on the lessons learned from the application of the Early Site Permit Review Standard (RS-002) in the staff's review of the Early Site Permit applications.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from October 2, 2003, through November 5, 2003, the following Subcommittee meetings were held:

- Reliability and Probabilistic Risk Assessment and Human Factors - October 10, 2003

The Subcommittees discussed seismic, digital I&C, and human factors research activities.

- Reliability and Probabilistic Risk Assessment - October 10, 2003

The Subcommittee discussed the status of the probabilistic risk assessment research program.

- Planning and Procedures - November 5, 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.

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ACRS Meetings and Dates for CY 2004

<u>ACRS Meeting</u>	<u>Dates</u>
509	February 5-7, 2004
510	March 4-6, 2004
511	April 15-17, 2004
512	May 6-8, 2004
513	June 2-4, 2004
514	July 7-9, 2004
515	September 8-11, 2004
516	October 7-9, 2004
517	November 4-6, 2004
518	December 2-4, 2004

PROPOSED SCHEDULE FOR THE 508th ACRS MEETING

The Committee agreed to consider the following topics during the 508th ACRS meeting, to be held on December 3-6, 2003:

- Draft Report on the NRC Safety Research Program
- Draft Final 10 CFR Part 52 Construction Inspection Program
- Proposed Revisions to SRP Chapter 18, Human Factors Engineering
- Draft Final Revision to 10 CFR 50.48 to Endorse NFPA 805 Fire Protection Standard
- Subcommittee Report on the Interim Review of the License Renewal Application for the Virgil C. Summer Nuclear Station
- Safeguards and Security Matters (Closed)
- Recent Operating Events

Sincerely,

/RA/

Mario V. Bonaca
Chairman