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

SL-0521

June 14, 2004

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

SUBJECT: SUMMARY REPORT - 512th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, MAY 5-8, 2004, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

Dear Chairman Diaz:

During its 512th meeting, May 5-8, 2004, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following letters:

LETTERS:

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

- Use of Mixed Oxide Lead Test Assemblies at the Catawba Nuclear Station, dated May 7, 2004
- Good Practices for Implementing Human Reliability Analysis, dated May 13, 2004
- Resolution of Certain Items Identified by the ACRS in NUREG-1740, "Voltage-Based Alternative Repair Criteria," dated May 21, 2004

HIGHLIGHTS OF KEY ISSUES

1. Safeguards and Security Matters

The Committee heard presentations by and held discussions with representatives of the Office of Nuclear Regulatory Research regarding safeguards and security matters. This meeting was closed to protect information classified as national security information as well as unclassified safeguards information pursuant to 5.U.S.C. 552b(c)(1) and (3).

Committee Action

The Committee plans to hold additional discussions with the NRC staff and its contractors in August/September 2004 to discuss security issues related to reactors, fuel cycle facilities, spent fuel cask storage, and emergency response planning. The Committee plans to provide reports to the Commission on these topics in the future.

2. Use of Mixed Oxide (MOX) Lead Test Assemblies at the Catawba Nuclear Station

The Committee heard presentations by and held discussions with representatives of Duke Power, the Union of Concerned Scientists (UCS), the Nuclear Energy Institute (NEI), and the NRC staff regarding the Duke Power's application to irradiate four MOX fuel lead test assemblies (LTAs) in the core of one of the reactors at the Catawba Nuclear Station. Representative of Duke Power presented information about the experience base elsewhere in the world with the fabrication and use of MOX fuel in commercial reactors. The NRC staff presented its evaluation of the key safety issues, which centered on fuel assembly performance, and changes to the accident source term arising from the use of MOX fuel LTAs. The UCS representative expressed concerns related to the behavior of MOX fuel during design-basis and beyond-design-basis accidents, that the UCS believes has not been appropriately treated by Duke, or the staff. The representative from NEI commented in support of the application.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter dated May 7, 2004 concluding that, under the restricted circumstances considered in both the Duke Power application and the NRC staff's safety evaluation, the four MOX fuel LTAs can be irradiated in non-limiting locations in either of the cores of the Catawba reactors with no undue risk to the health and safety of the public.

3. Risk Management Technical Specifications

The Committee heard presentations by and held discussions with representatives of the Office of Nuclear Reactor Regulation (NRR), NEI, and the South Texas Project (STP) regarding the status of the Risk Management Technical Specifications (RMTS), Initiative 4b, Risk Informed Completion Times. The purpose of this project is to risk-inform the technical specifications. Initiative 4b is intended to extend the completion times from a current nominal value to a predetermined maximum using configuration risk management. The staff is currently reviewing a draft guidance document from NEI and pilot proposals from the STP and Fort Calhoun. Hope Creek Plant has also volunteered to be a pilot. RMTS is dependent upon a robust and quality PRA. Communication and training of headquarters and regional staff are essential. Some issues associated with this project are the extent of incorporation of risk monitors and assessment tools into the PRAs, QA/QC of the software and its updates, and the time necessary to calculate the risk.

Committee Action

This was an information briefing and no Committee action was taken.

4. Trial/Pilot Implementation of Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities"

The Committee met with representatives of the NRC staff and NEI to discuss the current activities and plans related to the five pilot applications of Regulatory Guide (RG) 1.200. NEI provided its perspective on the pilot applications of RG 1.200. In a September 22, 2003 report to the Commission, the Committee agreed with the staff's recommendation that RG 1.200 be issued for trial use with an appropriate sample of pilot plants. The staff and NEI discussed what they hoped to learn from the pilot applications. Both the staff and NEI said that applying RG 1.200 has been more intensive than anticipated.

Committee Action

This was an informational briefing. The Committee plans to review Appendix C to RG 1.200, which will endorse the American Nuclear Society (ANS) Standard on external events. Also, the Committee plans to review the proposed revision to RG 1.200, which will incorporate the lessons learned from the trial applications.

5. Good Practices for Implementing Human Reliability Analysis

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding the Draft Letter Report (JCN W6994), "Good Practices for Implementing Human Reliability Analysis (HRA)," dated April 6, 2004. The staff provided a broad overview of the HRA research program and discussed HRA good practices. The purpose of the guidance in HRA good practices document is to ensure some level of consistency and quality in HRA analyses and their review.

Committee Action

The Committee issued a letter to the NRC Executive Director for Operations on this matter dated May 13, 2004, recommending that the draft letter report be issued for public comment and also peer-reviewed by domestic and international experts. The Committee plans to review the draft final letter report after the public comment period and peer review.

6. Potential Adverse Effects from Power Uprates

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding potential adverse effects from power uprates. The staff discussed the issue of steam dryers cracking at certain boiling water reactor (BWR) plants. In some cases, fractured metal parts from the steam dryer have entered the reactor coolant system and steam lines. The staff presented its actions and the industry activities for resolving this issue.

The members were critical of the staff and the industry response to this issue and questioned whether the staff and the industry really understood the causes of steam dryer cracking at several BWRs over the past two years and how extended power uprates affected this

equipment. The members were concerned about the apparent lack of risk analyses conducted at plants with steam dryer problems and about the staff's plans to continue granting uprates without first resolving the associated technical issues.

Committee Action

This was an information briefing and no Committee action was taken. However, the Committee will continue to be involved in the staff's plans and activities to resolve this issue.

7. Subcommittee Report on Fire Protection Issues

The Chairman of the ACRS Subcommittee on Fire Protection provided a report to the Committee regarding the matters discussed at the April 23, 2004 Subcommittee meeting. He stated that representatives of the NRC staff and the industry discussed three of the many ongoing NRC fire protection initiatives. The items discussed included resolution of post-fire circuit analysis issues, the revised Fire Significance Determination Process (SDP), and the RES-EPRI Fire Risk Requantification Study. The staff also provided status updates on rulemaking to allow operator manual actions to satisfy fire protection requirements and the voluntary adoption of the National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light-Water Reactor Electric Generating Plants."

Committee Action

The Committee plans to review the draft final rule on operator manual actions.

8. Resolution of Certain Items Identified by the ACRS In NUREG-1740 Related to the Differing Professional Opinion on Steam Generator Tube Integrity

The Committee completed its review of the NRC staff's resolution of certain items identified by the ACRS in NUREG-1740, "Voltage-Based Alternative Repair Criteria," related to the differing professional opinion (DPO) on steam generator tube integrity. During the 509th ACRS meeting on February 5-7, 2004, the Committee heard presentations by and held discussions with representatives of the NRC staff and their contractors regarding the staff's resolution of several items identified by the ACRS in NUREG-1740 as well as the status of activities associated with the resolution of the remaining ACRS issues. The staff presented the resolution of certain items, which included steam generator tube integrity during main steamline break, correlation between voltage and leakrate for 7/8" steam generator tubes, and use of appropriate iodine spiking factor in the dose calculations for the design-basis accident.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter dated May 21, 2004, which included several recommendations regarding the staff's resolution of certain items identified by the ACRS in NUREG-1740. The Committee plans to continue its discussion of this matter during future meetings.

9. Reconciliation of ACRS Comments and Recommendations

There were no EDO responses for discussion during this meeting.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from April 15, 2004 through May 5, 2004, the following Subcommittee meetings were held:

- Reactor Fuels - April 21, 2004

  The Subcommittee reviewed the proposed license amendment requesting authorization to use MOX fuel Lead Test Assemblies at Catawba.

- Human Factors/Reliability and Probabilistic Risk Assessment - April 22, 2004

  The Subcommittees discussed the proposed staff's guidance regarding Good Practices for Implementing Human Reliability Analysis and data development for Human Reliability Analysis.

- Fire Protection - April 23, 2004

  The Subcommittee discussed the resolution of post-fire safe shutdown circuit analysis revisions to the Reactor Oversight Process (ROP) fire SDP, and the preliminary results of the staff's Fire Risk Requantification Study.

- Planning and Procedures - May 5, 2004

  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 ACRS Subcommittees on Plant Operations and on Thermal-Hydraulic Phenomena plans to hold meetings, as needed, to discuss the progress made by the staff in resolving the issues of potential adverse effects resulting from power uprates.

- The Committee plans to review Appendix C to RG 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," which will endorse the ANS Standard on external events. In addition, the Committee plans to review the proposed revision to RG 1.200 once the lessons learned from the trial applications have been incorporated.

- The Committee plans to meet with the staff and its contractors in August/September 2004 to discuss security issues related to reactors, fuel cycle facilities, spent fuel cask storage, and emergency response planning.

- The Committee plans to review the draft final report (JCN W6994), "Good Practices for Implementing Human Reliability Analysis (HRA)," after the public comment period and peer review.

- The Committee plans to continue its discussion of the staff's resolution of the remaining issues identified by the ACRS in NUREG-1740, "Voltage-Based Alternative Repair Criteria."

PROPOSED SCHEDULE FOR THE 513th ACRS MEETING

The Committee considered the following topics during the 513th ACRS meeting, held on June 2-4, 2004:

- Draft Final 10 CFR 50.69, "Risk-Informed Categorization and Treatment of Structures, Systems, and Components for Nuclear Power Reactors"
- Revised License Renewal Review Process
- Digital Instrumentation and Control System Research Activities
- NRC Staff Response to the ACRS Report on the AP1000 Design
- Proposed Revisions to Standard Review Plan (SRP) Sections and Process and Schedule for Revising the SRP
- Metrics for Evaluating the Quality of the NRC Research Programs

Sincerely,

/RA/

Mario V. Bonaca
Chairman

- The Committee plans to review the draft final report (JCN W6994), "Good Practices for Implementing Human Reliability Analysis (HRA)," after the public comment period and peer review.

- The Committee plans to continue its discussion of the staff's resolution of the remaining issues identified by the ACRS in NUREG-1740, "Voltage-Based Alternative Repair Criteria."

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Mario V. Bonaca
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