SL-0487

January 25, 2001

The Honorable Richard A. Meserve
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: SUMMARY REPORT - 478TH MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, ON DECEMBER 6-9, 2000, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

Dear Chairman Meserve:

During its 478th meeting, December 6-9, 2000, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following report and letters. In addition, the Committee authorized Dr. John T. Larkins, Executive Director, ACRS, to transmit the memoranda noted below:

REPORT

- Issues Associated with the Thermal-Hydraulic Codes (Report to the Honorable Richard A. Meserve, Chairman, NRC, from Dana A. Powers, Chairman, ACRS, dated January 11, 2001)

LETTERS

- Nuclear Energy Institute Draft Report, NEI 99-03, "Control Room Habitability Assessment Guidance" (Letter to William D. Travers, Executive Director for Operations, NRC, from Dana A. Powers, Chairman, ACRS, dated December 14, 2000)

- Proposed Final Regulatory Guide DG-1053, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence" (Letter to William D. Travers, Executive Director for Operations, NRC, from Dana A. Powers, Chairman, ACRS, dated December 15, 2000)

- Differing Professional Opinion on Steam Generator Tube Integrity (Letter to William D. Travers, Executive Director for Operations, NRC, from Dana A. Powers, Chairman, dated February 1, 2001)

MEMORANDA

- South Texas Project, Units 1 and 2 - Draft Safety Evaluation on Exemption Requests from Special Treatment Requirements of 10 CFR Parts 21, 50, and 100 (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated December 13, 2000)

- Proposed Revision to the Commission's Safety Goal Policy Statement for Reactors (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated December 14, 2000)

- Physical Separation of Circuits for Low Pressure Emergency Core Cooling Systems (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated December 20, 2000)

HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. Issues Associated with Core Power Uprates

The Committee heard presentations by and held discussions with represen-tatives of the NRC staff concerning issues associated with core power uprates. In light of licensees submitting requests for extended 15-20% of nominal core power) power uprates, the Committee members expressed concern regarding the scope and method of the staff's review procedure and the potential for synergistic effects with other licensing actions that could compete with existing safety margins. NRC staff representatives presented the staff's review procedure for uprate requests, application of risk-informed decision making on power uprates, potential synergistic effects such as high burnup fuel and erosion/corrosion, and the perspective of the Office of Nuclear Regulatory Research on extended uprate applications.

Conclusion

The Committee will take this matter under advisement, pursuant to its review of proposed licensee power uprate applications. The Committee will also pursue follow-on action regarding this issue during its "Planning and Procedures Meeting" on January 22-24, 2001, when it holds a discussion on the topic of "Identification and Quantification of Design Margins."

2. Differing Professional Opinion (DPO) on Steam Generator Tube Integrity

The Chairman of the ACRS ad hoc Subcommittee on DPO provided a report to the Committee on the proposed conclusions and recommendations of the subcommittee associated with the technical merits of the DPO issues. The NRC staff, DPO author, and the Committee members discussed the impact of the tube support plate movement during depressurization on the steam generator tubes.

Conclusion

The Committee approved the conclusions and recommendations of the Subcommittee. Also, it approved a letter to the EDO to transmit the NUREG-xxx report prepared by the subcommittee subject to editorial changes to the report.

3. Thermal-Hydraulic Phenomena Subcommittee Report

The Thermal-Hydraulic Phenomena Subcommittee Chairman provided a report regarding the results of the November 13-14, 2000 Subcommittee meeting, associated with its review of the General Electric (GE) Nuclear Energy TRACG realistic thermal-hydraulic code. The Committee's discussion focused on the strengths and weaknesses of GE's code modeling approach and the application of the code to the modeling of anticipated operational occurrences.

Conclusion

The Subcommittee plans to continue its discussion of the TRACG code at future meetings.

4. Plant Systems Subcommittee Report

The Committee received a report by the Chairman of the Plant Systems Subcommittee on the results of a meeting held on October 31, 2000, regarding ABB/CE Siemens digital instrumentation and control (I&C) applications and the insights gained from a meeting held in November with the German Reactor Safety Committee (RSK) on digital I&C. Dr. Uhrig stated that the meeting with the German RSK was a followup to an exchange held at MIT in Cambridge, MA, in 1999. A principal focus of the meeting was to discuss safety issues associated with the utilization of digital I&C systems in light water reactors. The representatives of the NRC staff also clarified the issues related to digital I&C presented by the staff at the International Symposium on Software Reliability Engineering.

Conclusion

The Committee will continue its discussion of the digital I&C topical reports and other digital I&C issues during future ACRS meetings.

5. Meeting with NRC Commissioner Diaz

The Committee held discussions with Commissioner Diaz regarding the NRC Safety Research Program and other items of mutual interests.

6. South Texas Exemption Request

The Committee heard presentations by and held discussions with representa-tives of the NRC staff and South Texas Project (STP) concerning the recently issued draft safety evaluation on the STP request for exemptions from certain special treatment requirements of 10 CFR Parts 21, 50, and 100.

The safety evaluation was developed in response to the risk-informed exemption requests from the special treatment requirements of 10 CFR Parts 21, 50, and 100 submitted by STP on July 13, 1999, and supplemented on October 14 and 22, 1999, and January 26 and August 31, 2000. The submittal sought approval of processes for categorizing the safety significance of structures, systems, and components (SSCs) and treatment of those SSCs as the principal basis for granting the exemptions. STP used the NRC approved graded Quality Assurance (GQA) program to categorize certain SSCs in the plant.

During the meeting, STP provided a list of the regulations that they were seeking to exclude SSCs from the scope of requirements. These were: 10CFR Part 21 (Defect Notification); 10CFR50.34 (Appendix B Treatment); 10CFR 50.49 (EQ); 10CFR 50.54 (QA Program); 10CFR 50.55a (ASME); 10CFR 50.59 (Change Evaluation); 10CFR 50.65 (Maintenance Rule); Appendix A, GDCs 1,2,4,18 (QA, Seismic, EQ, 1E); Appendix B (QA Program); Appendix J (RCB Leak Testing); and 10CFR Part 100 (Seismic).

The NRC staff presentation emphasized the importance of the fact that risk-informed decisionmaking meets current regulations, is consistent with defense-in-depth, maintains sufficient safety margins, and that increases in CDF/risk are small. The staff listed a number of open items relating to the categorization and the treatment processes.

Conclusion

A memorandum was sent to the Executive Director for Operations dated December 13, 2000, indicating that the safety evaluation was not complete because of a number of open items. Because of the significance of the open items, an ACRS Subcommittee plans to discuss this matter at a future meeting.

7. Control Room Habitability

The Committee heard presentations by and held discussions with representatives of the Nuclear Energy Institute (NEI) and the NRC staff regarding the resolution of issues associated with control room habitability. Mr. P. Lagus, Lagus Technology Inc., also provided comments relative to aspects of control room tracer gas inleakage measurement. In response to NRC staff concerns, NEI developed a guidance document, NEI 99-03, "Control Room Habitability Assessment Guidance." NEI believes that the current draft of this document adequately addresses the staff's concerns with control room habitability. The staff agrees that the industry has made significant progress, but some key issues, primarily associated with testing and maintenance of acceptable inleakage values, remain unresolved. The staff has decided to pursue a regulatory approach to resolve this matter, with the expected development of a regulatory document and use of the public comment process.

Conclusion

The Committee provided a report to the Executive Director for Operations on this matter, dated December 14, 2000.

8. Proposed Final Regulatory Guide DG-1053, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence"

The Committee heard presentations by and held discussions with representatives of the NRC staff concerning the proposed final Regulatory Guide DG-1053, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence." The Committee also considered the guidance provided in NUREG/CR-6115, "PWR and BWR Pressure Vessel Fluence Calculation Benchmark Problems and Solutions." The Committee and staff discussed accuracy and reliability issues associated with the various methods used to determine vessel fluence. The wide variation in calculation methods has resulted lengthy plant-specific reviews. The proposed Regulatory Guide was developed to provide standardized methods and procedures to simplify and expedite these reviews.

Conclusion

The Committee sent a letter dated December 15, 2000, to the Executive Director for Operations on this matter.

9. Proposed Modifications to the Commission's Safety Goal Policy Statement for Reactors

The Committee heard a presentation by and held discussions with a representative of the NRC staff concerning the proposed modifications to the Commission's Safety Goal Policy Statement for reactors. The Committee considered the staff's proposed modifications which reflect Commission direction in the Staff Requirements Memorandum dated June 27, 2000 (SECY-00-0077). Individual ACRS members suggested a number of changes that the staff agreed to consider.

Conclusion

The ACRS Executive Director sent a memorandum dated December 14, 2000, to the Executive Director for Operations on this matter.

10. NRC Safety Research Program

The Committee continued its discussion of the NRC Safety Research Program and the format and content of the ACRS 2001 report to the Commission.

Conclusion

The Committee will continue its discussion and preparation of the ACRS 2001 report to the Commission on the NRC research program during future ACRS meetings.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

The Committee did not receive any EDO responses for discussion during this meeting.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from November 1 through December 5, 2000, the following Subcommittee meetings were held:

- Safety Research Program - November 1, 2000

  The Subcommittee discussed the 2001 draft ACRS report to the Commission regarding the NRC Safety Research Program.

- Thermal Hydraulic Phenomena - November 13-14, 2000

  The Subcommittee reviewed the GE Nuclear Energy TRACG thermal-hydraulic code, and continued the review of the NRC Office of Nuclear Regulatory Research (RES) thermal-hydraulic research program pursuant to development of the ACRS annual safety research report.

- Severe Accident Management - November 15, 2000

  The Subcommittee reviewed RES' severe accident management program and continued the review of activities between the NRC staff and the nuclear industry pursuant to the revisions of NEI document 99-03, "Control Room Habitability Assessment Guidance."

- Materials and Metallurgy - November 16, 2000

  The Subcommittee discussed the proposed draft regulatory guide DG-1053, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence."

- Planning and Procedures - December 5, 2000

  The Planning and Procedures 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 FOLLOW-UP MATTERS FOR THE EXECUTIVE DIRECTOR FOR OPERATIONS

- An ACRS Subcommittee plans to review the South Texas Project exemption requests for special treatment requirements and the associated NRC staff safety evaluation after resolution of significant open issues.

- The Committee requested an opportunity to review the staff's resolution of the issues associated with physical separation of circuits for low pressure emergency core cooling systems.

PROPOSED SCHEDULE FOR THE 479TH ACRS MEETING

The Committee agreed to consider the following topics during the 479th ACRS Meeting, February 1-3, 2001:

Treatment of Uncertainties in the Elements of the PTS Technical Basis Reevaluation Project

Briefing by and discussions with representatives of the NRC staff regarding treatment of uncertainties in the elements of the Pressurized Thermal Shock (PTS) Reevaluation Project.

Siemens S-RELAP5 Appendix K Small-Break LOCA Code

Briefing by and discussions with representatives of the NRC staff and Siemens Power Corporation regarding the Siemens S-RELAP5 Appendix K Small-Break Loss-of-Coolant Accident (LOCA) Code and the associated NRC staff Safety Evaluation Report.

Proposed ANS Standard on External-Events PRA

Briefing by and discussions with representatives of the American Nuclear Society (ANS) regarding the proposed ANS Standard on external events PRA.

Reprioritization of Generic Safety Issue-152, "Design Basis for Valves that Might be Subjected to Significant Blowdown Loads"
Briefing by and discussions with representatives of the NRC staff regarding reprioritization of Generic Safety Issue-152 and the reasons therefor, and related matters.

Regulatory Effectiveness of the ATWS Rule

Briefing by and discussions with representatives of the NRC staff regarding the staff's assessment of the regulatory effectiveness of the Anticipated Transients Without Scram (ATWS) Rule (10 CFR 50.62).

Overview of Mixed Oxide Fuel Fabrication Facility

Briefing by and discussions with representatives of the Department of Energy (DOE) and the NRC staff regarding the proposed Mixed Oxide Fuel Fabrication Facility to be constructed at the DOE's Savannah River Plant site.

Meeting with the NRC Chairman

Meeting with the NRC Chairman Meserve to discuss items of mutual interest.

NRC Safety Research Program

Discussion of the annual ACRS report to the Commission on the NRC Safety Research Program.

Sincerely,

/RA/

Dana A. Powers
Chairman