

March 21, 2003

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

Dear Chairman Meserve:

SUBJECT: SUMMARY REPORT - 499<sup>th</sup> MEETING OF THE ADVISORY  
COMMITTEE ON REACTOR SAFEGUARDS, FEBRUARY 6-8, 2003  
AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 499<sup>th</sup> meeting, February 6-8, 2003, 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 memorandum noted below:

REPORT:

The following report was issued to Richard A. Meserve, Chairman, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Report on the Safety Aspects of the License Renewal Application for the McGuire Nuclear Station Units 1 and 2 and the Catawba Nuclear Station Units 1 and 2, dated February 14, 2003

LETTERS:

The following letters were issued to William D. Travers, Executive Director for Operations, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Proposed Resolution of Generic Safety Issue-191, "Assessment of Debris Accumulation on PWR Sump Performance," dated February 20, 2003
- Draft Final Regulatory Guide DG-1077, "Guidelines for Environmental Qualification of Microprocessor-Based Equipment Important to Safety in Nuclear Power Plants," dated February 14, 2003

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- Pressurized Thermal Shock (PTS) Reevaluation Project: Technical Bases for Potential Revision to PTS Screening Criteria, dated February 21, 2003

#### MEMORANDUM:

The following memorandum was issued to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS:

- Proposed Amendments to 10 CFR Part 50, Appendix E, Paragraphs IV.B and IV.F.2, dated February 24, 2003

#### HIGHLIGHTS OF KEY ISSUES

##### 1. Catawba and McGuire License Renewal Application

The Committee heard presentations by, and held discussions with, representatives of the NRC staff and Duke Energy Corporation regarding the staff's final Safety Evaluation Report for the McGuire Nuclear Station and Catawba Nuclear Station license renewal application. The staff discussed the resolution of open and confirmatory items that were included in the draft SER.

##### Committee Action

The Committee issued a report to the NRC Chairman on this matter dated February 14, 2003. The Committee recommended that the application be approved. The Committee also noted that as in previous applications, there are a substantial number of activities and commitments that will not be accomplished until near the end of the current license period. Given the large number of power plants that will approach the license renewal term at approximately the same time, this nationwide inspection effort is likely to impose on the staff a major demand for resources.

##### 2. Draft Regulatory Guide DG-1107, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident" and Draft Generic Letter 2003-xx, related to the Resolution of Generic Safety Issue (GSI)-191, "Assessment of Debris Accumulation on PWR Sump Performance"

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding draft Regulatory Guide DG-1107 and draft Generic Letter 2003-xx, "Potential Impact of Debris Blockage on Emergency Recirculation During Design-Basis Accidents at Pressurized-Water Reactors," associated with the resolution of GSI-191.

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DG-1107 describes the technical issues that require resolution in order for plants to ensure that sump recirculation will function adequately following a LOCA. The draft Generic Letter is intended to initiate the process of gathering plant-specific information and requiring licensees to develop plans for resolving potential issues.

#### Committee Action

The Committee issued a letter to the NRC Executive Director for Operations on this matter dated February 20, 2003. The Committee agreed with the staff's proposal to issue the Generic Letter for public comment. The Committee also agreed with the staff's proposal to issue DG-1107 provided public views are sought on the ACRS recommendation that the staff evaluate the possibility that strainers may be so susceptible to debris blockage that alternative solutions to ensure long-term cooling may be required. In addition, the Committee concluded that the methods discussed in DG-1107 should be peer reviewed. The Committee looks forward to reviewing both documents after resolution of public comments.

#### 3. PTS Reevaluation Project: Technical Bases for Potential Revision to PTS Screening Criteria

The Committee heard presentations by and held discussions with representatives of the Office of Nuclear Regulatory Research (RES) regarding the technical bases for potential revision to the Pressurized Thermal Shock (PTS) screening criteria in the PTS rule (10 CFR 50.61). The staff utilized a multi-disciplinary approach which combines probabilistic risk assessment, thermal hydraulics and probabilistic fracture mechanics to estimate the yearly frequency of through-wall cracking in a reactor pressure vessel. The staff also presented the results of the plant-specific studies performed at Oconee Unit 1, Beaver Valley Unit 1, and Palisades. The results of these studies show that the current PTS screening criteria are very conservative.

#### Committee Action

The Committee issued a letter to the NRC Executive Director for Operations on this matter dated February 21, 2003. The Committee stated that the PTS Reevaluation Project has developed comprehensive technical bases for analyzing the susceptibility of reactor pressure vessels to PTS and to support rulemaking to revise the current PTS rule 10 CFR 50.61. The Committee also stated that the draft technical bases summary report needs substantial revision to describe more clearly the basic phenomena, issues, approaches, and conclusions. Also, topical reports on some important technical tasks should be completed to support a meaningful peer review.

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4. Draft Final Version of Regulatory Guide DG-1077, "Guidelines for Environmental Qualification of Microprocessor-Based Equipment Important to Safety in Nuclear Power Plants"

The Committee heard presentations by, and held discussions with, representatives of the NRC staff and Oak Ridge National Laboratory regarding the technical basis for DG-1077 and resolution of public comments. In addition, a representative of the Nuclear Utility Group on Equipment Qualification provided written and oral statements to the Committee.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated February 14, 2003. The Committee stated that the draft final Regulatory Guide DG-1077 provides appropriate guidance for environmental qualification of microprocessor-based equipment and should be issued.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the EDO's response of December 9, 2002 to comments and recommendations included in the ACRS report dated September 24, 2002, concerning Human Factors and Human Reliability Analysis Research.

The Committee decided that it was satisfied with the EDO's response.

- The Committee considered the EDO's response of December 9, 2002 to comments and recommendations included in the ACRS report dated October 17, 2002, concerning the Confirmatory Research Program on High-Burnup Fuel.

The Committee plans to continue follow-up on this matter.

- The Committee considered the EDO's response of January 14, 2003 to comments and recommendations included in the ACRS report dated November 13, 2002, concerning Recommendations Proposed by RES for Resolving GSI-189, "Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident."

The Committee decided that it was satisfied with the EDO's response.

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- The Committee considered the EDO's response of January 29, 2003 to comments and recommendations included in the ACRS report dated December 18, 2002, concerning the Report on the Safety Aspects of the License Renewal Application for the North Anna Power Station, Units 1 and 2, and the Surry Power Station, Units 1 and 2.

The Committee decided that it was satisfied with the EDO's response.

- The Committee considered the EDO's response of January 28, 2003 to comments and recommendations included in the ACRS report dated December 20, 2002, concerning the Draft Final ANS External Events PRA Methodology Standard.

The Committee decided that it was satisfied with the EDO's response.

#### OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from December 5, 2002 through February 5, 2003, the following Subcommittee meetings were held:

- Reliability and Probabilistic Risk Assessment - January 21, 2003

The Subcommittee continued its discussion of activities associated with the Reactor Oversight Process (ROP), specifically addressing staff activities regarding issues raised in a Staff Requirements Memorandum dated December 20, 2001, in which the Commission directed the NRC staff, with input from the ACRS, to provide recommendations for resolving conflicts and discrepancies between aspects of the revised ROP process that are risk-informed (e.g., significance determination process) and those that are performance based (e.g., performance indicators).

- Safety Research Program - January 22, 2003

The Subcommittee continued its discussions regarding the ACRS 2003 report on NRC-sponsored research programs.

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- Reliability and Probabilistic Risk Assessment - January 22-24, 2003

On January 22, 2003, the Subcommittee discussed the NRC staff's plan for achieving greater coherence of its risk-informed regulatory activities within the reactor safety arena. On January 23-24, 2003, the Subcommittee reviewed the AP1000 Probabilistic Risk Assessment.

- Thermal-Hydraulic Phenomena - February 4, 2003

The Subcommittee reviewed proposed NRC Generic Letter (GL) 2003-XX, "Potential Impact of Debris Blockage on Emergency Recirculation During Design-Basis Accidents at Pressurized-Water Reactors," and Draft Regulatory Guide DG-1107, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident," associated with the resolution of Generic Safety Issue (GSI)-191.

- Materials and Metallurgy - February 5, 2003

The Subcommittee discussed the risk metric and criteria that can be used for reevaluating the technical basis of the PTS rule.

- Planning and Procedures - February 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.

#### LIST OF MATTERS FOR THE ATTENTION OF THE EDO

- The Committee plans to review draft final NRC Generic Letter (GL) 2003-XX, "Potential Impact of Debris Blockage on Emergency Recirculation During Design-Basis Accidents at Pressurized-Water Reactors," and draft final Regulatory Guide DG-1107, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident," subsequent to reconciliation of public comments.
- The Committee plans to continue its discussion on the staff's coherence activities including the prioritization of regulatory activities during future meetings.
- The Committee plans to review the final reports associated with the technical basis for potential revisions to the PTS rule.

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PROPOSED SCHEDULE FOR THE 500<sup>th</sup> ACRS MEETING

The Committee agreed to consider the following topics during the 500<sup>th</sup> ACRS meeting, to be held on March 6-8, 2003:

- Peach Bottom License Renewal Application
- Reactor Oversight Process
- Vessel Head Penetration Cracking and Degradation
- Draft Final Revision 1 to Regulatory Guide 1.180 (DG-1119) "Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems"
- Early Site Permit Process
- Overview of the Format and Content of the Fort Calhoun License Renewal Application

Sincerely,

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Mario V. Bonaca  
Chairman