

July 3, 2001

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

Dear Chairman Meserve:

SUBJECT: SUMMARY REPORT - 483rd MEETING OF THE ADVISORY  
COMMITTEE ON REACTOR SAFEGUARDS, JUNE 6-8, 2001  
AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 483rd meeting, June 6-8, 2001, 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

- Response to Your May 7, 2001 Memorandum Regarding Differing Professional Opinion on Steam Generator Tube Issues (Letter to Chairman Meserve, NRC, from George E. Apostolakis, Chairman, ACRS, dated June 14, 2001)

LETTERS

- Risk-Based Performance Indicators: Phase 1 Report (Letter to William D. Travers, Executive Director for Operations, NRC, from George E. Apostolakis, Chairman, ACRS, dated June 19, 2001)
- Response to Your April 12, 2001 Letter on Issues Raised by ACRS Pertaining to Industry Use of Thermal-Hydraulic Codes (Letter to William D. Travers, Executive Director for Operations, NRC, from George E. Apostolakis, Chairman, ACRS, dated June 19, 2001)

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## MEMORANDA

- Proposed Final Regulatory Guide, 1.52, Revision 3, “Design, Inspection, and Testing Criteria for Air Filtration and Adsorption of Post-Accident Engineered-Safety-Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants” (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated June 11, 2001)
- Proposed Revision 1 to Risk-Informed Regulatory Guide 1.174 and Standard Review Plan Chapter 19 (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated June 12, 2001)

## HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. Proposed Risk-Informed Revisions to 10 CFR 50.46 and Proposed Revisions to the Framework for Risk-Informing the Technical Requirements of 10 CFR Part 50

The Committee heard presentations by and held discussions with representatives of the NRC staff and the Nuclear Energy Institute (NEI) concerning the status of proposed risk-informed revisions to 10 CFR 50.46 for emergency core cooling systems (ECCS) and proposed revision to the framework for risk-informing the technical requirements of 10 CFR Part 50. The Committee considered the staff's preliminary views and schedule for completing its Phase 1 feasibility study for developing risk-informed alternative ECCS requirements. The Committee discussed candidate options to improve the realism of large-break loss-of-coolant accident (LBLOCA) analysis including possible LBLOCA redefinition. The Committee discussed LBLOCA phenomena and frequency; demonstration of functionality and performance-based acceptance criteria; realism of ECCS evaluation models; credible break sizes; and uncertainty propagation. The Committee also discussed possible Phase II technical work and policy issues, e.g., single-failure criterion and selective implementation. The staff plans to provide its draft Commission paper for consideration by the Committee in late-June 2001.

### Committee Action

A joint meeting of the ACRS Subcommittees on Materials and Metallurgy, Thermal-Hydraulic Phenomena, and Reliability and PRA is scheduled for July 9, 2001, on this matter. The Committee plans to continue its review of this matter during the July 11-13, 2001 ACRS meeting, subject to the availability of the staff's proposed Commission paper.

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## 2. Potential Margin Reductions Associated with Power Uprates

The Committee was briefed by the ACRS Senior Fellow Dr. A. W. Cronenberg on his views with regard to the adequacy of the staff's review process for power uprates and potential safety margin reductions associated with power uprates. Key points noted by Dr. Cronenberg were:

- The NRC's General Design Criteria do not explicitly address how much design margin is required. Typically, the words "sufficient margin" are used. Margin requirements are more explicit in the Standard Review Plan and in such documents as industry Codes and Standards (e.g., ASME and ANSI).
- An investigation of the impact of power uprates for the Hatch plant shows that, in general, design margins are reduced for the uprates, but no design limits were exceeded.
- Licensee Safety Analysis Reports and NRC Staff Safety Evaluation Reports do not appear to be of sufficient detail or consistency to conduct an assessment of the margin impact for multiple licensing actions (e.g., power uprates/life extension/higher fuel burnups, etc.).
- The staff should consider: (1) development of a Standard Review Plan Section to address power uprate requests, (2) development of Legacy Tables to track the impact of successive licensing actions on such parameters as plant operations, structures, systems, and components (SSCs), and plant margins, and (3) performance of risk assessments for significant power uprate applications.

### Committee Action

No Committee action on this matter was taken at this time. Further discussion of this issue will be held during the July 2001 meeting, following a June 12, 2001 Subcommittee meeting to continue discussion of issues pertaining to core power uprates.

## 3. Draft Final Safety Evaluation Report for the South Texas Project Nuclear Operating Company (STPNOC) Request to Exclude Certain Components from the Scope of Special Treatment Requirements Required by Regulations

The Committee heard presentations by and held discussions with representatives of the NRC staff on the preliminary safety evaluation for the STP request for exemptions from certain special treatments requirements contained in 10 CFR Parts 21, 50, and 100 that impose controls to ensure the quality of SSCs that are within the scope of the

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regulations.

The NRC staff review assumes that the design basis would not change, that the functional capability of SSCs would be maintained for design basis conditions, and, that the FSAR (the licensing basis for exemptions) would include high level descriptions of programs on treatment of low safety significance SSCs.

In the preliminary safety evaluation, it is concluded that the categorization process is acceptable and that the alternative treatment program, if effectively implemented by the licensee, can result in SSCs remaining capable of performing their safety functions under design basis conditions. Thirteen exemptions are recommended to be granted and six exemptions are recommended not to be granted.

#### Committee Action

The ACRS plans to complete a report to the Commission on this matter during its July 13-14, 2001 Committee meeting.

#### 4. Discussion of General Design Criteria

The Committee was briefed by the ACRS Senior Fellow J. N. Sorensen on his views regarding risk informing the General Design Criteria (GDC), Appendix A to 10 CFR Part 50. The GDC were incorporated into Part 50 in 1971, and reflect the state of the art in light water reactor safety design at that time. The safety standard addressed is reasonable assurance that a facility can be operated without undue risk to the health and safety of the public, rather than quantitative risk metrics derived from safety goals. There are three approaches that can be taken to making the GDC "risk-informed" as the term is currently used. The first is to revise the scope of the GDC to address structures, systems and components important to risk, using metrics such as core damage frequency and large early release frequency. The second is to examine individual criteria and modify each, as necessary, to address risk as the appropriate measure of safety. The third approach is to replace the GDC within the regulatory structure with a statement of regulatory objectives and risk acceptance criteria for each objective. Current NRC staff activities associated with risk-informing the special treatment requirements in 10 CFR Part 50 (Option 2) and risk-informing the technical requirements in 10 CFR Part 50 (Option 3) are examples of the first and second approaches, respectively. The Nuclear Energy Institute (NEI) is developing a proposed set of general design criteria that will be applicable to all reactor designs not just LWRs.

#### Committee Action

This was an information briefing only. Further discussions will be held during the

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December 2001 meeting, when additional information is available from both the NRC staff work on Options 2 and 3, and the NEI effort.

5. Need to Revise 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants"

The Committee held a discussion concerning the need to revise 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," on the basis of experience gained by three license renewal applications and the generic guidance documents associated with the license renewal process.

Committee Action

The Committee decided to hear a briefing from the staff and prepare a report on this matter at the July 11-13, 2001 ACRS meeting.

6. Regulatory Challenges for Advanced Power Reactors

Dr. Thomas Kress, Chairman of the ACRS Subcommittee on Advanced Reactors, provided a report on the results of the June 4-5, 2001 Subcommittee meeting, concerning regulatory challenges for future nuclear power plants. He noted that Commissioner Nils Diaz provided an outstanding start to the meeting as the keynote speaker. Dr. Kress stated that the Subcommittee heard presentations by and held discussions with a broad range of personnel from government, industry, universities, and concerned citizen groups concerning these matters. He noted that the discussion covered a broad range of issues including: NRC and industry infrastructure needed to support a new generation of plants, defense-in-depth features including provisions for containment and emergency preparedness, risk assessment for new plant designs and human performance elements, and consideration of the Commission's Safety Goals for multiple-modular reactors.

Committee Action

The Committee plans to continue its review of this matter during future meetings. The Committee requests to be kept informed of staff schedules related to possible future nuclear power plants and requests the opportunity to review these matters during the early stages of development.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee discussed the response from the NRC Executive Director for

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Operations (EDO) dated May 17, 2001, to the ACRS comments and recommendations included in the ACRS report dated April 13, 2001, concerning the proposed final license renewal guidance documents.

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

#### OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from May 10, 2001, through June 6, 2001, the following Subcommittee meetings were held:

- Advanced Reactors Workshop on Regulatory Challenges for Future Nuclear Power Plants - June 4-5, 2001

The Subcommittee discussed matters related to regulatory challenges for future nuclear power plants. The meeting was conducted as a workshop, with presentations, panel discussions, and participation by the workshop attendees.

- Planning and Procedures - June 6, 2001

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 MATTERS FOR THE ATTENTION OF THE EXECUTIVE DIRECTOR FOR OPERATIONS

- The Committee plans to continue its review of matters related to possible future nuclear power plants. The Committee requests to be kept informed of staff schedules regarding industry initiatives in this area and requests the opportunity to review these matters during the early stages of development.
- The Commission plans to work with the staff in the development of risk-based performance indicators.
- As requested by the staff, the Committee plans to review the proposed final revision to Regulatory Guide 1.174 to address PRA quality in risk-informed activities after reconciliation of public comments.

#### PROPOSED SCHEDULE FOR THE 484<sup>th</sup> ACRS MEETING, JULY 11-13, 2001

The Committee agreed to consider the following topics during the 484th ACRS Meeting,

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July 11-13, 2001:

Proposed Risk-Informed Revisions to 10 CFR 50.46 and Proposed Revisions to the Framework for Risk-Informing the Technical Requirements of 10 CFR Part 50

Briefing by and discussions with representatives of the NRC staff regarding proposed risk-informed revisions to 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors," and proposed revisions to the framework for risk-informing the technical requirements of 10 CFR Part 50.

SECY-01-0100, "Policy Issues Related to Safeguards, Insurance, and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools"

Briefing by and discussions with representatives of the NRC staff regarding SECY-01-0100 and related matters.

Need to Revise 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants"

Briefing by and discussion with representatives of the NRC staff and Nuclear Energy Institute (NEI) regarding the need to revise 10 CFR Part 54.

Control Rod Drive Mechanism (CRDM) Cracking

Briefing by and discussions with representatives of the NRC staff and NEI regarding the staff and industry proposals for dealing with CRDM cracking.

Draft Individual Plant Examination of External Events (IPEEE) Insights Report

Briefing by and discussions with representatives of the NRC staff regarding the draft IPEEE Insights Report (NUREG-1742).

Proposed Resolution of Generic Safety Issues (GSI)-191, "Assessment of Debris Accumulation on PWR Sump Pump Performance"

Briefing by and discussions with representatives of the NRC staff regarding the status of resolution of GSI-191.

Potential Margin Reductions Associated with Power Uprates

Discussions with representatives of the NRC staff regarding ongoing or proposed staff activities related to the development of a Standard Review Plan for use in the review of power uprate applications.

Reactor Oversight Process

Discussion of proposed response to the following items in the April 5, 2000 Staff Requirements Memorandum: (1) Review the use of performance indicators (PIs) in the Revised Reactor Oversight Process (RROP) to ensure that the PIs provide meaningful

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insight into aspects of plant operation that are important to safety; (2) Review the initial implementation of the significance determination processes (SDPs) and assess the technical adequacy of the SDP to contribute to the RROP.

Sincerely,

**/RA/**

George E. Apostolakis  
Chairman