

June 14, 2000

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

SUBJECT: SUMMARY REPORT - 472ND MEETING OF THE ADVISORY  
COMMITTEE ON REACTOR SAFEGUARDS, ON MAY 11-13,  
2000, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

Dear Chairman Meserve:

During its 472nd meeting, May 11-13, 2000, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports. In addition, the Committee authorized Dr. Larkins, Executive Director, ACRS, to transmit the memoranda noted below:

#### REPORTS

- SECY-00-0053, "NRC Program on Human Performance in Nuclear Power Plant Safety" (Report to Richard A. Meserve, Chairman, NRC, from Dana A. Powers, Chairman, ACRS, dated May 23, 2000)
- Use of Defense in Depth in Risk-Informing NMSS Activities (Report to Richard A. Meserve, Chairman, NRC, from B. John Garrick, Chairman, ACNW, and Dana A. Powers, Chairman, ACRS, dated May 25, 2000)

#### MEMORANDA

- Proposed Final Revision 1 to Regulatory Guide 1.54, "Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants" (formerly DG-1076) (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated May 19, 2000)
- Proposed Modifications to Regulatory Guidance Documents Regarding Use of Risk-Informed Decisionmaking in License Amendment Reviews (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated May 22, 2000)

- Draft Regulatory Guide DG-1096, “Transient and Accident Analysis Methods” and Standard Review Plan, Section 15.0.1, “Review of Analytical Computer Codes” (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated May 22, 2000)

## OTHER

- NUREG-1635, Vol. 3, “Review and Evaluation of the Nuclear Regulatory Commission Safety Research Program” (Report to Richard A. Meserve, Chairman, NRC, from Dana A. Powers, Chairman, ACRS, dated May 24, 2000, transmitting NUREG-1635, Vol. 3)

## HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

### 1. Initiatives Related to Risk-Informed Technical Specifications

The Committee heard presentations by and held discussions with representatives of the NRC staff and the Nuclear Energy Institute (NEI) regarding the NRC staff’s efforts in the area of risk-informed technical specifications and associated industry initiatives proposed by the Risk-Informed Technical Specification Task Force (RITSTF). In particular, the Committee discussed Initiative 2 on missed technical specification surveillance requirements and Initiative 3 on mode restraint flexibility. The Committee discussed issues related to operable versus functional plant equipment, qualitative versus quantitative risk assessment, the role of configuration risk management programs, the relationship between technical specifications and 10 CFR 50.65(a)(4) of the maintenance rule, and the role of the revised reactor oversight process in verifying safety. The Committee also discussed the potential impact of missed surveillances on equipment failure rates and the need to review risk transition models proposed by the Nuclear Steam Supply System (NSSS) Owners Group.

#### Conclusion

The Committee plans to continue its review of initiatives related to risk-informed technical specifications as well as the risk-transition models proposed by the NSSS Owners Groups during future meetings.

### 2. Potential Revisions to the Pressurized Thermal Shock (PTS) Acceptance Criterion

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding a draft Commission paper concerning reevaluation of the PTS Rule (10 CFR 50.61) screening criterion. The staff summarized recent advances in materials research that have led to the

reevaluation of the technical basis for the PTS Rule. The staff presented several regulatory approaches that could be used to reevaluate the quantitative criterion used in PTS screening.

The Committee members and the staff discussed the relationship among the current PTS screening criterion, the core damage frequency, and the large early release frequency. The use of qualitative adequate protection criteria versus quantitative safety goal criteria, and the application of defense in depth and confidence levels were also discussed.

### Conclusion

This briefing was for information only. The Committee plans to continue its review of this matter at future meetings.

3. Proposed Revision to Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis"

The Committee heard presentations by and held discussions with representatives of the NRC staff, NEI, and Union Electric Company concerning the staff's efforts in response to the staff requirements memorandum dated January 5, 2000 (SECY-99-246), concerning license amendments in which the amendment request complies with the regulations and other license requirements. The Committee discussed the results of the staff's efforts to work with internal and external stakeholders to clarify what constitutes a "special circumstance" that would cause the NRC to request or use risk information in its evaluation of licensee submittals. The Committee considered the staff's proposed new Appendix to NUREG-0800, Standard Review Plan, Chapter 19, "Use of Probabilistic Risk Assessment in Plant-Specific, Risk-Informed Decisionmaking: General Guidance," and associated modifications to Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The Committee also considered NRC Regulatory Issue Summary 2000-07 which was issued by the NRC to inform licensees of the interim guidance on the use of risk information by the staff in its review of license amendment requests, including reviews of license amendment requests that are not risk informed.

### Conclusion

The Committee authorized the ACRS Executive Director to issue a memorandum to the Executive Director for Operations dated May 22, 2000, on this matter.

4. Proposed Regulatory Guide and Standard Review Plan (SRP) Section Associated With NRC Code Reviews

The Committee heard presentations by and held discussions with representatives of the NRC staff concerning draft Regulatory Guide DG-1096, "Generic Transient and Accident Analysis Methods," and Standard Review Plan, Section 15.0.1, "Review of Analytical Computer Codes." Specifically, the staff discussed with the Committee the revisions to the regulatory guide and the SRP section based on comments made during the Subcommittee meeting. The staff stated that issues discussed during the Subcommittee meeting were being incorporated into the regulatory guide and the SRP section. The Committee and the staff also discussed the generic applicability of the code review and the use of or reference to the code, scaling, applicability, and uncertainty (CSAU) study. The staff indicated that the regulatory guide would apply to other code reviews as well as to thermal hydraulics. They also indicated that the CSAU study was performed to evaluate code uncertainties in order to obtain best estimate calculations. The staff will provide any revisions to the regulatory guide and the SRP Section to the Committee before they are issued for public comment.

Conclusion

The Committee authorized the ACRS Executive Director to issue a memorandum to the NRC Executive Director for Operations dated May 22, 2000, on this matter indicating that the Committee has no objection to publishing the draft regulatory guide and the SRP section for public comment.

5. SECY-00-0062, Risk-Informed Regulation Implementation Plan

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding the NRC Risk-Informed Regulation Implementation Plan (RIRIP).

The Committee discussed the staff's draft proposal for risk-informing of the regulatory processes and practices and the description of issues that have or may affect the implementation of the Commission's risk-informed activities. The staff is revising the probabilistic risk assessment implementation plan to make it a risk-informed implementation plan.

In SECY-00-0062, the staff noted that the RIRIP would be organized to track three principal arenas in the agency's strategic plan (nuclear reactor safety, nuclear materials safety, and nuclear waste safety). The Committee discussed the criteria for the selection and prioritization of practices and policies to be risk informed and the guidelines for implementation.

### Conclusion

The Committee plans to continue its review of this matter and to follow up on the staff's progress during future meetings.

#### 6. Operating Event at E. I. Hatch Nuclear Power Plant, Unit 1

The Committee heard presentations by and held discussions with the representatives of the NRC staff regarding the findings and recommendations of the Augmented Inspection Team (AIT), which investigated the January 26, 2000 reactor trip event, at E.I. Hatch Nuclear Power Plant, Unit 1.

The NRC staff briefly presented the overall event sequence and the findings of the AIT. This event occurred during the shift change at E.I. Hatch Unit 1. The plant was at the 100 percent rated thermal power when the reactor vessel water level began decreasing as the result of an unexpected closure of the inlet valve to the high-pressure feedwater heater. Later, it was determined that the valve closed because of a problem with the valve control switch. The valve closure caused a large reduction in feedwater flow, the reactor water level decreased, and an automatic reactor trip occurred as expected.

The NRC staff stated that this event is being considered a significant event and has potential generic implications. The NRC staff plans to continue its review of the following two issues, including interaction with the Boiling Water Reactor Owners Group and General Electric as appropriate:

- To what extent should water be allowed to enter the main steamlines at BWRs? Should generic guidance be developed for BWRs with specific criteria directing when MSIVs should be closed?
- What is the significance and the specific impact of the water in the main steamlines relative to considerations in the design and licensing basis?

The licensee's representatives stated that they had initiated broader corrective actions to address operational performance issues. The licensee promptly completed several corrective actions, including revision of the operating shift turnover process.

### Conclusion

This briefing was for information only. No Committee action was required.

## 7. Physical Security Requirements at Power Reactors

The Committee heard presentations by and held discussions with representatives of the NRC staff, the Nuclear Control Institute (NCI), and NEI regarding a draft Commission paper concerning the status of revising the physical security requirements at power reactors. During a closed portion of this session the staff described the design basis threat and the present threat assessment.

The Committee members, the staff, NCI, and NEI discussed security event response procedures, differences between the Operational Safeguards Response Evaluation and Safeguards Performance Assessment programs, licensees' ability to develop security event scenarios, detection of sabotage performance by an insider, developing defensive strategies against an intelligent adversary, and the difficulties in using performance-based inspections to evaluate deterministic rules.

### Conclusion

This briefing was for information only.

## RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee discussed the response from the EDO, dated April 21, 2000, to ACRS comments and recommendations included in the ACRS report dated March 13, 2000, concerning SECY-00-0007, "Proposed Staff Plan for Low-Power and Shutdown Risk Analysis Research to Support Risk-Informed Regulatory Decisionmaking."

The Committee decided that it was satisfied with the EDO's response. The Committee plans to continue to evaluate matters related to low-power and shutdown operations as operating plant experience indicates emergent risk significant issues of concern.

- The Committee discussed the response from the EDO, dated April 19, 2000, to ACRS comments and recommendations included in the ACRS report dated March 15, 2000, concerning the revised reactor oversight process (RROP).

The Committee decided that it was satisfied with the EDO's response. In accordance with the Staff Requirements Memorandum dated April 5, 2000, the Committee plans to continue its review of the results of the use of performance indicators and the significance determination process subsequent to initial implementation of the RROP.

- The Committee discussed the response from the EDO dated April 18, 2000, to ACRS comments and recommendations included in its letter dated March 13, 2000, concerning proposed resolution of GI B-17, "Criteria for Safety-Related Operator Actions" and Generic Issue 27, "Manual vs Automated Actions."

The Committee decided it was satisfied with the EDO's response, but expressed concern regarding use of information from ANSI/ANS Standard ANSI/ANS 58.8-1994, "Time Response Design Criteria for Safety-Related Operator Actions."

#### OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from April 5 through May 10, 2000, the following Subcommittee meetings were held:

- Thermal-Hydraulic Phenomena - April 27, 2000

The Subcommittee continued its discussion of the NRC Code Guideline Documents (Proposed Regulatory Guide and Standard Review Plan Section).

- Joint Meeting of the ACRS Subcommittees on Plant Operations and on Reliability and Probabilistic Risk Assessment - April 28, 2000

The Subcommittees discussed NRC staff and industry initiatives related to risk-informed technical specifications.

- Joint Subcommittee Meeting - May 4, 2000

The ACRS and ACNW Joint Subcommittee met to discuss the development of risk-informed regulation in the Office of Nuclear Material Safety and Safeguards, including risk-informing fuel cycle programs, integrated safety assessments, byproduct material risk analysis, dry cask storage risk analysis, the results of a public workshop on the use of risk information in regulating the use of nuclear materials, and related matters.

- Planning and Procedures - May 10, 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

- The Committee plans to continue to evaluate matters related to low-power and shutdown operations as operating plant experience indicates emergent risk significant issues of concern.
- In accordance with the Staff Requirements Memorandum dated April 5, 2000, the Committee plans to continue its review of the results of the use of performance indicators and the significance determination process subsequent to initial implementation of the RROP.
- The Committee requested that the staff provide the ACRS with a revised version of Regulatory Guide DG-1096 and SRP Section 15.0.1 associated with NRC code reviews prior to issuing them for public comment.
- The Committee plans to continue its review of the risk-informed regulation implementation plan at future meetings.
- The Committee plans to continue its review of initiatives related to risk-informed technical specifications as well as the risk-transition models proposed by the NSSS Owners Group during future meetings.
- The Committee plans to review and comment on the status of the PTS Technical Basis Reevaluation Project at the October 5-7, 2000 ACRS meeting.

### PROPOSED SCHEDULE FOR THE 473rd ACRS MEETING

The Committee will consider the following topics during the 473rd ACRS Meeting, June 7-9, 2000:

#### Proposed Resolution of Generic Safety Issue-173A, "Spent Fuel Storage Pool for Operating Facilities"

Briefing by and discussions with representatives of the NRC staff regarding the proposed resolution of Generic Safety Issue-173A.

#### Regulatory Effectiveness of the Station Blackout Rule

Briefing by and discussions with representatives of the NRC staff regarding the results of the review performed by the staff to determine the regulatory effectiveness of the Station Blackout Rule.

Proposed Final Standard Review Plan Section and Regulatory Guide Associated with the Revised Source Term Rule

Briefing by and discussions with representatives of the NRC staff regarding the proposed final Standard Review Plan Section and Regulatory Guide associated with the application of the revised source term for operating nuclear power plants.

Assessment of the Quality of Probabilistic Risk Assessments (PRAs)

Briefing by and discussions with representatives of the NRC staff regarding the staff's proposal to address PRA quality until the industrial standards have been completed, including the potential role of the industry PRA certification process.

Performance-Based Regulatory Initiatives

Briefing by and discussions with representatives of the NRC staff regarding a draft Commission Paper associated with performance-based regulatory initiatives and related matters.

Use of Industry Initiatives in the Regulatory Process

Briefing by and discussions with representatives of the NRC staff regarding use of industry initiatives in the regulatory process.

Safety Culture at Operating Nuclear Power Plants

Briefing by and discussions with Mr. Sorensen, ACRS Senior Fellow, regarding the safety culture at operating nuclear power plants.

Visit to Davis Besse Nuclear Power Plant and Meeting with NRC Region III Personnel

Briefing by and discussion with Mr. Singh, ACRS Senior Staff Engineer, regarding the proposed schedule for touring the Davis Besse Nuclear Power Plant, specific plant areas to be visited, proposed topics for discussion with representatives of the licensee, and the NRC Region III Office.

Proposed Plan and Assignments for Reviewing License Renewal Guidance Documents

Discussion of the proposed plan and member assignments for reviewing the license renewal guidance documents (Standard Review Plan, Regulatory Guide, and Generic Aging Lessons Learned II Report).

Sincerely,

**/RA/**

Dana A. Powers  
Chairman