



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

SL-0447

PDR 5/8/97

March 5, 1997

The Honorable Shirley Ann Jackson
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Jackson:

SUBJECT: SUMMARY REPORT - FOUR HUNDRED THIRTY-EIGHTH MEETING OF
THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, FEBRUARY 6-
8, 1997, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 438th meeting, February 6-8, 1997, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, including its annual report to the Congress. In addition, the Committee authorized Dr. Larkins, Executive Director, to transmit the memoranda noted below:

REPORTS

- Human Performance Program Plan (Report to Shirley Ann Jackson, Chairman, NRC, from R. L. Seale, Chairman, ACRS, dated February 13, 1997)
- Nuclear Safety Research and Regulatory Reform (Report to Newt Gingrich, Speaker of the United States House of Representatives, and to Albert Gore, Jr., President of the United States Senate, from R. L. Seale, Chairman, ACRS, dated February 21, 1997)

MEMORANDA

- Draft AEOD Report on Grid Performance Factors (Memorandum to Hugh L. Thompson, Jr., Acting Executive Director for Operations, from John T. Larkins, Executive Director, ACRS, dated February 11, 1997)
- Rulemaking Plan to Amend Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors -- 10 CFR 50.54 and 10 CFR 140.11 (Memorandum to Hugh L. Thompson, Jr., Acting Executive Director for Operations, from John T. Larkins, Executive Director, ACRS, dated February 12, 1997)
- Proposed Revision 3 to Regulatory Guide 1.134, "Medical Evaluation of Licensed Personnel at Nuclear Power Plants"

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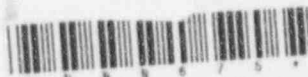
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(Memorandum to Hugh L. Thompson, Jr., Acting Executive Director for Operations, from John T. Larkins, Executive Director, ACRS, dated February 12, 1997)

- Proposed Supplement to Generic Letter 95-06, "Changes in the Operator Licensing Program" (Memorandum to Hugh L. Thompson, Jr., Acting Executive Director for Operations, from John T. Larkins, Executive Director, ACRS, dated February 12, 1997)
- Proposed Final Generic Letter, "Revised Contents of Monthly Operating Report" (Memorandum to Hugh L. Thompson, Jr., Acting Executive Director for Operations, from John T. Larkins, Executive Director, ACRS, dated February 12, 1997)
- Proposed Rulemaking for Amendments to 10 CFR Parts 30, 40, 50, 70, and 72--Self-Guarantee for Non-Profit and Non-Bond Issuing Licensees (Memorandum to Leonard J. Callan, Executive Director for Operations, from John T. Larkins, Executive Director, ACRS, dated February 20, 1997)

HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. Subcommittee Report - Westinghouse AP600 Test and Analysis Program

Dr. Catton, Chairman of the ACRS Subcommittee on Thermal-Hydraulic Phenomena, provided comments on the future scope and direction of the Subcommittee's review of the Westinghouse AP600 Test and Analysis Program (TAP), based on the results of the December 18-19, 1996 Subcommittee meeting. He discussed the history of the Subcommittee's review and the unique problems associated with the modeling of thermal-hydraulic accident phenomena for the AP600 design.

Dr. Catton stated that: (1) Westinghouse should perform a comprehensive Phenomena Identification and Ranking Table (PIRT), accompanied by a complete top-down and bottom-up scaling analysis, in support of its testing program, and (2) the NRC staff should ensure that Westinghouse provides complete, scrutable documentation associated with its AP600 TAP. Based on the results of the December 18-19, 1996 Subcommittee meeting, Dr. Catton concluded that Westinghouse should perform additional work to complete both of the above items.

Conclusion

The Subcommittee plans to meet with Westinghouse in the near future to discuss its efforts to model the long-term cooling

scenario, while it proceeds to address the outstanding issues pertaining to its PIRT and Scaling Report.

2. Subcommittee Report - National Academy of Sciences/National Research Council Phase 2 Study Report on Digital Instrumentation and Control Systems

Dr. Don W. Miller, Chairman of the ACRS Subcommittee on Instrumentation and Control Systems and Computers, provided a brief report to the Committee regarding his preliminary review of the National Academy of Sciences/National Research Council (NAS/NRC) Phase 2 study report. Dr. Miller noted that he and Dr. Dana Powers had met with the NRC staff on January 29, 1997, regarding the schedule for future meetings to review the proposed final Standard Review Plan (SRP) and associated regulatory guidance documents for digital instrumentation and control systems, including the planned integration of insights from the NAS/NRC Phase 2 study. Dr. Miller proposed a list of assignments for ACRS Members to perform detailed reviews of individual sections of the Phase 2 report and to highlight points of concern for consideration during the March 1997 ACRS briefing by the NAS/NRC Committee. He noted that a Subcommittee meeting is scheduled for April 17-18, 1997, to review the proposed final SRP and associated regulatory guidance documents. The full Committee review of this matter is expected during the May 1997 meeting.

Conclusion

The Committee plans to continue its review of these matters during future meetings.

3. Shutdown Operations Risk

The Committee heard presentations by and held discussions with representatives of the NRC staff concerning the issues related to shutdown risk. The staff presented the justification for and status of the proposed shutdown rule, and identified research activities related to assessing shutdown risk. The Committee and the staff discussed the urgent need for a shutdown rule, the need to develop methods and technologies to benchmark low power and shutdown operations risk, and research options for evaluating shutdown risk.

Conclusion

The Committee plans to continue its discussion of this issue during the April 1997 ACRS meeting.

4. Risk-Informed, Performance-Based Regulation and Related Matters

The Committee held discussions with representatives of the NRC staff and of the Nuclear Energy Institute regarding policy and technical matters related to the development of SRP sections and Regulatory Guides for risk-informed, performance-based regulation. The ACRS Subcommittee on Probabilistic Risk Assessment met with representatives of the NRC staff and the industry on October 31 and November 1, 21, and 22, 1996, and January 28, 1997, regarding these matters.

Conclusion

The Committee plans to continue its discussion of these matters, as well as an associated proposed ACRS report, during the March 1997 ACRS meeting.

5. AEOD Spent Fuel Pool Study

The AEOD staff briefed the Committee regarding the results of its independent study of the likelihood and consequences of an extended loss of spent fuel pool (SFP) cooling.

The findings and conclusions of the study include:

- A loss of SFP coolant inventory greater than 1 foot has occurred at a rate of about one per 100 reactor years.
- A loss of SFP cooling with a temperature increase greater than 20°F has occurred at a rate of approximately 3 times per 1000 reactor years.
- The primary cause of events involving spent fuel pools has been attributed to human error.
- The relative risk of fuel damage due to loss of SFP cooling is low in comparison with the risk of other reactor events not involving SFP.
- The likelihood and consequences of events involving loss of SFP cooling are highly dependent on human performance and individual plant design features.

The staff plans to issue an Information Notice to inform licensees of the findings and conclusions of this study report, which it also plans to publish as a NUREG document.

Conclusion

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

6. Draft Report Concerning the Plant-Specific Application of Safety Goals

The Committee discussed a draft ACRS report concerning the plant-specific application of risk-acceptance criteria and the appropriateness of these criteria being derived from the Safety Goal quantitative health objectives on early fatalities. During the deliberations, the concept of adequate protection was considered. In the Staff Requirements Memorandum dated January 14, 1997, the Commission requested ACRS views on the relationship between the concept of adequate protection, as used in NRC regulations, and the Safety Goals. The Committee decided to address this issue in the draft ACRS report noted above. The Committee suggested that the staff brief the ACRS concerning the use of the concept of adequate protection in the regulatory process.

Conclusion

The Committee plans to continue deliberations on this draft report after hearing a presentation from the staff regarding the concept of adequate protection at the April 1997 ACRS meeting.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee discussed the response from the NRC Executive Director for Operations (EDO) dated February 4, 1997, responding to ACRS comments and recommendations included in the ACRS letter dated December 30, 1996, concerning the Human Performance Program Plan.

The Committee noted that the EDO response did not address a formal process for developing a long-term, top-down strategic plan that would identify and set priorities for agency needs in the area of human factors research. The Committee issued a report dated February 13, 1997, that provided additional comments and recommendations regarding the Human Performance Program Plan. The Committee decided to continue its discussion of this issue at future meetings.

- The Committee discussed the response from the EDO dated January 2, 1997, responding to ACRS comments and recommendations included in the ACRS letter dated November 20, 1996, concerning the proposed rule on steam generator integrity.

The ACRS Subcommittees on Materials and Metallurgy and on Severe Accidents met with the staff on January 9, 1997, to discuss the EDO response, the status of development of the proposed Steam Generator Rule, and an associated regulatory guide, and issues related to risk-informed, performance-based regulation. The information the staff provided during the meeting was insufficient for the Members to clearly understand the technical bases for the proposed rule. As directed by the Committee, the Executive Director, ACRS, sent a memorandum to the Acting Deputy Director, NRR, on January 31, 1997, requesting that the staff respond to the ACRS comments included in the November 20, 1996 letter and also address comments provided by several members that were transmitted along with the memorandum at the next Subcommittee meeting. The Committee plans to continue its review of this issue at a joint meeting of the Subcommittees on Materials and Metallurgy and on Severe Accidents scheduled for March 4-5, 1997.

- The Committee discussed the response from the EDO dated December 26, 1996, responding to the ACRS comments and recommendations included in the ACRS report dated November 18, 1996, concerning the plant-specific application of safety goals.

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

- The Committee discussed the response from the EDO dated December 19, 1996, responding to the ACRS comments and recommendations in the ACRS letter dated November 22, 1996, concerning the programs for risk-based analysis of reactor operating experience.

The Committee decided to continue its discussion of this matter at future meetings.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from December 6, 1996 through February 5, 1997, the following Subcommittee meetings were held:

- Thermal-Hydraulic Phenomena - December 18-19, 1997

The Subcommittee on Thermal-Hydraulic Phenomena met with representatives of the NRC staff to review the PIRT/Scaling Report pertaining to the AP600 Reactor Coolant System.

- Materials & Metallurgy & Severe Accidents - January 9, 1997

The Subcommittees on Materials & Metallurgy and on Severe Accidents met with representatives of the staff regarding the proposed Steam Generator Integrity Rule and an associated regulatory guide, and related matters.

- Probabilistic Risk Assessment - January 28, 1997

The Subcommittee on Probabilistic Risk Assessment met with representatives of the NRC staff and continued its discussion of the NRC staff's approach to codifying risk-informed, performance-based regulation through the development of Standard Review Plan sections and associated regulatory guides.

- Planning and Procedures - February 5, 1997

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.

PROPOSED SCHEDULE FOR THE 439TH ACRS MEETING

The Committee agreed to consider the following during the 439th ACRS Meeting, March 6-8, 1997:

Capability of RELAP5/MOD3 Code to Assess the AP600 Design (Open/Closed) - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the capability of the RELAP5/MOD3 code to assess the adequacy of the AP600 passive plant design. The Committee may hear presentations by representatives of the Westinghouse Electric Corporation, as appropriate.

Release of AP600 Test Data from the ROSA Test Facility (Open/Closed) - The Committee will hold discussions with representatives of the NRC staff and the Westinghouse Electric Corporation regarding the issues associated with the release of test data from the ROSA test facility to the public.

Arthur Andersen Report, "Recommendations to Improve the Senior Management Meeting Process" (Open) - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the results of the Arthur Andersen study that was performed to evaluate the Senior NRC Management Meeting Process for assessing the performance of operating nuclear plants. Representatives of the nuclear industry will participate, as appropriate.

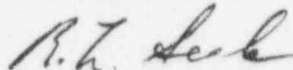
Risk-Informed, Performance-Based Regulation and Related Matters (Open) - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the SRP sections, regulatory guides, and other matters associated with the risk-informed, performance-based regulation. Representatives of the nuclear industry will participate, as appropriate.

Independent Safety Assessment of the Maine Yankee Atomic Power Station (Open) - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the results of the independent safety assessment of the Maine Yankee Atomic Power Station. Representatives of the nuclear industry will participate, as appropriate.

National Academy of Sciences/National Research Council (NAS/NRC) Phase 2 Study Report (Open) - The Committee will hear presentations by and hold discussions with the Chairman of the NAS/NRC Committee regarding the results of the NAS/NRC Phase 2 Study Report on digital instrumentation and control systems. Other members of the NAS/NRC Committee and representatives of the NRC staff and the nuclear industry will participate, as appropriate.

Department of Energy's (DOE's) Tritium Production Program (Open) - The Committee will hear presentations by and hold discussions with representatives of DOE regarding DOE's tritium production program. Representatives of the NRC staff will participate, as appropriate.

Sincerely,



R. L. Seale
Chairman