



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

SL-0475

PDR

November 4, 1999

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

Dear Chairman Meserve:

SUBJECT: SUMMARY REPORT - FOUR HUNDRED SIXTY-SIXTH MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS ON SEPTEMBER
30 - OCTOBER 2, 1999, AND OTHER RELATED ACTIVITIES OF THE
COMMITTEE

During its 466th meeting on September 30 - October 2, 1999, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports and letters. In addition, the Committee authorized Dr. Larkins, Executive Director, to transmit the memorandum noted below:

REPORTS

- Draft Commission Paper Regarding Proposed Guidelines for Applying Risk-Informed Decisionmaking In License Amendment Reviews (Report to Greta Joy Dicus, Chairman, NRC, from Dana A. Powers, Chairman, ACRS, dated October 8, 1999)
- Combustion Engineering Owners Group (CEOG) Application to Eliminate the Post-Accident Sampling System from the Plant Design Bases for CEOG Utilities (Report to Greta Joy Dicus, Chairman, NRC, from Dana A. Powers, Chairman, ACRS, dated October 8, 1999)
- Proposed Plans for Developing Risk-Informed Revisions to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities" (Report to Greta Joy Dicus, Chairman, NRC, from Dana A. Powers, Chairman, ACRS, dated October 12, 1999)

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LETTERS

- Proposed Resolution of Generic Safety Issue B-55, "Improved Reliability of Target Rock Safety Relief Valves" (Letter to William D. Travers, Executive Director for Operations, NRC, from Dana A. Powers, Chairman, ACRS, dated October 8, 1999)
- Proposed Resolution of Generic Safety Issue 23 (GSI-23), "Reactor Coolant Pump Seal Failure" (Letter to William D. Travers, Executive Director for Operations, NRC, from Dana A. Powers, Chairman, ACRS, dated October 8, 1999)

MEMORANDUM

- Proposed Final Revision 3 to Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants" (Memorandum to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated October 5, 1999)

HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. NRC Safety Research Program

The Committee heard a briefing from representatives of the Office of Nuclear Regulatory Research (RES) regarding a vision statement for RES to facilitate accomplishing the statutory mission of the NRC. The vision statement states that RES conducts independent analyses and develops technical bases for realistic regulatory decisions that protect the public health and safety and prepares the agency for the future by evaluating safety issues involving current and new designs and technologies. The RES vision statement has three critical aspects: it is independent, it is realistic in decisionmaking, and it is forward-looking.

RES representatives described the role of RES as involving the performance of activities that complement the NRC's front-line regulatory activities and the independent examination of evolving technology and anticipated issues. In addition, RES plans to maintain a center of excellence for technical expertise and for developing and maintaining regulatory tools and databases.

Conclusion

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

2. Combustion Engineering Owners Group Application to Eliminate the Post-Accident Sampling System Requirements

The Committee heard presentations by and held discussions with representatives of the Combustion Engineering Owners Group (CEOG) and the NRC staff regarding the CEOG's application to eliminate the Post-Accident Sampling System (PASS) from the plant design and licensing bases for CEOG plants. CEOG stated that the PASS requirements, instituted by NRC following the accident at Three Mile Island Unit 2, are unnecessary and can be eliminated because the requirements are being addressed through other information sources. Some of the initial requirements, for example, hydrogen sampling of the containment atmosphere and pH measurement of the containment sump water, had been deleted by the NRC staff in 1993 in response to a CEOG license amendment request.

The NRC staff's preliminary review findings regarding the CEOG application were that elimination of PASS from the Combustion Engineering plants is acceptable. Two issues are still under evaluation, however, the need for (1) sampling of radionuclides in the reactor coolant system, containment atmosphere, and sump and (2) measurement of containment sump water pH.

Conclusion

The Committee issued a report to Chairman Dicus, dated October 8, 1999, on this matter.

3. Rulemaking and Review Plans Associated With the Development of Risk-Informed Revisions to 10 CFR Part 50

The Committee heard presentations by and held discussions with representatives of the NRC staff, the Nuclear Energy Institute (NEI), and Public Citizen concerning proposed plans for developing risk-informed revisions to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The Committee discussed the staff's proposal to develop a new regulatory section of 10 CFR 50.69 and an associated Appendix T to implement the Option 2 rulemaking (changing the special treatment rules of 10 CFR Part 50). The Committee also discussed the staff's plan for implementing the Option 3 study (changing specific requirements in the body of 10 CFR Part 50). ACRS member, Dr. Apostolakis provided a brief discussion on the use of importance measures (e.g., Fussell-Vesely and Risk Achievement Worth). He cited an example to illustrate limitations associated with the interpretation of importance measures and suggested that the expert panel that categorizes structures, systems, and components be trained on their proper use. Mr. Jim Riccio of the Public Citizen, Critical Mass Energy Project, gave a brief

presentation of his paper entitled "Amnesty Irrational - How the Nuclear Regulatory Commission Fails to Hold Nuclear Reactors Accountable for Violations of Its Own Safety Regulation."

Conclusion

The Committee issued a report to Chairman Dicus dated October 12, 1999, on this matter.

4. Proposed Resolution of Generic Safety Issue (GSI)-148, "Smoke Control and Manual Fire Fighting Effectiveness"

The Committee heard presentations by and held discussions with representatives of the NRC staff concerning the proposed resolution of Generic Safety Issue (GSI) 148, "Smoke Control and Manual Fire Fighting Effectiveness."

The staff presented a brief background and the proposed resolution of GSI 148. The staff stated that GSI 148 has been classified as a "licensing issue" with the resolution being handled via plant specific reviews as requested as a part of the Individual Plant Examination of External Events (IPEEE) program. As of to date the NRC staff has completed its review of 26 licensee IPEEE submittals out of 70, and have documents the results in the safety evaluation reports. The staff stated that 22 licensee submittals responded the smoke management issue. The staff has proposed a document, "Review Guidance for Generic Issue 148 which will also include guidance for smoke control and effectiveness. The staff also stated that additional recent efforts are underway to fully address the risk impact of smoke on safety-related equipment by RES.

The staff concluded that with the review of IPEEE submittals to date, the guidance document, and the research activities in the area of smoke propagation the staff has proposed to closeout this GSI and considered it resolved without recommending any safety enhancements or other regulatory action.

Conclusion

The Committee deferred the letter to the Executive Director for Operations (EDO), during the November ACRS meeting on this matter.

5. Proposed Resolution of Generic Safety Issue (GSI)-23, "Reactor Coolant Pump Seal Failures"

The Committee heard presentations by and held discussions with representatives

of the NRC staff and the Westinghouse Owners Group regarding the proposed resolution of GSI-23, "Reactor Coolant Pump Seal Failures." This issue was identified as a GSI in 1980 following a significant number of pump seal failures in nuclear power plants during normal operation. The concern involves the potential for a significant seal failure that could lead to possible core uncovering.

The staff has performed a limited set of probabilistic analyses and determined that accident sequences involving pump seal failures are of potential risk significance for a small number of plants. Therefore, the staff proposes to close out this issue as a GSI and perform plant-specific reviews to determine whether further regulatory action (backfit) is necessary. The staff plans to develop a Task Action Plan to determine the need for plant-specific backfits.

Issues noted during the Committee's discussion included the following:

- The impact of uncertainties on the conclusions regarding the risk significance of pump seal leak rates had not received significant consideration with regard to the staff's plant-specific analyses.
- About 25 percent of the licensees employing Westinghouse reactor coolant pumps have not installed improved seal material that provides enhanced leakage protection.
- The staff is using a seal leakage model applicable to Westinghouse pumps to evaluate leakage for pumps designed by other manufacturers.

Conclusion

The Committee issued a letter to the Executive Director for Operations, dated October 8, 1999, on this matter.

6. Status of the Proposed Final Amendment to 10 CFR 50.55a, "Codes and Standards"

The Committee heard presentations by and held discussions with representatives of the NRC staff and NEI regarding the proposed amendment to 10 CFR 50.55a related to eliminating the requirement to update the inservice inspection (ISI) and inservice testing (IST) programs every 120 months, and adding a requirement for performing volumetric examination of small-bore Class 1 piping of the high-pressure safety injection system. The ACRS members, the staff, and NEI representatives discussed whether future American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME) changes will be safety significant, the ability of the

ASME Code development process to create meaningful consensus codes, and how NEI derived the costs for updating ISI and IST programs. The ACRS members and the staff discussed alternative inspection options, the benefits of volumetric inspections, operating experience, and inconsistencies in the ASME Code.

Conclusion

This briefing was for information only. The Committee plans to review the issue of eliminating the 120-month update requirement when the staff's proposed position paper is available.

7. Proposed Regulatory Guide on Design Bases Information

The Committee heard presentations by and held discussions with representatives of the NRC staff and NEI regarding a proposed draft Regulatory Guide (RG) DG-1093 in which the staff proposes to endorse Appendix B in NEI 97-04, "Design Bases Program Guidelines," as an acceptable method for meeting NRC requirements. The Committee discussed NEI 97-04, which provides guidance to licensees in organizing and maintaining design bases information and associated information. The Committee discussed exceptions and clarifications proposed by the staff in draft RG DG-1093. The Committee extensively discussed guidance and examples provided in NEI 97-04, Appendix B. Exceptions and clarifications in RG DG-1093 include redundancy and diversity as specific design functions, normal operation versus all modes of operation (e.g., low-powered shutdown operation) and accident conditions, testing and inspection, and design basis values (e.g., piping design pressure, flow, temperature, etc.).

The NRC staff and NEI representatives informed the Committee that a meeting is scheduled for October 14, 1999, to continue discussions to resolve the exceptions. The staff and NEI representatives offered to brief the Committee after more progress is made.

Conclusion

The Committee decided to continue its discussion of this matter during the ACRS meeting on November 4-6, 1999, especially the resolution of the differences between NEI and the NRC staff.

8. Proposed Resolution of Generic Safety Issue B-55, "Improved Reliability of Target Rock Safety Relief Valves"

The Committee heard presentations by and held discussions with representatives

of the NRC staff concerning the proposed resolution of GSI B-55, "Improved Reliability of Target Rock Safety Relief Valves" (SRVs). The staff stated that the boiling-water reactor (BWR) pressure relief system is designed to prevent overpressurization of the reactor coolant pressure boundary under the most severe abnormal operational transient. This protection is accomplished through the use of a plant-unique combination of safety valves, including SRVs. The majority of the SRVs in the older BWRs were manufactured by Target Rock.

The staff stated that the BWR Owners Group and the individual BWR licensees have improved the performance of the SRVs by installing ion-beam platinum disks, or Stellite 21 disks, and by installing additional pressure switches to actuate these valves using pneumatic power. On the basis of recent performance data, the staff concluded that the Stellite 21 and the ion-beam implanted platinum disks are performing better than the former Stellite 6B disks and that the disks experience a lower rate of occurrence of high setpoint drift beyond that allowed by plant technical specifications. Additionally, the affected BWR plants have sufficient margin to accommodate upward valve setpoint drift as high as 10 percent. On the basis of the activities being pursued by the licensees under existing regulatory requirements, the staff does not plan to impose any additional regulatory requirements.

Conclusion

The Committee issued a letter to the Executive Director for Operations dated October 8, 1999, on this issue.

9. Subcommittee Chairmen Reports

- Proposed Final Revision to Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants"

Dr. Robert Seale, Acting Chairman of the Human Factors Subcommittee, summarized the proposed final Revision 3 to RG 1.8, "Qualification and Training of Personnel for Nuclear Power Plants." He stated that the revision endorses a more recent version of American National Standards Institute/American Nuclear Society (ANSI/ANS) 3.1, "Selection, Qualification, and Training of Personnel for Nuclear Power Plants," with additions, exceptions, and clarifications. The most significant exception is the endorsement of ANSI/ASME NQA-1-1983, "Quality Assurance Program Requirements for Nuclear Power Plants," as the acceptable standard for individuals working in Quality Control and the Quality Control organizations. Dr. Seale recommended that the Committee not review the proposed Revision 3 of RG 1.8.

- Control Room Habitability

The Chairman of the Severe Accident Management (SAM) Subcommittee provided a report to the Committee regarding the status of NRC staff and industry activities pertaining to control room habitability that were discussed during the September 16-17, 1999 SAM Subcommittee meeting. Presentations were made by representatives of the NRC staff, the Nuclear HVAC [Heating, Ventilation, and Air Conditioning] Utilities Group (NHUG), NEI, an independent contractor (P. Lagus) who performs tracer gas testing of control room leak rates, and two utilities, Commonwealth Edison Company and Northern States Power Company. The NRC staff and NEI representatives are working to address closure of this issue. NEI has prepared a draft guidance document on how licensees can reconstitute their design basis for this issue. The staff reviewed this document and identified issues for further evaluation. The Committee plans to review the NRC staff and industry resolution during the ACRS meeting in February or March 2000.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee discussed the response from the NRC Executive Director for Operations (EDO) dated August 9, 1999, to ACRS comments and recommendations in the ACRS report dated July 21, 1999, concerning the proposed final Regulatory Guide 1.181, "Content of the Updated Final Safety Analysis Report in Accordance with 10 CFR 50.71(e)"

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

- The Committee discussed the EDO's response dated August 9, 1999, to ACRS comments and recommendations in the ACRS report dated July 23, 1999, concerning the Proposed Maintenance Rule Guidance, DG-1082, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants."

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

- The Committee discussed the EDO's response dated August 9, 1999, to ACRS comments and recommendations in the ACRS letter dated June 10, 1999, concerning pilot application of the revised inspection and assessment programs, risk-based performance indicators, and performance-based initiatives, and related matters.

The Committee decided that it was not satisfied with the EDO's response. In

accordance with the Staff Requirements Memorandum dated August 13, 1999, the Committee decided to discontinue its review of these matters.

- The Committee discussed the EDO's response dated August 2, 1999, to the ACRS comments and recommendations included in the ACRS report dated July 23, 1999, concerning a proposed final amendment to 10 CFR 50.55a, "Codes and Standards."

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

- The Committee discussed the EDO's response dated August 18, 1999, to ACRS comments and recommendations included in the ACRS report dated July 22, 1999, concerning the revision of Appendix K, "ECCS Evaluation Models," to 10 CFR Part 50.

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

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from September 1 through September 29, 1999, the following Subcommittee meetings were held:

- Thermal Hydraulic Phenomena - September 15-16, 1999

The Subcommittee continued its review of the NRC Office of Nuclear Regulatory Research's thermal-hydraulic research program, including its plan for consolidating thermal-hydraulic codes, and the proposed resolution of Generic Safety Issue 23, "Reactor Coolant Pump Seal Failure."

- Severe Accident Management - September 16-17, 1999

The Subcommittee reviewed the modifications proposed by the Combustion Engineering Owners Group (CEOG) to the Post-Accident Sampling System requirements for CEOG nuclear power plant utilities. The Subcommittee also reviewed the status of NRC staff and nuclear industry activities pertaining to the issue of control room habitability.

- Plant License Renewal - September 23, 1999

The Subcommittee reviewed the status of the staff activities associated with the Generic Aging Lessons Learned program and the license renewal issue process, the proposed format of license renewal applications, and other selected license

renewal issues.

- Reliability and Probabilistic Risk Assessment and Regulatory Policies and Practices
- September 23-24, 1999

The Subcommittees discussed the proposed revisions to the NRC Probabilistic Risk Assessment Implementation Plan described in SECY-99-211 and the proposed rulemaking plan and study for development of risk-informed revisions to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

- Planning and Procedures - September 29, 1999

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 review the issue of eliminating the 120 month update requirement when the staff's position paper is available.
- The Committee plans to review the proposed requirements for inspecting small bore Class 1 piping of the high-pressure safety injection system when the staff's position paper is available.
- The Committee plans to continue its review of the NRC staff and industry resolution of issues related to control room habitability during the February or March 2000 ACRS meeting.
- The Committee plans to continue its discussion of a proposed letter on the resolution of GSI-148, "Smoke Control and Manual Fire Fighting Effectiveness," at the November 4-6, 1999 ACRS meeting.
- In accordance with the Staff Requirements Memorandum dated August 13, 1999, the Committee decided to discontinue its review of the revised inspection and assessment programs, risk-based performance indicators and performance-based initiatives, and related matters.
- The NRC staff and NEI informed the Committee that a meeting is scheduled for October 14, 1999, to continue discussions to resolve the staff's exceptions in Draft Regulatory Guide DG-1093 related to design bases information. The Committee decided to continue its discussion of this matter during the November 4-6, 1999

ACRS meeting.

- The Committee plans to work with the staff to resolve the significant technical issues associated with the implementation of Options 2 and 3 of SECY-98-300, "Options for Risk-Informed Revisions to 10 CFR Part 50.
- The Committee would like to see the task action plan being developed by RES to determine the need for plant-specific backfits associated with reactor coolant pump seals.

PROPOSED SCHEDULE FOR THE 467TH ACRS MEETING

In addition to meeting with the Commissioners to discuss items of interest, the Committee agreed to consider the following during the 467th ACRS Meeting:

Proposed Revision to Section 11 of NUMARC 93-01, Assessment of Risk Resulting from Performance of Maintenance Activities

Briefing by and discussions with representatives of the Nuclear Energy Institute and NRC staff regarding proposed revision to Section 11 of NUMARC 93-01.

NRC Safety Research Program Report to the Commission

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

Proposed Changes to the Design Control Document Associated with the AP600 Design

Briefing by and discussions with representatives of the NRC staff and Westinghouse Electric Company regarding proposed changes to the Design Control Document related to the AP600 design and the associated NRC staff evaluation.

Spent Fuel Fire Risk Associated with Decommissioning

Briefing by and discussions with representatives of the NRC staff regarding the status of staff activities related to assessing the spent fuel fire risk associated with decommissioning, spent fuel pool risk assessment study, and related matters.

Status of Resolution of Issues Associated with the Design Bases Information

Briefing by and discussions with representatives of the NRC staff and Nuclear Energy Institute (NEI) regarding the status of resolution of the differences between the NRC staff and NEI related to NEI 97-04 document, "Design Bases Program Guidelines."

Sincerely,

A handwritten signature in black ink, reading "Dana A. Powers". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Dana A. Powers
Chairman