



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

SL-0441

PDR 10/3/96

July 25, 1996

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-SECOND MEETING OF
THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, JUNE 12-14,
1996, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 432nd meeting, June 12-14, 1996, the Advisory Committee
on Reactor Safeguards (ACRS) discussed several matters and
completed the following report and letter.

REPORT

Severe Accident Research (Report to Shirley Ann Jackson,
Chairman, NRC, from T.S. Kress, Chairman, ACRS, dated June 28,
1996.)

LETTER

Draft Regulatory Guide DG-1047, "Standard Format and Content
for Applications to Renew Nuclear Power Plant Operating
Licenses" (Letter to James M. Taylor, Executive Director for
Operations, from T.S. Kress, Chairman, ACRS, dated June 18,
1996)

HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. Draft Regulatory Guide, DG-1047, "Standard Format and Content
for Applications to Renew Nuclear Power Plant Operating
Licenses"

The Committee discussed the draft Regulatory Guide DG-1047
with representatives of the NRC staff and the Nuclear Energy
Institute (NEI). The purpose of this guide is to provide a
uniform format and content for structuring and presenting the
information in a license renewal application. The guidance
provided in this guide is intended to ensure that actions have
been taken for managing the effects of aging and for evaluat-
ing time-limited aging analyses, giving reasonable assurance

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that the activities authorized by the renewed license will be conducted in accordance with the current licensing basis.

The NEI developed a document entitled "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - Requirements for Renewal of Operating Licenses for Nuclear Power Plants (NEI 95-10)," which provides guidelines for implementing the requirements of the License Renewal Rule. The staff reviewed this document and found it acceptable.

Conclusion

The Committee issued a letter to the Executive Director for Operations dated June 18, 1996, on this matter.

2. Individual Plant Examination Insights Report

The Committee heard presentations by and held discussions with representatives of the NRC staff and its contractors, the Sandia and Brookhaven National Laboratories, regarding the draft Individual Plant Examination (IPE) Insights Report. This report provides perspectives gained from reviewing 75 IPE submittals covering 108 nuclear power plant units. The review of the IPEs for insights looks beyond the intent of Generic Letter 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities - 10 CFR 50.54(f)."

The IPE Insights Report has five main objectives:

- Obtain perspectives on the impact of the IPE program on reactor safety.
- Obtain a better understanding of reactor and containment design and operational features, modeling methods and assumptions, significant plant improvements that affect the core-damage frequency, and containment performance for different reactor and containment types.
- Evaluate the role of the control room operator. Determine what specific operator actions are important for a class of plants.
- Evaluate the quality of the IPEs as compared to a state-of-the-art probabilistic risk assessment (PRA) and the potential role of IPEs in risk-informed regulation.
- Provide perspectives on such additional items as comparing IPE results to those of NUREG-1150 and to the Commission's safety goals, and identifying improvements as a result of the Station Blackout Rule.

Conclusion

The Committee plans to continue its review of this matter as insights are integrated into NRC programs related to the development of risk-informed and performance-based regulations.

3. Loss of Offsite Power at Catawba, Unit 2

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding the results of the Special Inspection Team (SIT) investigation of the loss of offsite power (LOOP) event that occurred on February 6, 1996 at the Catawba Nuclear Plant, Unit 2.

Two main generator isophase bus potential transformer bushings failed, causing a main generator trip, a reactor trip, and LOOP. Significant findings of the SIT, which investigated this event, included the following:

- The "2B" emergency diesel generator was taken out of service for corrective maintenance the morning of the event.
- The initiation of safety injection increased the water volume in the reactor coolant system, causing the pressurizer to go solid.
- Full offsite power was restored during the morning of February 8, 1996.
- The root cause of this event was inadequate preventive maintenance of the isophase bus duct. This allowed moisture and foreign material to build up on the isolation bushing, creating an electrical path to ground (short) from the main generator output.
- The licensee replaced the potential transformer bushings with an improved design, inspected and repaired components, and enhanced the preventive maintenance program in this area.

Conclusion

The Committee took no action as a result of this information briefing.

4. Issues Associated with Steam Generators

The Committee heard presentations by and held discussions with representatives of the NRC staff and NEI regarding issues

associated with steam generator tube integrity. The staff is developing a proposed performance-based rule, an associated regulatory analysis, and a regulatory guide concerning steam generator tube integrity. An industry implementing document, to be endorsed by the proposed regulatory guide, describes acceptable methods and performance measures for meeting rule requirements and performance criteria. The staff continues to work with NEI to resolve technical issues associated with the regulatory analysis and to resolve regulatory differences between the regulatory guide and the industry's implementing document.

Conclusion

The Committee plans to discuss a draft letter concerning this issue during the August 1996 ACRS meeting.

5. Browns Ferry Nuclear Plant, Unit 3

Representatives of the Tennessee Valley Authority (TVA), the licensee for Browns Ferry Nuclear Plant (BFN) Unit 3, briefed the Committee regarding circumstances that led to the shutdown of BFN Unit 3. BFN Units 1 and 3 were voluntarily shut down by TVA in March 1985 due to poor performance, which included significant enforcement actions, several operational events, equipment failures, and the inability of the TVA management to identify and correct problems.

The root causes of Browns Ferry's problems identified by TVA and NRC included the lack of clear assignment of responsibility and authority to the managers within their organization to clearly establish accountability for performance. Since the restart of Unit 3 in November 1995, the licensee has conducted self-assessment inspections and performed independent reviews of the following five principal areas to ensure continued safe operation of BFN Unit 3:

- Safety assessment and corrective action
- Operations
- Engineering
- Maintenance
- Plant support

Conclusion

The Committee took no action as a result of this information briefing.

6. Health Effects of Low Levels of Ionizing Radiation

The Committee heard presentations by and held discussions with a representative of the NRC staff, the NRC Visiting Medical Fellow, an invited expert, and a private citizen regarding health effects of low levels of ionizing radiation. The staff explained the ongoing NRC-funded study to assess the scientific bases for the linear quadratic model, which was used to develop the regulatory standards for protection against the adverse effects of radiation. The NRC Fellow expressed the opinion that scientific data, which did not confirm the linear no-threshold (LNT) hypothesis, have been overlooked or suppressed by professional health physics societies and organizations. The invited expert suggested that the LNT hypothesis be reexamined. The private citizen expressed the opinion that the use of the LNT hypothesis in the regulatory process costs lives and a tremendous amount of money.

Conclusion

The Committee discussed a report prepared by the Advisory Committee on Nuclear Waste (ACNW) subsequent to a joint ACRS/ACNW Subcommittee meeting during which this matter was discussed. The Committee decided neither to sign a joint letter nor to send a separate ACRS letter to the Commission on this matter.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

The Committee discussed the response from the NRC Executive Director for Operations dated May 24, 1996, responding to ACRS comments and recommendations included in the ACRS report dated April 22, 1996, concerning the Proposed Revisions to 10 CFR Parts 50 and 100 and Proposed Regulatory Guides Relating to Reactor Site Criteria.

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

LETTER FROM CHAIRMAN JACKSON

The Committee discussed a letter from Chairman Jackson dated June 3, 1996, responding to ACRS comments and recommendations included in the ACRS report dated April 23, 1996, concerning Probabilistic Risk Assessment Framework, Pilot Applications, and Next Steps to Expand the Use of PRA in the Regulatory Decision-Making Process.

The Committee plans to continue its review of issues associated with risk-informed and performance-based regulations. Also, the Committee plans to look at the emerging policy

issues identified in the May 15, 1996 Staff Requirements Memorandum and provide recommendations to the Commission.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from May 23 through June 12, 1996, the following Subcommittee meetings were held:

- Materials and Metallurgy/Severe Accidents - June 3-4, 1996

The Subcommittees discussed operating experience, technical issues, and rulemaking efforts associated with steam generator performance.

- Probabilistic Risk Assessment/Westinghouse Standard Plant Designs - June 5, 1996

The Subcommittees discussed the PRA and Severe Accident Analysis related to the Westinghouse AP600 design.

- Planning and Procedures - June 11, 1996

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.

- Individual Plant Examinations/Probabilistic Risk Assessment - June 11-12, 1996

The Subcommittees discussed the IPE Insights Report and the staff's research program related to PRA.

LIST OF FOLLOW-UP MATTERS FOR THE EXECUTIVE DIRECTOR FOR OPERATIONS

- The Committee decided to review the Draft Regulatory Guide DG-1047, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses" following reconciliation of public comments by the staff. The Committee has no objection to the NRC staff proposal to issue the draft guide for public comment. [A letter was issued to James M. Taylor, Executive Director for Operations, NRC, from T.S. Kress, Chairman, ACRS, dated June 18, 1996.]
- In a letter dated March 22, 1996, responding to the February 26, 1996 ACRS report related to potential plugging of emergency core cooling suction strainers, the EDO stated that the staff would revise the proposed Final Bulletin and Revision 2 to Regulatory Guide 1.82 to place more emphasis on the need to improve, where appropriate,

the procedures to better address core cooling from alternate sources of water. Noting that the Bulletin was issued without the changes committed to by the EDO, the Committee, during its May 1996 meeting, asked for an explanation. At the June 1996 ACRS meeting, Mr. Soffer, Office of the EDO, provided an explanation. Subsequently, a June 18, 1996 memorandum from Mr. Holahan, NRR, documented the explanation as follows:

The procedures to address core cooling from alternate water sources are already included in the emergency operating procedures. While strengthening industry procedures and practices related to the use of alternate water sources is desirable, it is not required to comply with the regulations. Since the Bulletin was a compliance Bulletin being issued to ensure compliance with 10 CFR 50.46, the staff concluded that recommendations to improve industry procedures should not be included in the Bulletin as they might be interpreted as new requirements. The staff also decided to include updated guidance on alternate water sources in Regulatory Guide 1.82. The staff realized that the wording in Regulatory Guide 1.82 regarding alternate water sources was "softer" than intended and the staff agreed to consider the need to revise this Guide to strengthen the alternate water source discussion. The staff will inform the ACRS of the results of those discussions.

PROPOSED SCHEDULE FOR THE 433RD ACRS MEETING

The Committee agreed to consider the following during the 433rd ACRS Meeting, August 8-10, 1996:

Supplemental Safety Evaluation Reports for Evolutionary Plant Designs - The Committee will hear presentations by and hold discussions with representatives of the NRC staff, General Electric Nuclear Energy (GENE), and ABB-Combustion Engineering (ABB-CE) regarding the proposed changes to the GENE Advanced Boiling Water Reactor (ABWR) and ABB-CE System 80+ evolutionary plant designs and the associated NRC staff Safety Evaluation Reports. Other interested parties will participate, as appropriate.

A portion of this session may be closed to discuss GENE and ABB-CE proprietary information applicable to this matter.

SECY-96-128, "Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design" - The Committee will hear presentations by and hold discussions with representatives of the NRC staff and Westinghouse

Electric Corporation regarding SECY-96-128, which includes proposed staff positions on three policy issues concerning Prevention and Mitigation of Severe Accidents, Post-72-Hour Actions, and External Reactor Vessel Cooling, as well as the status of seven key technical issues pertaining to the AP600 passive plant design. Other interested parties will participate, as appropriate.

A portion of this session may be closed to discuss Westinghouse proprietary information applicable to this matter.

Risk-Informed and Performance-Based Regulations and Related Matters - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding several issues raised in the Staff Requirements Memoranda dated May 15 and June 11, 1996, including:

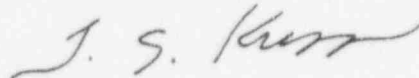
- Role of performance-based regulation in the PRA Implementation Plan
- Plant-specific application of safety goals
- Requirement for risk neutrality versus the allowance for an acceptable increase in risk
- Risk-informed inservice testing and inservice inspection requirements
- Pilot applications for risk-informed and performance-based regulations

Representatives of the nuclear industry will participate, as appropriate.

Risk-Based Analysis of Reactor Operating Experience - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding risk-based analysis of reactor operating experience. Representatives of the nuclear industry will participate, as appropriate.

Spent Fuel Pool Cooling Issues - The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the staff review of the safety issues associated with spent fuel pool cooling systems. Representatives of the nuclear industry and other interested persons will participate, as appropriate.

Sincerely,



T. S. Kress
Chairman