



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

SL-0522

July 6, 2004

The Honorable Nils J. Diaz
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Diaz:

SUBJECT: SUMMARY REPORT - 513th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, JUNE 2-4, 2004, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 513TH meeting, June 2-4, 2004, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, letter, and memoranda:

REPORTS:

Reports to Nils J. Diaz, Chairman, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Security of Nuclear Facilities, dated June 10, 2004 (National Security Information - Secret)
- Draft Final 10 CFR 50.69, "Risk-Informed Categorization and Treatment of Structures, Systems, and Components For Nuclear Power Reactors," dated June 15, 2004

LETTER:

Letter to Luis A. Reyes, Executive Director for Operations, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Digital Instrumentation and Controls Research Program, dated June 9, 2004

MEMORANDA:

Memoranda to Luis A. Reyes, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS:

- Proposed Revisions to Standard Review Plan Sections 5.2.3, 5.3.1 and 5.3.3, dated June 9, 2004
- Draft Regulatory Guide, DG-1130, "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants," (Proposed Revision 2 to Regulatory

Guide 1.152), dated June 3, 2004
Memorandum to Bruce A. Boger, Director, Division of Inspection Program Management, NRR,
from John T. Larkins, Executive Director, ACRS:

- Deferral of ACRS Review of Draft SRP Chapter 13.0 "Conduct of Operation," Section 13.1.2 - 13.1.3, "Operating Organization" Revision and Supporting Documents Until After Public Comment, dated June 7, 2004

HIGHLIGHTS OF KEY ISSUES

1. Draft Final 10 CFR 50.69, "Risk-Informed Categorization and Treatment of Structures, Systems, and Components For Nuclear Power Reactors"

The Committee met with representatives of the NRC staff and the Nuclear Energy Institute (NEI) to discuss the draft final 10 CFR 50.69, "Risk-Informed Categorization and Treatment of Structures, Systems, and Components for Nuclear Power Reactors." The staff's briefing focused on major changes to the rulemaking package since its briefing to the ACRS Subcommittee on Reliability and Probabilistic Risk Assessment on February 19, 2004. The staff also discussed the conditions in Regulatory Guide 1.201, "Guidelines for Categorizing Structures, Systems, and Components in Nuclear Power Plants According to Their Safety Significance," on the acceptance of NEI 00-04, "10 CFR 50.69 SSC Categorization Guideline." NEI then provided its perspective on the draft final rule. NEI expressed some frustration because it had just been made aware of some changes to the rulemaking package, and it disagreed with the staff's proposal to issue Regulatory Guide 1.201 for trial use.

Committee Action:

The Committee issued a report to the Chairman on this matter, dated June 15, 2004, recommending that the final 10 CFR 50.69 be issued. The Committee concluded that Regulatory Guide 1.201 should be issued for trial use.

2. Revised License Renewal Review Process

The Committee heard presentations by and held discussion with representatives of the NRC staff regarding the proposed enhancements to the current license renewal application review process that are expected to increase the overall efficiency of the process while maintaining an appropriate level of rigor to ensure adequate plant safety during the period of extended operation. The proposed enhancements include additional onsite reviews to improve the flow of information and limit the need for written correspondence on minor issues and clarifications.

Before finalizing these proposed enhancements, the staff will evaluate the pilot applications of these enhancements at four plants. Insights gained during these pilot applications will be considered before the staff makes enhancements to the Generic License Renewal Guidance Documents.

Committee Action:

This was an information briefing, and no Committee action was taken.

3. Meeting With the NRC Commissioners

The Committee met with the NRC Commissioners on June 2, 2004 to discuss the following items:

- PWR Sump Performance
- PRA Quality for Decisionmaking
- Risk-Informing 10 CFR 50.46
- ACRS 2004 Report on the NRC Safety Research Program
- ESBWR Pre-Application Review
- Interim Review of the AP1000 Design

The Committee is awaiting the Staff Requirements Memorandum (SRM) from the Commission regarding this meeting.

Committee Action:

The Committee will address any issues raised by the Commission in the SRM.

4. Digital Instrumentation and Control System (I&C) Research Activities

The Committee heard presentation by and held discussion with the representatives of the Office of Nuclear Regulatory Research (RES) regarding the current research activities for developing tools and guidance for the risk-assessment of digital I&C systems. The staff provided an overview of the information presented to the Plant Operations Subcommittee on March 26, 2004. The staff described the research program objectives included in SECY-01-0155, NRC Digital Instrumentation and Control Research Plan, and focused attention on the current research studies under way to address each of these objectives.

The staff provided additional details of the ongoing developmental studies at the University of Virginia, the University of Maryland, and Brookhaven National Laboratory that address the following issues:

- Digital Systems have different failure modes, and are much more challenging to model. More quantitative methods are needed.
- Digital systems are being retrofitted into current generation of nuclear power plants and they need to be reviewed in a risk-informed manner.
- The NRC does not have guidance on what is acceptable and what is not in modeling of digital system reliability.

Committee Action:

The Committee issued a letter to the NRC Executive Director for Operations on this matter, dated June 9, 2004. The Committee expressed support for the effort of the Digital I&C Research Program to develop more quantitative measures of digital system reliability. The letter also contained personal opinions and recommendations submitted by Dr. George

Apostolakis for staff consideration.

5. NRC Staff's Response to the ACRS Report on the AP1000 Design

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding the staff's response to the ACRS interim letter dated March 17, 2004 on the AP1000 design certification review. The ACRS in its letter commented on seven technical issues. These issues are automatic depressurization system (ADS)-4 squib valve function, assurance of long-term cooling (strainer blockage), code deficiencies, range of pi-group values, in-vessel retention/fuel-coolant interactions (FCI), organic iodine production, and catastrophic failure of a free-standing steel containment.

In addition, Westinghouse representatives briefed the Committee on three issues that had been raised by the ACRS: in-vessel retention/FCI, organic iodine production, and catastrophic failure of a free-standing steel containment. The staff described its plans to review Westinghouse's organic iodine production sensitivity study.

Committee Action:

This briefing was for information only. The ACRS Future Plant Designs Subcommittee plans to hold a meeting on June 25, 2004 to follow-up on the organic iodine production issue and any remaining items as a result of the review of the Final Safety Evaluation Report (FSER). The Committee also plans to include a session during its meeting on July 7-9, 2004 to discuss the FSER.

6. Proposed Revisions to Standard Review Plan (SRP) Sections and Process and Schedule for Revising the SRP

The Committee heard presentations by and held discussions with representatives of the NRC staff regarding proposed revisions to SRP Sections 5.2.3, "Reactor Coolant Pressure Boundary Materials;" 5.3.1, "Reactor Vessel Materials;" and 5.3.3, "Reactor Vessel Integrity." The staff stated that the proposed revisions to the above SRP sections include primarily editorial changes and updates to the references, and do not include any technical changes. The staff also discussed the process, schedule, estimated resources for updating the other SRP sections. Those SRP sections that involve safety-significant issues and stakeholder/Commission interest will have a high priority for update. Updates to the SRP will be accomplished in accordance with the Office of Nuclear Reactor Regulation (NRR) Office Instruction (OI) LIC-200, "Standard Review Plan Process." The staff plans to update about 35 SRP sections in each FY 2005 and FY 2006. The staff will "bundle" the relevant SRP Sections and submit the bundles to the ACRS for review. During FY 2005, the staff plans to submit 13 "bundles" to the ACRS for review.

Committee Action:

The Committee decided not to review the proposed revisions to SRP Sections 5.2.3, 5.3.1, and 5.3.3. The ACRS Executive Director issued a memorandum to the NRC Executive Director for Operations (EDO), dated June 9, 2004, informing the EDO of the Committee's decision. As suggested by the Committee, the staff has agreed to include a recommendation in the memorandum transmitting future SRP revisions to the ACRS with regard to the need for the

Committee's review of those sections along with the reasons therefor.

7. Metrics for Evaluating the Quality of the NRC Research Programs

RES is required to have an independent evaluation of the quality of its research programs. This evaluation is mandated by the Government Performance and Results Act and needs to be in place during the next fiscal year. The Committee has agreed to assist RES in assessing the quality of the NRC research programs. The Committee has previously approved the strategy for the review of the quality of selected research projects. This strategy will be tested during FY 2004 and refined in FY 2005. During the June 2-4, 2004 ACRS meeting, the Committee discussed a process for developing the quantitative metrics (numerical grades) to be used for evaluating the quality of selected NRC research projects.

Committee Action:

The Committee plans to use a decisionmaking framework (value tree) in evaluating the quality of selected NRC research projects. In FY 2004, the Committee will assess the quality of the NRC research projects on PWR Sump Performance and on MACCS Code.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENT

- The Committee discussed the EDO's response dated May 18, 2004 to comments and recommendations included in the ACRS interim letter dated March 17, 2004, regarding the ACRS Reviews of the Westinghouse Electric Company Application for Certification of the AP1000 Plant Design.

The Committee decided that it was satisfied with the EDO's response. However, the ACRS Subcommittee on Future Plant Designs plans to discuss the organic iodine production issue during a meeting on June 25, 2004.

- The EDO's May 18, 2004 response concerning the AP1000 also included several commitments that arose from the AP1000 review, but which are generic in applicability, and their resolution does not impact the completion of the AP1000 licensing activity.

The staff committed to brief the ACRS Subcommittee on Thermal-Hydraulic Phenomena on experimental studies being conducted at the ATLATS facility at Oregon State University to support thermal-hydraulic code improvements, and the planned separate-effects tests at the APEX-AP1000 facility, which will help to isolate and measure upper plenum pool entrainment. The staff will brief the Subcommittee on the new models that will be developed and implemented in the TRACE code as deficiencies are identified.

The Committee plans to review the procedure that the staff will develop to define an appropriate Pi group range for scaling integral test facilities.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from May 6, 2004 through June 1, 2004, the following Subcommittee meetings were held:

- Planning and Procedures - June 1, 2004

The Subcommittee discussed proposed ACRS activities, practices, and procedures for conducting Committee business and organizational and personnel matters relating to ACRS and its staff.

- Materials and Metallurgy - June 1, 2004

The purpose of this meeting was to follow up on the July 2003 meeting on vessel head degradation regarding work that the MRP and NRC staff indicated they would be working on.

LIST OF MATTERS FOR THE ATTENTION OF THE EDO

- The Committee plans to review insights gained from the trial use of Regulatory Guide 1.201, "Guidelines for Categorizing Structures, Systems, and Components in Nuclear Power Plants According to Their Safety Significance."
- The Committee plans to review the draft final Regulatory Guide, DG-1130, "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants," after reconciliation of public comments.
- The Committee plans to review the draft final SRP Chapter 13.0, "Conduct of Operation," after reconciliation of public comments.
- The Committee plans to hold discussions with the staff regarding Safeguards and Security matters during its September 8-11, 2004 meeting.

PROPOSED SCHEDULE FOR THE 514TH ACRS MEETING

The Committee agreed to consider the following topics during the 514th ACRS meeting to be held on July 7-9, 2004:

- Final Safety Evaluation Report Associated with the AP1000 Design Certification
- Draft Final Generic Letter on Potential Impact of Debris Blockage on Emergency Recirculation During Design-Basis Accidents at PWRs
- Risk-Informing 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors"
- Differences in Regulatory Approaches and Requirements Between U.S. and Other Countries

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- Proposed Generic Communication on the Use of Ultrasonic Flow Measurement Devices for Measuring Feedwater Flow Rates in Nuclear Plants
- Status of the ACRS Members' Assessment of the Quality of Selected NRC Research Projects

Sincerely,

/RA/

Mario V. Bonaca
Chairman

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