



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

June 2, 2010

The Honorable Gregory B. Jaczko
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: SUMMARY REPORT – 572nd MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, MAY 6-8, 2010

Dear Chairman Jaczko:

During its 572nd meeting, May 6-8, 2010, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following letters and memoranda:

LETTERS

Letters to R. W. Borchardt, Executive Director for Operations, NRC, from Said Abdel-Khalik, Chairman, ACRS:

- Revised Standard Review Plan for Spent Fuel Dry Storage Systems (NUREG-1536), dated May 17, 2010
- Draft Guidance on Crediting Containment Accident Pressure in Meeting the Net Positive Suction Head Required to Demonstrate that Safety Systems Can Mitigate Accidents as Designed, dated May 19, 2010

MEMORANDA

Memoranda to R. W. Borchardt, Executive Director for Operations, NRC, from Edwin M. Hackett, Executive Director, ACRS:

- Comments Regarding Licensed Operator Training Standards, dated May 12, 2010
- Proposed Standard Review Plan, Branch Technical Position 7-19, dated May 12, 2010
- Final Interim Staff Guidance ISG-25, dated May 12, 2010
- Proposed Revisions to Regulatory Guides 3.67 and 7.3, dated May 12, 2010

HIGHLIGHTS OF KEY ISSUES

1. Revision 1C to NUREG-1536, "Standard Review Plan for Spent Fuel Dry Storage Systems at a General License Facility"

The Committee met with representatives of the NRC staff to discuss Revision 1C to NUREG-1536, "Standard Review Plan (SRP) for Spent Fuel Dry Storage Systems at a General License Facility." The SRP provides guidance to the NRC staff for reviewing applications for a dry storage system Certificate of Compliance. The document promotes a consistent regulatory review of a vendor's application. It also provides a framework that identifies acceptable approaches to meeting the regulatory requirements for a spent fuel dry storage system in accordance with 10 CFR Part 72.

In the SRP the staff describes a new prioritization methodology that ranks review areas as high, medium, and low. The staff discussed the basis for performing burnup credit measurements in the SRP. In order to prevent misloading of assemblies that do not meet the criteria for burnup credit, the SRP states that the applicant should perform supplementary pool-side measurements to confirm assembly burnup values. Acceptable measurement methods are not described in the SRP. ACRS Members noted that it was unclear why plant burnup records alone would not be acceptable to confirm assembly burnup once the assemblies are explicitly verified.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter dated May 17, 2010, recommending that NUREG-1536 be issued after the discussion of burnup credit is removed and reference is made to Interim Staff Guidance (ISG)-8, Revision 2, "Burnup Credit in the Criticality Safety Analyses of PWR Spent Fuel in Transport and Storage Casks." The Committee also recommended that the staff reconsider the guidance in ISG-8, Revision 2, regarding the need for supplementary measurements to verify and adjust plant burnup records prior to granting burnup credit.

2. Draft Guidance on Crediting Containment Accident Pressure in Meeting the Net Positive Suction Head (NPSH) Required to Demonstrate that Safety Systems Can Mitigate Accidents as Designed.

The Committee met with representatives of the NRC staff to discuss the draft staff guidance regarding the acceptability of crediting containment accident pressure (CAP) in extended power uprates (EPU) and other applications. In a January 8, 2009, Staff Requirements Memorandum, the Commission directed the staff to continue working to resolve the differences of opinion between the Committee and the staff concerning CAP. In 2009, the Committee reviewed the staff's White Paper on crediting CAP. As a result of this review, the Committee issued a March 18, 2009, letter, which delineated the Committee's concerns and proposed some alternate approaches for the staff's consideration. The current draft staff guidance incorporates some of the recommendations in the March 18, 2009, ACRS letter.

The guidance provides criteria that applications crediting CAP should meet for different scenarios such as, design-basis loss-of-coolant accidents (LOCAs) and special events (e.g., Appendix R fires, Anticipated Transients Without Scram, and Station Blackout). The guidance also describes the types of analyses and pump tests that should be performed.

The staff re-examined the behavior of pumps operating with available NPSH near the required

NPSH. They consulted with pump experts to help estimate the uncertainties associated with the required NPSH. The staff concluded in their draft guidance that: (1) uncertainties associated with the determination of the required NPSH during a LOCA should be accounted for; (2) appropriate modifications to the pump mechanical seal designs should be considered; and (3) the duration of pump operation within the maximum wear rate region should be limited to 100 hours.

Although the draft guidance relies on deterministic licensing-basis analyses that assume containment integrity, the staff described a generic assessment of the change in risk due to containment leakage large enough to reduce containment pressure below that needed for operation of the pumps. For containment leakage test intervals believed to be representative of BWRs with Mark I containments (approximately once per week), the predicted change in core damage frequency is less than $1 \times 10^{-7}/\text{yr}$. The staff's risk model assumed that the failure rate of containment isolation is the same before and after the accident. The model did not include the possibility that head loss due to sump strainer blockage is greater than the predicted value. The generic risk study also included some initial seismic risk estimates, but the risk associated with other significant contributors such as fires and operator actions were not included.

The draft staff guidance includes an explicit expectation that licensees demonstrate the impracticality of plant modifications that would eliminate the need for CAP credit. The Committee strongly supports that position.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter dated May 19, 2010, concluding that the draft guidance provides an improved framework for a more comprehensive assessment of the acceptability of crediting CAP, but that these analyses should be complemented by plant-specific PRA analyses. The Committee agrees with the staff that before considering analyses to justify credit for CAP, licensees must first demonstrate that it is impractical to make plant modifications that eliminate this need. However, the Committee disagrees with the staff that a generic waiver of this requirement is appropriate for BWRs with Mark I containments. The Committee concluded that if no CAP credit is needed for special events licensing-basis analyses, and the 95/95 lower tolerance bound for LOCAs calculated using an acceptable methodology shows that no CAP credit is needed, then CAP credit can be deemed to be small enough that it is acceptable without the need for hardware modifications or additional risk studies. This conclusion is consistent with the intent of the previous ACRS position that if the CAP associated with the licensing-basis analysis is sufficiently "short" and "small," then it can be assumed to be largely due to conservatism in the calculation and does not represent a significant challenge to the independence of barriers and the associated risk is small.

Although the Committee's position is documented in the May 19, 2010, letter, four Members disagreed with the specific conclusion that supplemental risk assessments or plant modifications are not needed for those cases in which special events licensing-basis analyses and the 95/95 lower tolerance bound for LOCAs show that the CAP credit is not needed. These Members provided additional comments that are documented in the May 19, 2010, letter and recommend

that granting of CAP credit should include a thorough evaluation of potential safety system modifications that eliminate the need for CAP credit and, in the event that these modifications are impractical, a plant-specific full-scope PRA be performed to demonstrate that the increase in risk is small.

MEETING WITH THE NRC CHAIRMAN

Chairman Jaczko addressed the Committee and provided his perspectives on nuclear safety and technical matters of significant interest to the NRC. These included the proposed revisions to 10 CFR 50.46a, implementation of risk-informed performance-based fire protection (NFPA 805), safety culture, the reactor oversight process, and plant license extensions beyond 60 years. The Chairman also entertained ACRS Member questions on these and other matters of interest to the Committee.

Committee Action

This was an information exchange. No Committee action was necessary.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of April 20, 2010, to comments and recommendations included in the March 18, 2010, ACRS report on the status of staff rulemaking efforts for depleted uranium and other unique waste streams. The Committee decided that it was satisfied with the EDO response. In the EDO response, the staff committed to include a discussion of how early comments, including those of the ACRS, were addressed in the Statements of Consideration.
- The Committee considered the EDO's response of April 16, 2010, to comments and recommendations included in the February 22, 2010, ACRS report on draft final NUREG-1520 Revision 1, "Standard Review Plan for Review of a License Application for a Fuel Cycle Facility." In its report, the ACRS recommended that when developing and reporting the results of Integrated Safety Analyses (ISAs), the staff should consider fire-induced "hot shorts" and their potential to place systems in conditions other than a fail-safe condition. The EDO response stated that the staff will evaluate the potential for fuel cycle events related to hot shorts; and if the staff determines that these are common events or have significant risk for fuel cycle facilities, the staff will develop guidance utilizing the results of ongoing research on this topic. The Committee will evaluate the adequacy of the EDO's response to this issue and will consider preparing a response during its June 9-11, 2010, meeting.
- The Committee considered the EDO's response of March 25, 2010, to comments and recommendations included in the November 12, 2009, ACRS report on draft final Regulatory Guide 5.71, "Cyber Security Programs for Nuclear Facilities." The Committee decided that it was satisfied with the EDO's response.

SCHEDULED TOPICS FOR THE 573rd ACRS MEETING

The following topics are scheduled for the 573rd ACRS meeting, to be held on June 9-11, 2010:

- Draft Final Regulatory Guide 1.216, "Containment Structural Integrity Evaluation for Internal Pressure Loadings above Design-Basis Pressure"
- Meeting with the Commission
- Proposed Rulemaking on Distribution of Source Materials to Exempt Persons and to General Licensees and Revision of General License and Exemptions
- Proposed Interim Staff Guidance (ISG) DC/COL-ISG-013, "Assessing the Consequences of an Accidental Release of Radioactive Materials from Waste Tanks," and Proposed DC/COL-ISG-014, "Assessing Groundwater Flow and Transport of Accidental Radionuclide Releases"
- Status of Risk-Informing Guidance for New Reactors
- Generic Safety Issue (GSI)-191, "Assessment of Debris Accumulation on PWR Sump Performance"

Sincerely,

/RA/

Said Abdel-Khalik
Chairman

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/RA/

Said Abdel-Khalik
Chairman

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