



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

July 12, 2010

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

SUBJECT: SUMMARY REPORT – 573rd MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, JUNE 9-11, 2010

Dear Chairman Jaczko:

During its 573rd meeting, June 9-11, 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:

- Draft Final Regulatory Guide 1.216, “Containment Structural Integrity Evaluation for Internal Pressure Loadings above Design-Basis Pressure,” dated June 24, 2010
- Response to the April 16, 2010, EDO Letter Regarding Draft Final NUREG-1520, Revision 1, “Standard Review Plan for Review of a License Application for a Fuel Cycle Facility,” dated June 16, 2010

MEMORANDA

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

- Draft Final Regulatory Guide 2.5, dated June 14, 2010
- Proposed Regulatory Guides 1.93 and 7.7, dated June 14, 2010

HIGHLIGHTS OF KEY ISSUES

1. Draft Final Regulatory Guide 1.216, “Containment Structural Integrity Evaluation for Internal Pressure Loadings above Design-Basis Pressure”

The Committee met with representatives of the NRC staff to discuss Draft Final Regulatory Guide (RG) 1.216, “Containment Structural Integrity Evaluation for Internal Pressure Loadings above Design-Basis Pressure.” This RG applies to new light water reactors with free-standing steel or concrete containment. The staff discussed the Regulatory Positions in RG 1.216, the associated regulatory requirements, and the disposition of the public comments. RG 1.216 describes methods that the staff considers acceptable for: (1) predicting the internal pressure capacity for containment structures above the design-basis accident pressure; (2) demonstrating containment structural integrity related to combustible gas control; and (3) demonstrating that

containment structural integrity meets the Commission's performance goals related to the prevention and mitigation of severe accidents.

Committee Action

The Committee issued a letter to the EDO on this matter, dated June 24, 2010, recommending that RG 1.216 be issued.

2. Proposed Revisions to NUREG-1520, "Standard Review Plan for Review of a License Application for a Fuel Cycle Facility"

During its 569th meeting, February 4, 2010, the Committee met with representatives of the NRC staff to discuss the proposed modifications in draft final NUREG-1520 Revision 1, "Standard Review Plan (SRP) for Review of a License Application for a Fuel Cycle Facility (FCF)." On February, 22, 2010, the Committee issued a report to the NRC Chairman on this matter, concluding that NUREG-1520 Revision 1 should be issued. In addition, 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. On April 16, 2010, the EDO responded to the ACRS report stating 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 evaluated the adequacy of the EDO's response and decided to issue a response letter to the EDO.

Committee Action

The Committee issued a letter to the EDO on this matter, dated June 16, 2010, recommending that explicit consideration of fire-induced "hot shorts" be included in the guidance for review of applications for fuel cycle facilities.

3. Meeting with the Commission

On June 9, 2010, the Committee met with the NRC Commissioners to discuss topics of mutual interest, including the following:

- Risk-Informed Performance-Based Fire Protection (RG 1.205)
- NRC Safety Research Program
- Crediting Containment Accident Pressure in the net positive suction head (NPSH) Calculations
- Status of Rulemaking for Disposal of Depleted Uranium

Committee Action

The June 25, 2010, Staff Requirements Memorandum (SRM) associated with this meeting states that the ACRS should review and report on the current state of licensee efforts to transition to National Fire Protection Association (NFPA) Standard 805. This review should include methodological and other issues that may impede the transition process, lessons learned from the pilot projects, and any recommendations to address any issues identified. The ACRS review should also determine whether the level of conservatism of the methodology is appropriate.

The SRM also contained tasking to the staff on the subject of containment accident pressure. The Committee will interact with the staff, as appropriate, as the staff develops their response to the tasking.

4. Proposed Rulemaking on Distribution of Source Materials to Exempt Persons and to General Licensees and Revision of General License and Exemptions

The Committee met with representatives of the NRC staff to discuss a proposed rulemaking concerning the distribution of source materials. The NRC intends to amend Title 10, Part 40, "Domestic Licensing of Source Material," of the *Code of Federal Regulations* (10 CFR Part 40) to require specific licenses for the initial distribution of source material to exempt persons and to those operating under the general license for small quantities of source material (10 CFR 40.22, "Small Quantities of Source Material"). The proposed amendments would modify the existing possession and use requirements for a 10 CFR 40.22 general license to more closely align the requirements with current health and safety and security standards. The proposed amendments would revise, clarify, or delete certain product exemptions in 10 CFR 40.13, "Unimportant quantities," to make the exemptions more risk informed. Amendments requiring specific licensing are necessary because the NRC currently has no reporting requirements to identify how, and in what quantity, source material is being used under exemption or under the 10 CFR 40.22 general licenses. In addition, much of 10 CFR Part 40 has not been revised to account for revisions to NRC's health and safety requirements. In particular, 10 CFR 40.22 general licensees are exempt from NRC's health and safety requirements and can exceed exposure limits that would normally require action by most other NRC licensees. By requiring distributors to obtain specific licenses and imposing new reporting requirements, the proposed amendment would allow the NRC to better identify how much source material is being used under both product exemptions and the general license, as well as help in identifying general licensees. In addition, the staff considers that the proposed amendment to 10 CFR 40.22 would make the regulations more consistent with existing health and safety requirements.

The following concerns were raised by the members: (1) there appears to be a declining trend in the use of uranium and thorium source material; (2) there was no clear evidence of significant dose consequences in applications related to use of this source material; (3) the basis for significantly lowering the possession limits for source material is not transparent; and (4) it is unclear how this proposed rulemaking for 10 CFR Part 40 is risk informed or how it can be used to enhance public or worker safety.

Committee Action

This was an information briefing. No Committee action was necessary. The Committee plans to review the draft final revision to this rule after the resolution of public comments.

5. Proposed Interim Staff Guidance (ISG) DC/COL-ISG-013 and DC/COL-ISG-014

The Committee met with representatives of the NRC staff to discuss two proposed Interim Staff Guidance (ISG) documents. The two documents are Draft DC/COL-ISG-013, "Assessing the Consequences of an Accidental Release of Radioactive Materials from Liquid Waste Tanks for Combined License Applications," and Draft DC/COL-ISG-014, "Assessing Groundwater Flow and Transport of Accidental Radionuclide Releases." The two ISGs address inconsistencies and lack of guidance in several sections of the Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants (NUREG-0800). The ISGs apply to an acute, accidental discharge from a liquid tank. One of the primary purposes of the analyses described in these ISGs is to establish technical specifications for the amount and concentrations of radioactive liquids that can be stored in tanks that are susceptible to accidents at the plant site.

Committee Action

This was an information briefing. No Committee action was necessary. The Committee plans to review the draft final revisions of these two ISGs after the resolution of public comments.

6. Status of Risk-Informed Guidance for New Reactors

The Committee met with representatives of the NRC staff to discuss the status of risk-informed guidance for changes to the licensing basis and the Reactor Oversight Process (ROP) for new light-water reactors. Several risk-informed initiatives such as Risk-Managed Technical Specifications (RMTS), risk-informed in-service inspection of piping, and special treatment requirements (10 CFR 50.69, "Risk Informed Categorization and Treatment of Structures, Systems and Components for Nuclear Power Reactors") have been proposed. The staff's review of these initiatives has raised questions regarding appropriate risk metric acceptance guidelines and thresholds in the ROP. The staff discussed the evolution of their views on this subject and noted that staff consensus on a high-level approach across the agency was recently achieved.

The staff discussed potential approaches for developing guidance for risk informed applications and their possible implications. The approach selected by the staff will be to: (1) identify specific changes to risk-informed guidance for changes to the licensing basis that would prevent a significant decrease in the safety of the new reactor over its life and (2) identify specific changes to risk-informed guidance for the ROP that would provide for meaningful regulatory oversight. The staff plans to issue the final Commission paper on this issue and to continue to engage stakeholders regarding specific changes to industry and NRC guidance documents.

Committee Action

The Committee will consider a report on this issue during its July 14-16, 2010, meeting.

7. Generic Safety Issue (GSI)-191, "Assessment of Debris Accumulation on PWR Sump Performance"

The Committee met with representatives of the NRC staff to discuss the status of resolution of GSI-191. The staff described developments since 2007, the current status, and path forward. The staff issued revised guidance in 2008 regarding head loss testing, coatings, and chemical effects. In many cases, licensee responses to Generic Letter 2004-02 did not provide sufficient details to determine that testing and evaluation methods were acceptable. This resulted in a large number of requests for additional information (RAIs). In late 2009, as a result of NRC questions, industry identified a design error with the test loop used for their Zone of Influence (ZOI) testing. The staff determined that the ZOI conclusions based on these tests have the potential to significantly under-predict the quantity of debris that could be generated during a hypothetical loss-of-coolant accident. In response, industry is considering additional testing and analysis. To address in-vessel downstream effects, industry submitted Topical Report WCAP-16793, Revision 1. Testing results have shown that two vendors' fuels appear to behave very differently in response to debris intrusion. The staff is working with vendors to resolve the unexpected difference in behavior and plans to issue their safety evaluation of this topical report in 2010.

The staff has concluded that strainer performance has been adequately demonstrated (except for in-vessel effects) for 39 out of 69 United States Pressurized Water reactors (PWRs). The staff expects some "high fiber" plants may require additional testing and/or modifications to satisfactorily address this generic issue. The staff also briefed the Committee on the April 15 Commission Meeting on GSI-191 and the associated SRM issued on May 17, 2010.

Committee Action

Although this was an information briefing, the Committee subsequently requested that they be

briefed on the staff's response to the May 17, 2010, SRM. The ACRS will conduct a subcommittee review of the staff response on September 7, 2010, followed by a Full Committee briefing on September 9, 2010. The ACRS will produce a letter report on their deliberations and member Sanjoy Banerjee will represent the ACRS position at the GSI-191 Commission meeting on September 28, 2010.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of May 25, 2010, to comments and recommendations included in the April 7, 2010, ACRS report on the review and evaluation of the NRC Safety Research Program. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of May 3, 2010, to comments and recommendations included in the March 25, 2010, ACRS report on Draft Revision 2 to RG 4.11 (DG-4016), "Terrestrial Environmental Studies for Nuclear Power Plants." The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of April 30, 2010, to comments and recommendations included in the March 25, 2010, ACRS report on Draft Final Revision 1 of RG 1.141, "Containment Isolation Provisions for Fluid Systems." The Committee decided that it was satisfied with the EDO's response.

SCHEDULED TOPICS FOR THE 574th ACRS MEETING

The following topics are scheduled for the 574th ACRS meeting, to be held on July 14-16, 2010:

- Safety Evaluation Report with Open Items Associated with the South Texas Project Combined License Application
- Draft Final RG 3.74, "Guidance for Fuel Cycle Facility Change Processes"
- Closure of Design Acceptance Criteria/Inspection Test Analysis and Acceptance Criteria (DAC/ITAAC) for New Reactors
- Meeting with Representatives of the Nuclear Energy Institute (NEI)
- Risk-Informed Guidance for New Reactors
- Assessment of the Quality of Selected NRC Research Projects

Sincerely,

/RA/

Said Abdel-Khalik
Chairman

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Sincerely,
/RA/
Said Abdel-Khalik
Chairman

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Letter to the Honorable Gregory B Jaczko, Chairman, NRC, from Said Abdel-Khalik, Chairman, ACRS, dated July 12, 2010

SUBJECT: SUMMARY REPORT – 573rd MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, June 9-11, 2010

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