



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

August 10, 2010

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

SUBJECT: SUMMARY REPORT – 574th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, JULY 14-16, 2010

Dear Chairman Jaczko:

During its 574th meeting, July 14-16, 2010, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, letters, and memoranda:

REPORTS

Reports to Gregory B. Jaczko, Chairman, NRC, from Said Abdel-Khalik, Chairman, ACRS:

- Risk-Informed Regulatory Guidance for New Reactors, dated July 27, 2010
- Closure of Design Acceptance Criteria for New Reactors, dated August 9, 2010

LETTERS

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

- Draft Final Regulatory Guide 3.74, "Guidance for Fuel Cycle Facility Change Processes," dated July 29, 2010
- Interim Letter: Safety Evaluation Report with Open Items Related to the South Texas Project Combined License Application Referencing the Certified Advanced Boiling Water Reactor Design, dated August 9, 2010

MEMORANDA

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

- Draft Final Regulatory Guides 3.13, 8.35, and 8.4, dated July 21, 2010
- Proposed Revisions to Regulatory Guides 1.149, 1.179, and 3.71, dated July 21, 2010
- Withdrawal of Regulatory Guides 3.44 and 3.49, dated July 21, 2010

HIGHLIGHTS OF KEY ISSUES

1. Risk Informed Guidance for New Reactors

During its 573th meeting, June 9-11, 2010, 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 a new reactor over its life and (2) identify specific changes to risk-informed guidance for the ROP that would provide for meaningful regulatory oversight.

Committee Action

The Committee completed its review of this issue during its July 14-16, 2010, meeting and issued a report to the NRC Chairman dated July 27, 2010. The Committee recommended that: (1) the staff continue to interact with internal and external stakeholders to develop guidance for an integrated risk-informed decision-making framework that consistently applies the principles of Regulatory Guide 1.174 for currently operating plants and new reactors; (2) the bases for risk significance determinations in the ROP be consistent with the guidance for changes to the licensing basis; (3) the guidance anticipate and account for plant-specific risk profiles that may be influenced significantly by external events such as severe earthquakes; and (4) the staff expedite the development of interim guidance for the use of numerical risk significance measures for selection of candidate structures, systems, and components (SSCs) in design certification and combined license (COL) reliability assurance programs. ACRS Member, John Stetkar, also provided additional comments to encourage the extension of the probabilistic risk assessment (PRA) technology to include full-scope Level 3 assessments because insights from plant-specific Level 3 PRAs may identify metrics other than core damage frequency and large release frequency that are more appropriate representations of integrated risk.

2. Closure of Design Acceptance Criteria and Inspections, Tests, Analyses, and Acceptance Criteria

Recent reviews of new reactor designs and associated COLs have indicated ongoing Committee concerns relative to closure of Design Acceptance Criteria (DAC) and Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC), with a particular focus on DAC for digital instrumentation and control (I&C). At the 573rd Meeting in June 2010, the Committee decided to document their concerns in a report to the Chairman. During the current Meeting, the Committee held extensive discussions on the subject and heard from a member of the public regarding legal and process considerations on DAC at the time the 10 CFR Part 52 rule was being considered. The discussions focused on the fundamental concept of DAC, the history of

DAC, and the intent of 10 CFR Part 52 to advance standardization of nuclear reactor designs.

Committee Action

The Committee issued a report to the NRC Chairman, on this matter dated August 9, 2010, concluding that DAC closure requires expertise, judgment, and interpretation and that it should be performed by NRC staff experts with an independent assessment by the ACRS. The Committee also noted that, it is preferable that all DAC be resolved no later than COL stage. However, whether resolved as part of the COL process or post-COL, proper closure of DAC requires a consistent scope and depth of evaluation.

3. Draft Final Regulatory Guide 3.74, "Guidance for Fuel Cycle Facility Change Processes"

The Committee met with representatives of the NRC staff to discuss draft final Regulatory Guide 3.74, "Guidance for Fuel Cycle Facility Change Processes." This document provides guidance to fuel cycle facility operators regarding changes to their facilities and programs, and whether prior NRC approval is needed. NRC staff prepared the guide with input from a task force of licensees. The Regulatory Guide had been issued for public comment, and the staff was awaiting ACRS review prior to issuing it in final form.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated July 29, 2010, recommending that Regulatory Guide 3.74 be issued.

4. Safety Evaluation Report with Open Items Associated with the South Texas Project Combined License Application

The Committee met with representatives of the NRC staff and South Texas Project (STP) Nuclear Operating Company to discuss the safety evaluation report (SER) with open items associated with the STP combined license application (COLA). Staff from STP presented the significant departures as well as COL and site specific information regarding their COLA for two Advanced Boiling Water Reactor (ABWR) units (Units 3 and 4) at the existing site of STP Units 1 and 2. The NRC staff presented the significant open items and the proposed license conditions in their SER with open items. The COLA references the fuel design prescribed in the certified design. STP plans to submit a request to amend the COL to load the first core with a different fuel design. The Committee plans to review the licensing topical reports being submitted to support this amendment. The Committee noted that neither STP nor the NRC staff seemed to have a systematic program to review 10 CFR Part 21 reports for STP Units 3 and 4 before this issue was raised by the ABWR Subcommittee. Related to the issue of emergency core cooling system (ECCS) sump strainer blockage, the Committee plans to review downstream effects and the associated test program for the fuel design to be used in STP Units 3 and 4.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated August 9, 2010, concluding that the STP COLA and the staff's SER with open items for the chapters it reviewed are acceptable subject to satisfactory closure of the open items. The Committee also recommended that a process for the identification and resolution of 10 CFR Part 21 notifications issued between design certification rulemaking and COLA submittals be developed and applied to all design centers and COLAs.

5. Meeting with Representatives of the Nuclear Energy Institute

The Committee met with representatives of the Nuclear Energy Institute (NEI) to discuss the following topics: Security, Fire Protection, Safety Culture, Generic Safety Issue (GSI)-191, "Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance," and the NEI Groundwater Protection Initiative. Following the presentation, NEI indicated that they were receptive to meet with the ACRS again to discuss issues associated with fire protection and GSI-191 in greater detail. NEI also indicated that they would like to comment on GSI-191 at the upcoming Thermal-Hydraulic Phenomena Subcommittee meeting. The Committee was receptive to additional meetings with NEI.

Committee Action

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

6. Interim Staff Guidance DC/COL-ISG-017, "Ensuring Hazard-Consistent Seismic Input for Site Response and Soil Structure Interaction Analyses," and Interim Staff Guidance DC/COL-ISG-020, "Implementation of Seismic Margin Analysis for New Reactors Based on PRA"

The Committee met with representatives of the NRC staff to discuss two final interim staff guidance (ISG) documents: ISG-017, "Ensuring Hazard-Consistent Seismic Input for Site Response and Soil Structure Interaction Analyses," and ISG-020, "Implementation of Seismic Margin Analysis for New Reactors Based on PRA." These ISGs focus on improving existing guidance in three sections of the Standard Review Plan, "Review of Safety Analysis Reports for Nuclear Power Plants," (NUREG-0800). Improvements are made to Section 2.5, "Geology and Seismicity," and Section 3.7, "Seismic Analysis," by ISG-017 and Section 19.0, "Probabilistic Risk Assessment and Severe Accident Evaluation for New Reactors," by ISG-020.

Committee Action

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

7. Assessment of the Quality of Selected NRC Research Projects

The Committee discussed the status of the ACRS Panels' review of the quality assessment of NRC research projects on NUREG/CR-6947, "Human Factors Consideration with Respect to Emerging Technology in Nuclear Power Plants," and NUREG/CR-6997, "Modeling a Digital Feedwater Control System Using Traditional Probabilistic Risk Assessment Methods."

Committee Action

The Committee plans to discuss its report on the quality assessment of the research projects noted above during its September 9-11, 2010, meeting.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of May 26, 2010, to comments and recommendations included in the April 20, 2010, ACRS report on Interim Staff Guidance DC/COL-ISG-016, "Compliance with 10 CFR 50.54(hh)(2) and 10 CFR 52.80(d) Loss of

Large Areas of the Plant due to Explosions of Fires from a Beyond-Design Basis Event.” The Committee decided that it was satisfied with the EDO's response.

- The Committee considered the EDO's response of June 15, 2010, to comments and recommendations included in the May 17, 2010, ACRS letter on the Revised Standard Review Plan for Spent Fuel Dry Storage Systems (NUREG-1536). The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of June 10, 2010, to comments and recommendations included in the May 19, 2010, ACRS letter on the 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. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of May 27, 2010, to comments and recommendations included in the April 21, 2010, ACRS letter on the Chapters 2, 4, 5, 8, 10, 12, and 17 of the Safety Evaluation Report with Open Items Associated with the Review of the U.S. Evolutionary Power Reactor Design Certification Application. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of May 14, 2010, to comments and recommendations included in the March 29, 2010, ACRS report on the Draft Final Revision 1 of Regulatory Guide 1.62, “Manual Initiation of Protective Actions.” The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of May 25, 2010, to comments and recommendations included in the February 18, 2010, ACRS report on Draft Final Regulatory Guide 1.217, “Guidance for the Assessment of Beyond Design-Basis Aircraft Impacts.” The Committee decided that the response does not adequately address all of their concerns. The Committee plans to consider a response letter back to the staff during its September 9-11, 2010, meeting.

SCHEDULED TOPICS FOR THE 575th ACRS MEETING

The following topics are scheduled for the 575th ACRS meeting, to be held on September 9-11, 2010:

- Potential Approaches to Resolve Generic Safety Issue (GSI)-191, Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance
- Amendment to the Design Control Document (DCD) for the Certified ABWR design
- Long-term Core Cooling Approach for the Economic Simplified Boiling Water Reactor (ESBWR) Design
- License Application for Mixed Oxide (MOX) Fuel Fabrication Facility and the Associated Safety Evaluation Report
- Proposed Interim Staff Guidance (ISG) DC/COL-ISG-13, “Assessing the Consequences of an Accidental Release of Radioactive Materials from Liquid Waste Tanks,” and Proposed DC/COL-ISG-14, “Assessing Groundwater Flow and Transport of Accidental

Radionuclide Releases”

- Assessment of the Quality of Selected NRC Research Projects
- Response to the EDO regarding Regulatory Guide 1.217, “Guidance for the Assessment of Beyond Design-Basis Aircraft Impacts”

Sincerely,

/RA/

Said Abdel-Khalik
Chairman

Radionuclide Releases”

- Assessment of the Quality of Selected NRC Research Projects
- Response to the EDO regarding Regulatory Guide 1.217, “Guidance for the Assessment of Beyond Design-Basis Aircraft Impacts”

Sincerely,

*/RA/*Said Abdel-Khalik
ChairmanAccession No: ML102220070 Publicly Available (Y/N): Y Sensitive (Y/N): N

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