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

SL-0552

July 10, 2007

The Honorable Dale E. Klein
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Klein:

SUBJECT: SUMMARY REPORT – 543rd MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, JUNE 6-8, 2007, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 543rd meeting, June 6-8, 2007, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following letters and memoranda:

LETTERS

Letters to Luis A. Reyes, Executive Director for Operations, NRC, from William J. Shack, Chairman, ACRS:

- Draft Final NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," dated June 18, 2007

- General Electric (GE) Licensing Topical Reports on Maximum Extended Load Line Limit Analysis Plus (MELLLA+), and Applicability of GE Methods to Expanded Operating Domains, dated June 22, 2007

MEMORANDA

Memoranda to Luis A. Reyes, Executive Director for Operations, NRC, from Frank P. Gillespie, Executive Director, ACRS:

- Review of the Final Rule to Amend 10 CFR Parts 19, 20 and 50: Occupational Dose Records, Labeling Containers, and the Total Effective Dose Equivalent (TEDE), dated June 12, 2007

- Draft Regulatory Guide DG-1148, "Qualification of Safety-Related Battery Chargers and Inverters for Nuclear Power Plants," dated June 12, 2007

- Draft Regulatory Guide DG-4012, "Minimization of Contamination and Radioactive Waste Generation in Support of Decommissioning," dated June 13, 2007

- Draft Regulatory Guide DG-5019, "Reporting of Safeguards Events," dated June 12, 2007

- Draft Regulatory Guide DG-5021, "Managing the Safety/Security Interface," dated June 12, 2007

HIGHLIGHTS OF KEY ISSUES

1. Draft Final NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire"

The Committee met with representatives of the NRC staff and the Nuclear Energy Institute (NEI) to discuss draft final NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire." The staff described the purpose of NUREG-1852 and summarized responses to the public comments. NUREG-1852 provides technical guidance to determine whether proposed operator manual actions are feasible and can be performed reliably under a wide range of plant conditions. These actions must be not only feasible but also reliable because they are relied upon in lieu of passive fire barriers that have high reliability. The objective is to ensure that adequate safety is maintained when operator manual actions are used. NUREG-1852 will also help ensure consistent reviews of licensee requests for NRC approval of operator manual actions in response to fire.

A representative of NEI described some of the many public comments that were made on NUREG-1852 and stated that they disagree with the staff's resolutions.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated June 18, 2007 agreeing with the staff that operator manual actions should be both feasible and reliable. The Committee recommended that NUREG-1852 be published after revision and review by the ACRS. The recommended revisions were to (a) include a section in the report describing its intended use in context, (b) provide advice as to the skills of the team that determines the time margin, and (c) mention the potential use of other existing methods to facilitate the search for scenarios initiated by fires.

2. Maximum Extended Load Line Limit Analysis Plus (MELLLA+) and Supporting Topical Reports

The Committee met with representatives of the NRC staff and GE to discuss the staff's Safety Evaluations for GE Licensing Topical Reports NEDC-33006P, Revision 2, "General Electric Boiling Water Reactor Maximum Extended Load Line Limit Analysis Plus," and NEDC-33173P, "Applicability of GE Methods to Expanded Operating Domains." Representatives of GE presented an overview of the MELLLA+ expanded operating domain and supporting topical reports. GE accentuated the need for the MELLLA+ flow window in order to efficiently operate boiling water reactors at extended power uprate (EPU) levels. The staff summarized the results of its evaluation of MELLLA+ and the applicability of GE Methods to expanded operating domains.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated June 22, 2007. The Committee concurred with the staff's conclusion that application of the GE methods to EPU and the MELLLA+ operating domains, with the limitations imposed by the staff, is acceptable. The Committee also concurred with the staff's conclusion that application of the GE process for analysis of operation in the MELLLA+ region, with the limitations imposed by the staff including the modifications made by the staff during discussions with the Committee, is acceptable.

3. Overview of the PHEBUS-FP Experimental Program and Results of Recent Tests

The Committee met with representatives of the NRC staff and the Institute of Radiological Protection and Nuclear Safety in France to discuss the PHEBUS-FP (fission product) experimental program and the results of recent tests. The staff described the history of the development of the NRC severe accident source term and how the PHEBUS-FP results are used. The PHEBUS-FP program provides insights and information on fuel degradation, hydrogen production, fission product release, accident progression, and mechanisms for the transport of fission products. The test facility is a simplified model of a reactor coolant system and containment. The PHEBUS-FP test results have been used to validate severe accident codes such as MELCOR and to revise the accident source term reported in NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants." The ongoing activities involve separate effects testing to better understand various specific accident phenomena such as fission product chemistry, fuel clad oxidation in air, and fission product release from mixed oxide and high burnup fuels.

Committee Action

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

4. Status Report on the Quality Assessment of Selected NRC Research Projects

The Committee was briefed by the members of the ACRS panels regarding the status of their assessment of the quality of the NRC research projects on "Fatigue Crack Flaw Tolerance in Nuclear Power Plant Piping" and "Technical Review of the Online Monitoring Techniques for Performance Assessment."

Committee Action

The Committee plans to continue its discussion of its quality assessment of selected NRC research projects during its July 2007 meeting.

5. ACRS Member's Issues Associated with the Technology-Neutral Framework for Future Plant Licensing

The Committee continued its discussion of individual ACRS member's issues associated with the technology-neutral regulatory framework for future plant licensing. The majority of the discussion focused on the pros and cons of maintaining the concept of design- or licensing-basis events in the technology-neutral regulatory framework for future plant licensing.

Committee Action

The Committee plans to consider a report on the technology-neutral regulatory framework during its July 2007 meeting.

6. Subcommittee Report on Plant License Renewal

The Chairman of the Plant License Renewal Subcommittee provided a report to the Committee summarizing the results of the June 5, 2007 meeting with the NRC staff and representatives of Entergy to review the draft Safety Evaluation Report (SER) related to the license renewal application for the Vermont Yankee Nuclear Power Station. The current operating license expires on March 21, 2012. During the meeting, Entergy described the licensing history, major plant improvements, the license renewal project, and specific issues related to the drywell shell and torus shell integrity. The staff's draft SER issued on March 30, 2007, contained six confirmatory items and no open items. The major discussion topics were the resolution of cracks found in the steam dryer during the recent refueling outage, plant changes related to the extended power uprate, and the number of exceptions to the Generic Aging Lessons Learned (GALL) Report.

Committee Action

The Committee plans to review the final SER associated with this license renewal application during its September 2007 meeting.

7. Meeting with the Commission

On June 7, 2007, the Committee met with NRC Commissioners to discuss topics of mutual interest, including the following:

- Framework for Future Plant Licensing
- Digital Instrumentation and Controls Systems (Digital I&C) Activities
- License Renewal/Extended Power Uprates
- Human Reliability Analysis Models

In a Staff Requirements Memorandum (SRM) dated June 22, 2007, stemming from the above meeting, the Commission stated that it supports the Committee's recommendations in its letter dated May 18, 2007, concerning Digital I&C. The Commission also stated that it values the Committee's bi-annual review of the NRC Safety Research Program. In its next report, due March 2008, the Committee should identify any gaps it perceives in the research program and provide recommendations on redirecting funding to high priority areas. In addition, the Committee should identify areas where the research needs are considered to have been satisfied.

The Committee will continue to follow-up on the staff activities in the Digital I&C area. Also, ACRS will address the issues raised by the Commission regarding the Safety Research Program in its next report to the Commission.

8. Election of Member-at-Large

The Committee elected Dr. Said Abdel-Khalik as Member-at-Large for the Planning and Procedures Subcommittee.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of May 18, 2007, to comments and recommendations included in the April 23, 2007 ACRS letter on Risk-informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications Guidelines. The Committee decided that it was satisfied with the EDO's response.

- The Committee considered the EDO's response of May 22, 2007 to comments and recommendations included in the April 23, 2007 ACRS letter on Revision 3 to Standard Review Plan Section 4.2, "Fuel System Design." The Committee decided that it was satisfied with the EDO's response.

- The Committee considered the EDO's response of April 10, 2007 to comments and recommendations included in the February 16, 2007 ACRS report on the 5 percent power uprate for Browns Ferry Nuclear Plant Unit 1. The Committee decided that it was not satisfied with the EDO's response. The ACRS report noted that granting of containment overpressure credit during long-term loss-of-coolant accident and 10 CFR Part 50 Appendix R fire scenarios at 120 percent of the original licensed thermal power will require support by more complete evaluations. The EDO response did not address the staff's plans to deal the Committee's concerns. The Committee plans to continue its discussion of this issue with its staff during the Committee's review of the 20 percent extended power uprate application for Browns Ferry Units 1, 2, and 3.

- The Committee considered the EDO's response of April 16, 2007 to comments and recommendations included in the March 19, 2007, ACRS report on the assessment of aircraft impacts on new plants. The Committee decided that it was satisfied with the EDO's response.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from May 6, 2007 through June 5, 2007, the following Subcommittee meetings were held:

- Thermal-Hydraulic Phenomena – May 14-15, 2007

The Subcommittee discussed the status of plant-specific implementation plans for the resolution of GSI-191 (Assessment of Debris Accumulation in PWR Sump Performance). This included a review of the installation of new strainers, the debris generation and transport calculational methodology, and chemical effects tests.

- Thermal-Hydraulic Phenomena – May 24-25, 2007

The Subcommittee reviewed the staff's Safety Evaluations associated with GE Licensing Topical Reports NEDC-33006P, Revision 2, "General Electric Boiling Water Reactor Maximum

Extended Load Line Limit Analysis Plus," and NEDC-33173P, "Applicability of GE Methods to Expanded Operating Domains."

- Plant License Renewal – June 5, 2007

The Subcommittee reviewed the License Renewal Application for the Vermont Yankee Nuclear Power Station, the associated draft SER, and other related documents.

- Planning and Procedures – June 5, 2007

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

LIST OF MATTERS FOR THE ATTENTION OF THE EDO

- The Committee plans to review the draft final version of Regulatory Guide DG-5021,"Managing the Safety/Security Interface," after reconciliation of public comments.

- The Committee plans to review the draft final version of Regulatory Guide DG-5019, "Report of Safeguards Events," after reconciliation of public comments.

- The Committee plans to review the draft final version of Regulatory Guide DG-1148, "Qualification of Safety-Related Battery Chargers and Inverters for Nuclear Power Plants," after reconciliation of public comments.

- The Committee referred the draft Regulatory Guide DG-4012, "Minimization of Contamination and Radioactive Waste Generation in Support of Decommissioning," to the Advisory Committee on Nuclear Waste and Materials for review.

- The Committee plans to review the final SER associated with the Vermont Yankee license renewal application during its September 2007 meeting.

- The Committee plans to continue its discussion of its quality assessment of selected NRC research projects during the July 2007 meeting.

- The Committee would like to have the opportunity to review any significant changes in the final SERs associated with GE Licensing Topical Reports NEDC-33006P, Revision 2, "General Electric Boiling Water Reactor Maximum Extended Load Line Limit Analysis Plus," and NEDC-33173P, "Applicability of GE Methods to Expanded Operating Domains." The Committee would also like the opportunity to review the first few plant-specific MELLLA+ applications.

- The Committee would like to review the revisions to draft final NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," prior to issuance.

PROPOSED SCHEDULE FOR THE 544TH ACRS MEETING, JULY 11-13, 2007

- Sampling Methodology and Statistical Thresholds for Selecting Inspections, Tests, Analyses, and Acceptance Criteria (ITAACs) for Inspection
- Dissimilar Metal Weld Issue
- Activities in the Safeguards and Security Areas
- Revisions to Draft Final NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire"
- Draft NUREG-0654, Supplement 3, "Criteria for Protective Action Recommendations for Severe Accidents"
- Browns Ferry Unit 1 Restart Activities
- Status Report on the Quality Assessment of Selected NRC Research Projects

Sincerely,

/RA/

William J. Shack
Chairman

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/RA/

William J. Shack
Chairman

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