



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

SL-0537

February 3, 2006

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

Dear Chairman Diaz:

SUBJECT: SUMMARY REPORT - 528<sup>th</sup> MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, DECEMBER 7-10, 2005, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 528<sup>th</sup> meeting, December 7-10, 2005, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following report, letters, and memoranda:

REPORT:

Report to Nils J. Diaz, Chairman, NRC, from Graham B. Wallis, Chairman, ACRS:

- Vermont Yankee Extended Power Uprate, dated January 4, 2006

LETTERS:

Letters to Luis A. Reyes, Executive Director for Operations, NRC, from Graham B. Wallis, Chairman, ACRS:

- Draft Final Generic Letter 2005-XX, "Impact of Potentially Degraded Hemyc/MT Fire Barrier Materials on Compliance with Approved Fire Protection Programs, dated December 21, 2005
- Early Site Permit Application for the Grand Gulf Site and the Associated Final Safety Evaluation Report, dated December 23, 2005

MEMORANDA:

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

- Proposed Revision to Standard Review Plan Section 17.5, "Quality Assurance Program Description Design Certification, Early Site Permit and New License Applicants," dated December 16, 2005

- Proposed Revision to Regulatory Guide 1.76, “Design Basis Tornado and Tornado Missiles for Nuclear Power Plants,” and Standard Review Plan, Sections 2.3.1, “Regional Climatology,” and 3.5.1.4, “Missiles Generated by Tornado and Extreme Winds,” dated December 16, 2005
- Draft Regulatory Guide DG-1120, “Transient and Accident Analysis Methods,” and Standard Review Plan Chapter 15, Section 15.0.2, “Review of Transient and Accident Methods,” dated December 16, 2005

## HIGHLIGHTS OF KEY ISSUES

### 1. Final Review of the Vermont Yankee Extended Power Uprate Application and the Associated Safety Evaluation

The Committee reviewed the application by Entergy Nuclear Vermont Yankee for an Extended Power Uprate (EPU) for the Vermont Yankee Nuclear Power Station. The Committee considered several technical issues, most notably, the request by the licensee for containment overpressure credit related to the emergency core cooling system (ECCS) pump Net Positive Suction Head calculation during design basis loss-of-coolant accident (LOCA) and anticipated transient without scram (ATWS) scenarios. The Committee also considered the licensee’s actions related to steam dryer cracks, which have been discovered at other BWRs that have implemented EPUs.

Entergy, the NRC staff, and representatives of the State of Vermont and the New England Coalition made presentations regarding this application and many comments were submitted by members of the public. Members of the public especially emphasized the need for an independent inspection of the plant, and they commented that the inspection performed by the NRC staff was not sufficiently thorough to support the uprate.

### Committee Action

The Committee issued a report dated January 4, 2006, recommending that the Vermont Yankee Extended Power Uprate be approved. The Committee also recommended that the change in the licensing basis associated with the requested containment overpressure credit be approved.

The Committee also concluded that the monitoring that will be performed during the ascension to uprate power provides adequate assurance that, if resonant vibrational modes are induced in the steam dryers, they will be identified prior to component failure.

The Committee also concluded that load rejection and main steam isolation valve closure transient tests are not warranted, because the planned transient testing program adequately addresses the performance of the modified systems. The staff used EPU Review Standard RS-001 to evaluate this application, and the Committee commented that it provides a structured process for the review of applications for extended power uprates, and its continued use and improvement are encouraged.

## 2. Draft ACRS Report on the NRC Safety Research Program

The ACRS provides the Commission a biennial report, presenting the Committee's observations and recommendations concerning the overall NRC Safety Research Program. During the December meeting, the Committee discussed its draft 2006 report to the Commission on the NRC Safety Research Program.

### Committee Action

The Committee plans to continue its discussion of its draft report on the NRC safety research program during its February 2006 meeting.

## 3. Early Site Permit Application for the Grand Gulf Nuclear Station and the Associated Final Safety Evaluation Report

The Committee heard presentations by and held discussions with representatives of the NRC staff and System Energy Resources, Inc. (SERI), the applicant for an early site permit (ESP) for the Grand Gulf site. The Committee discussed the application and the associated NRC staff's final safety evaluation report (FSER).

SERI seeks a site permit for a reactor or a set of reactor modules of total power up to 4300 MWt on a site adjacent to the current Grand Gulf Nuclear Power Station 1, a boiling water reactor (BWR/6) with a Mark III containment. With the additional unit or modules, the total nuclear generating capacity at the Grand Gulf site could be as high as 8600 MWt. The Grand Gulf site had previously been approved for two units, but the second unit was not completed.

The SERI application for an ESP does not specify a particular power plant technology for the new reactor to be placed on the proposed site. The ESP, instead, uses a plant parameter envelope of power plant characteristics that is intended to bound the reactor technology that could eventually be selected.

### Committee Action

The Committee issued a letter to the NRC Executive Director for Operations (EDO) on this matter dated December 23, 2005, commending the NRC staff on the development of a comprehensive and readable FSER. The Committee agreed with the staff's three permit conditions for an ESP and 26 action items for the combined license phase. The Committee, however, stated that the FSER should be issued once the staff has made more explicit analyses of the hazards posed by explosions in transportation accidents on the Mississippi River. The NRC staff also needs to provide additional guidance to applicants concerning the discussion in an application of major features of the emergency planning for a proposed site.

4. Draft Final Generic Letter, "Impact of Potentially Degraded Hemyc/MT Fire Barrier Materials on Compliance with Fire Protection Regulations"

The Committee heard presentations by and held discussions with representatives of the staff regarding the Draft Final Generic Letter, "Impact of Potentially Degraded Hemyc/MT Fire Barrier Materials on Compliance with Fire Protection Regulations." The staff provided the Committee a summary of its responses to the comments received during the public comment period. The staff explained the justification for the Draft Final Generic Letter. The Office of Nuclear Regulatory Research (RES) tests showed the Hemyc fire barrier failed to meet the 1-hour requirement. A representative from the Nuclear Energy Institute (NEI) provided NEI's view on the Draft Final Generic Letter. NEI said this Generic Letter is another example of a generic communication imposing new regulatory requirements, and the NRC has the right to amend its regulations but this should be done in the more disciplined rulemaking process. The staff stated the Generic Letter is not imposing a new burden and does not constitute a backfit according the Committee to Review Generic Requirements.

Committee Action

The Committee issued a letter to the NRC EDO on this matter dated December 21, 2005, recommending that the staff issue the Generic Letter.

5. Meeting with the NRC Commissioners

The Committee met with the NRC Commissioners to discuss items of mutual interest. Topics for discussion included license renewal, early site permits, new plant licensing, proposed alternative embrittlement criteria in 10 CFR 50.46, fire protection matters, power uprate technical issues, and future ACRS activities.

In a Staff Requirements Memorandum (SRM) dated December 20, 2005, resulting from this meeting, the Commission requested that the ACRS inform the Commission of its plans to manage the increased workload resulting from the anticipated receipt of new reactor designs and combined license applications. Also, the ACRS shall make among its highest priorities its role in the resolution of GSI-191.

Committee Action

This was an information briefing. The Committee plans to consider this matter during future meetings as further progress has been made by the staff.

6. Proposed Program Plan and Advance Notice of Proposed Rulemaking for Risk-Informing 10 CFR Part 50

The Committee met with the NRC staff to discuss a draft Commission Paper which outlines a formal program plan to make a risk-informed and performance-based revision to 10 CFR Part 50, including revisions to the applicable Regulatory Guides, Standard Review Plan, or other guidance documents. The program plan was developed in response to the Commission's SRM dated May 9, 2005. The draft Commission Paper also included an Advance Notice of Proposed Rulemaking that seeks stakeholder feedback on rulemaking approaches for making technical requirements for power reactors more risk-informed and performance-based.

7. Staff Activities Associated with Responding to the Commission's SRM related to Safety Conscious Work Environment and Safety Culture

The Committee heard presentations by and held discussions with representatives of the NRC staff on NRC's safety culture initiatives described in SECY-04-0111 [Recommended Staff Actions Regarding Agency Guidance in the Areas of Safety Conscience Work Environment and Safety Culture] and the associated Commission's SRM dated August 30, 2004.

The staff described what had been done organizationally with respect to Commission's direction. This included establishing a Steering Committee, a Safety Culture Working Group, and a support Regional team. Also, the staff discussed the November 29<sup>th</sup> and 30<sup>th</sup>, 2005 public meeting and the results that lead to the development of a conceptual approach titled Option G, and how Option G would address safety culture within a regulatory framework, including information sources, documentation, assessment, and follow-up which could include NRC's request to have licensees perform self-assessment of their safety culture. Mr. Cobey indicated that using a phased approach, safety culture would be addressed at different levels. At the lowest level, this would include looking for safety culture issues within baseline inspection of licensee's root cause analysis. In a degraded cornerstone column, the staff may request a licensee to have an independent assessment. And in a multiple/repetitive degraded cornerstone column, the NRC may perform its own evaluation of a licensee's safety culture. A representative of NEI provided insights on INPO's safety culture initiative.

Committee Action

This was an information briefing. The Committee plans to decide on a course of action on this matter following a joint meeting of the ACRS Subcommittees on Human Factors and on Reliability and Probabilistic Risk Assessment scheduled to be held on January 25, 2006.

8. Election of ACRS Officers for CY 2006

The Committee re-elected Graham B. Wallis as ACRS Chairman, William J. Shack as ACRS Vice-Chairman, and John D. Sieber 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 November 28, 2005, to comments and recommendations included in the ACRS interim letter dated October 19, 2005, concerning the safety aspects of the license renewal application for the Browns Ferry Nuclear Plant Units 1, 2, and 3. The Committee decided that it was satisfied with the EDO's response.

**The EDO response stated that a licensee commitment to implement operating experience and aging management program reviews before entering the period of extended operation will be included in the safety evaluation report for the Browns Ferry extended power uprate application currently under review. The staff also committed to address the Committee's concerns regarding Unit 1 operating experience, the Unit 1 Periodic Inspection Program, and the terminology used for license-renewal related inspections in the final safety evaluation report related to the license renewal of the Browns Ferry Nuclear Plant Unit 1, 2, and 3.**

- The Committee considered the EDO's November 3, 2005 response to the ACRS letter of September 23, 2005, concerning the Committee's review of the proposed technical basis for revision of the embrittlement criteria in 10 CFR 50.46(b). The Committee decided that it was satisfied with the EDO's response.

## OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from November 3, 2005, through December 7, 2005, the following Subcommittee meetings were held:

- Power Uprates - November 15-16, 2005

The Subcommittee reviewed the application by Entergy Nuclear Northeast (Entergy) for an extended power uprate for the Vermont Yankee Nuclear Power Station. This meeting was held in Brattleboro, VT, to encourage public participation.

- Reliability and Probabilistic Risk Assessment - November 17-18, 2005

The Subcommittee discussed the details of the Standardized Plant Analysis Risk (SPAR) models development program.

- Power Uprates - November 29-30, 2005

The Subcommittee continued its review of the application by Entergy Nuclear Northeast (Entergy) for an extended power uprate for the Vermont Yankee Nuclear Power Station.

- Planning and Procedures - December 7, 2005

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 discuss with the NRC staff the lessons learned as a result of the review of the early site permit applications for Grand Gulf, North Anna, and Clinton. The Committee plans to discuss the staff's analyses of the hazards posed to the proposed Grand Gulf site by explosions in transportation accidents on the Mississippi River. In addition, the Committee plans to discuss the NRC staff's guidance concerning the major features of the emergency planning for a proposed site.
- The Committee would like to hear a briefing from the NRC staff after the staff has reviewed the licensees' responses to the Generic Letter 2005-xx, "Impact of Potentially Degraded Hemyc/MT Fire Barrier Materials on Compliance with Approved Fire Protection Programs."
- The Committee plans to review the draft final version of the SRP Section 17.5, "Quality Assurance Program Description Design Certification, Early Site Permit and New License Applicants," after reconciliation of public comments.
- The Committee plans to review the draft final revision to Regulatory Guide 1.76, "Design Basis Tornado and Tornado Missiles for Nuclear Power Plants," and SRP Sections 2.3.1, "Regional Climatology," and 3.5.1.4, "Missiles Generated by Tornado and Extreme Winds," after reconciliation of public comments.
- The Committee plans to review additional guidance being developed by the staff for use in the consideration of overpressure credit.

PROPOSED SCHEDULE FOR THE 529<sup>th</sup> ACRS MEETING

The Committee agreed to consider the following topics during the 529<sup>th</sup> ACRS meeting, to be held on February 9-11, 2006:

- Evaluation of Human Reliability Analysis (HRA) Methods Against Good Practices
- Proposed Revision to SRP Section 14.2.1, "Generic Guidelines for Extended Power Uprate Testing Programs"
- Draft ACRS Report on the NRC Safety Research Program
- FERRET Reactor Vessel Fluence Methodology
- Proposed revisions to SRP Section 14.2.1, "Generic Guidelines for Extended Power Uprate Testing Programs," and related matters.

Sincerely,

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Graham B. Wallis  
Chairman