



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

SL-0545

November 6, 2006

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

Dear Chairman Klein:

SUBJECT: SUMMARY REPORT - 536<sup>th</sup> MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, OCTOBER 4-6, 2006, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 536<sup>th</sup> meeting, October 4-6, 2006, 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 Graham B. Wallis, Chairman, ACRS:

- Draft Final NUREG-1824, "Verification and Validation of Selected Fire Models for Nuclear Power Plant Applications," dated October 25, 2006
- Draft Revision 1 to Regulatory Guide 1.200 (DG-1161), "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," and SRP Section 19.1, "Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," dated October 23, 2006

MEMORANDA:

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

- Draft Final Revisions to 10 CFR Part 26, "Fitness-for-Duty Programs," dated October 6, 2006
- Proposed Revisions to Regulatory Guides in Support of New Reactor Licensing Activities, dated October 16, 2006
- Supplement 1 to Final Safety Evaluation Report for North Anna Early Site Permit (ESP) Application, dated October 13, 2006

OTHER:

Letter to Brian Sheron, Director, Office of Nuclear Regulatory Research, from Graham B. Wallis, Chairman, ACRS, Subject: ACRS Assessment of the Quality of Selected NRC Research Projects - FY2006, dated October 17, 2006

HIGHLIGHTS OF KEY ISSUES

1. Draft Final Revision 3 to Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a Loss-of-Coolant Accident"

The Committee met with representatives of the NRC staff to discuss proposed Revision 3 to Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a Loss-of-Coolant Accident." The staff described the 2003 revision to 10 CFR 50.44. For currently operating and future, similar reactors, this rule eliminated the design basis accident as a source of significant combustible gas, thereby eliminating the need for recombiners and purge/repressurization systems. When this rule was finalized, the staff did not finalize the associated Regulatory Guide or the Standard Review Plan (SRP) Section. Proposed Revision 3 to Regulatory Guide 1.7 provides detailed guidance on implementing the revised rule. The staff stated that most of the changes from the 2003 draft of this Guide are editorial, except for a clarifying footnote regarding environmental equipment qualification of oxygen monitors. The Committee commented extensively on the importance of assuring effective atmospheric mixing inside containment. The staff also briefly discussed a revision to the associated SRP Section 6.2.5, which also only incorporated editorial changes from the 2003 version.

Committee Action:

The Committee plans to finalize a letter to the Executive Director for Operations on this matter, during the November 2006 meeting.

2. Proposed Updates to Regulatory Guides and SRP Sections in Support of New Reactor Licensing

The Committee met with representatives of the NRC staff to discuss the criteria the staff used to identify the Regulatory Guides and SRP Sections that needed to be developed or revised in support of new reactor licensing. The staff provided its basis for recommending which of these Regulatory Guides and SRP Sections be reviewed by the ACRS. Most of the revisions to these Regulatory Guides and SRP Sections are to reflect current practice and do not introduce new staff positions.

Committee Action

This was an information briefing. The Committee plans to conduct an accelerated review of all Regulatory Guides and SRP Sections that it determines warrants ACRS review.

### 3. Master Integrated Plan for New Reactor Licensing Activities

The Committee met with representatives of the NRC staff to discuss its business process integration activities related to new reactor licensing. This involves the use of a Master Integrated Schedule as a communication and coordination tool to identify, address, and resolve specific issues at a high level (e.g., training, space, infrastructure, information technology). In addition, the staff has worked with the ACRS to develop a Master Project Management Plan that contains resource-loaded schedules (gant charts) for reviewing early site permit, design certification, and combined license applications. The Master Project Management Plan is a living tool that can project, given certain planning assumptions, the number and schedule of ACRS meetings.

#### Committee Action

This was an information briefing. No Committee action was necessary. The Committee plans to continue to work with the NRC staff to develop and refine the Master Integrated Schedule and the Master Project Management Plan.

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

The Committee discussed the ACRS report on the quality assessment of research projects selected for FY 2006. The Committee reviewed containment capacity studies at Sandia National Laboratories and the melt coolability and concrete interaction program at Argonne National Laboratory.

#### Committee Action

The Committee issued a letter to the Director of the Office of Nuclear Regulatory Research, dated October 17, 2006, transmitting its final report on the assessment of the quality of selected NRC research projects for FY 2006.

### 5. 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 October 3, 2006 meeting with representatives of the NRC staff and AmerGen regarding the license renewal application for the Oyster Creek Generation Station and the associated Safety Evaluation Report (SER) with Open Items. Representatives of the Nuclear Information Resource Service and the Rutgers Environmental Law Clinic expressed concerns regarding the integrity of the drywell liner and the adequacy of AmerGen's aging management program. The current operating license expires on April 9, 2009. The major issue discussed during the meeting was corrosion of the drywell liner. The Subcommittee members asked several questions regarding this issue which were not completely addressed.

#### Committee Action

The Plant License Renewal Subcommittee plans to hold another meeting in January 2007 to discuss further the containment drywell liner issue. The ACRS full committee intends to meet its original schedule to review this application and the staff's final SER during its February 1-3, 2007 meeting subject to receiving the final SER on December 6, 2006, as committed to by the staff.

#### 6. Proposed Revision 1 to Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities"

The Committee met with representatives of the NRC staff to discuss the draft final Revision 1 to Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," and the associated SRP Section 19.1, "Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities." The staff described the history of the development of the Regulatory Guide, which endorses the ASME Probabilistic Risk Assessment Standard. Following several pilot applications, the ASME Standard was updated, and now the staff is revising the Regulatory Guide. The staff described the revisions to the Guide and the associated appendices. The SRP was revised to provide indicators to the staff that would signal the need for an audit of the licensee's probabilistic risk assessment. The staff noted that a public meeting was held to obtain comments and briefly discuss one area of disagreement with industry. A representative from the Nuclear Energy Institute explained their objections, but clarified that it is not a major issue.

#### Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated October 23, 2006, recommending that the revised Regulatory Guide and SRP Section be issued for use after reconciliation of public comments. The Committee also recommended that a regulatory guide on performance of sensitivity and uncertainty analyses be developed.

#### 7. Verification and Validation of Selected Fire Models

The Committee met with representatives of the Office of Nuclear Regulatory Research, the Electric Power Research Institute, and the National Institute of Standards and Technology to discuss a collaborative project for verification and validation of selected fire models that are commonly used in the nuclear industry. NUREG-1824 is the result of this collaborative project.

#### Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated October 25, 2006, recommending that NUREG-1824 be published. The Committee also recommended that the user's guide to be developed by the staff include estimates of the ranges of normalized parameters to be expected in nuclear plant applications and quantitative estimates of the uncertainties associated with each model's predictions.

## RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of July 20, 2006, to comments and recommendations included in the June 15, 2006 ACRS letter on the draft final Generic Letter 2006-XX, "Inaccessible or Underground Cable Failures that Disable Accident Mitigation Systems." The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of September 6, 2006, to comments and recommendations included in the August 1, 2006 ACRS letter on Generic Safety Issue (GSI) 191 - Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance. The EDO response disagreed with the Committee's recommendation for continued confirmatory research. Although the previously funded research has been concluded, the staff has not ruled out additional confirmatory research. The EDO response also acknowledged the limitations of the integral tests but stated that the staff expects the supplements to Generic Letter 2004-02 will demonstrate that debris effects have been bounded. The Committee decided that it was not satisfied with the EDO's response.
- The Committee considered the EDO's response of October 19, 2006, to comments and recommendations included in the September 19, 2006 ACRS letter on the Safety Aspects of the License Renewal Application for the Monticello Nuclear Generating Plant. The Committee decided that it was satisfied with the EDO's response.

**The staff plans to update the Committee on the status of its review efforts regarding Generic Safety Issue - 191, including any conclusions regarding the need for additional research.**

## OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from September 6, 2006, through October 3, 2006, the following Subcommittee meetings were held:

- Reliability and Probabilistic Risk Assessment — September 21, 2006

The Subcommittee reviewed draft final NUREG-1824, "Verification and Validation of Selected Fire Models for Nuclear Power Plant Applications."

- Plant License Renewal — October 3, 2006

The Subcommittee reviewed the license renewal application for the Oyster Creek Generation Station and the associated Safety Evaluation Report with Open Items prepared by the NRC staff.

- Planning and Procedures — October 3, 2006

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 would like to be informed of any significant changes made to Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-informed Activities," or SRP Section 19.1, "Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-informed Activities," as a result of public comments.
- The Committee plans to review the regulatory guide on performance of sensitivity and uncertainty analyses when it is developed.
- The Committee expects to receive a list of candidate projects from the Office of Nuclear Regulatory Research for its quality assessment of selected NRC research projects during 2007.
- The Committee would like to be informed of any significant changes made to the Regulatory Guides listed in the October 16, 2006 memorandum from John T. Larkins, Executive Director, ACRS to Luis A. Reyes, Executive Director for Operations, NRC.
- The Committee referred proposed revisions to Regulatory Guide 1.112, "Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Light-Water-Cooled Nuclear Power Reactors," and Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Inception Through Normal Operations to License Termination) - Effluent Streams and the Environment," to the Advisory Committee on Nuclear Waste for possible review.
- The Committee plans to review the proposed revision to Regulatory Guide 1.189, "Fire Protection for Operating Nuclear Power Plants," and SRP Section 9.5.1, "Fire Protection Program," during its November 2006 meeting.
- The Plant License Renewal Subcommittee plans to continue its review of the license renewal application for the Oyster Creek Generation Station during a January 2007 subcommittee meeting. The ACRS full committee is scheduled to review this application and the associated final SER during its February 1-3, 2007 meeting subject to receiving the staff's final SER on December 6, 2006, as previously committed to by the staff.

PROPOSED SCHEDULE FOR THE 537<sup>th</sup> ACRS MEETING

The Committee agreed to consider the following topics during the 537<sup>th</sup> ACRS meeting, to be held on November 1-3, 2006:

- Final Review of the License Renewal Application for the Palisades Nuclear Plant
- Proposed Revisions to Regulatory Guide 1.189, "Fire Protection for Operating Nuclear Power Plants"
- Draft Final Rule to Risk-Inform 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors"
- Proposed Revisions to Regulatory Guides and Standard Review Plan Sections in Support of New Reactor Licensing
- Potential Collaborative Research on Human Reliability Analysis Methods
- Proposed ACRS Report on Draft Final Revision 3 to Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a Loss-of-Coolant Accident"

Sincerely,

**/RA/**

Graham B. Wallis  
Chairman