



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

SL-0544

October 23, 2006

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

Dear Chairman Klein:

SUBJECT: SUMMARY REPORT - 535th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, SEPTEMBER 7-8, 2006, AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

During its 535th meeting, September 7-8, 2006, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following report, letters, and memoranda:

REPORT:

Report to Dale E. Klein, Chairman, NRC, from Graham B. Wallis, Chairman, ACRS:

- Report on the Safety Aspects of the License Renewal Application for the Monticello Nuclear Generating Plant, dated September 19, 2006

LETTERS:

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

- Proposed Direct Final Rule to Amend 10 CFR 50.68, "Criticality Accident Requirements," dated September 21, 2006
- Lessons Learned from the Review of Early Site Permit Applications, dated September 22, 2006

MEMORANDA:

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

- Draft NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," dated September 13, 2006

- Proposed Revision to Standard Review Plan, NUREG-0800, Section 6.1.1, "Engineering Safety Features Materials," dated September 13, 2006
- Proposed Revision to Regulatory Guide 1.23 (DG-1164), "Meteorological Monitoring Programs for Nuclear Power Plants," dated September 13, 2006
- Draft Final Revision to Regulatory Guide 1.76, "Design Basis Tornado for Nuclear Power Plants," dated September 13, 2006
- Questions Raised by Members of the Public During the ACRS Subcommittee Meeting on Palisades Nuclear Plant License Renewal Application, dated September 13, 2006

HIGHLIGHTS OF KEY ISSUES

1. Final Review of the License Renewal Application for the Monticello Nuclear Generating Plant

The Committee met with representatives of the NRC staff and the Nuclear Management Company, LLC (NMC) to discuss the license renewal application for the Monticello Nuclear Generating Plant (MNGP) and the final Safety Evaluation Report (SER) prepared by the NRC staff. The operating license for MNGP expires on September 8, 2010. The applicant has requested approval for continued operation for a period of 20 years beyond the current license expiration date. The applicant discussed operating experience; major equipment replacements and repairs; major exceptions to the Generic Aging Lessons Learned Report; and the commitment tracking system. The staff discussed the results of its evaluation of the Monticello license renewal application as well as the results of the inspection and audit. In the final SER, the staff concluded that the requirements of 10 CFR 54.29(a) have been met.

Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated September 19, 2006, recommending that the NMC application for renewal of the operating license for MNGP be approved.

2. Lessons Learned from the Review of the Early Site Permit Applications

The Committee met with representatives of the NRC staff and applicants to discuss any lessons that may have been learned from the preparation, evaluation, and review of the North Anna, Grand Gulf, and Clinton ESP applications. The staff and applicants agreed that there should be better communications and guidance related to the information contained in applications. Specific areas that would benefit from clearer guidance include: guidance for the electronic submission of applications, guidance on the treatment of the high frequency component of seismic ground motion, guidance for computing the probable maximum flood at proposed sites, and guidance for assuring the integrity of data posted on the Internet. Some issues that consumed a lot of time during the preparation and review of the first three ESP applications, such as the development of the "plant parameter envelope" and the review of specific major features of an emergency plan, are unlikely to require the same level of attention in the future.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated September 22, 2006, summarizing the lessons learned from the review of early site permit applications.

3. Proposed Direct Final Rule to Amend 10 CFR 50.68, "Criticality Accident Requirements"

The Committee met with representatives of the NRC staff and the Nuclear Energy Institute to discuss the direct final rule to amend 10 CFR 50.68, "Criticality Accident Requirements." Under current regulations, two separate analyses using different assumptions must be performed to address spent fuel criticality when a spent fuel transportation package or storage cask is in the spent fuel pool. The rule would remove the requirement to perform one of these analyses. The significant difference in the assumptions of the two analyses is the amount and type of credit taken for the reduction in the fuel reactivity due to its irradiation in the core. The staff stated that one of the approved analytical methodologies does not include full burnup credit because the uncertainty in fission product reactivity effects is large, and has not been quantified. Industry and the Office of Nuclear Regulatory Research are cooperating on a program to obtain the data needed to reduce uncertainties. The results of this research may enable additional burnup credit to be allowed for dry cask storage.

Committee Action

The Committee issued a letter to the Executive Director for Operations on this matter, dated September 21, 2006, recommending that the proposed direct final rule to amend 10 CFR 50.68 be issued for public comment and that the NRC staff complete the research to quantify the reactivity effects of fission products in the fuel.

4. State-of-the-Art Consequence Analysis

The Committee met with representatives of the NRC staff to discuss the staff's plans for performing state-of-the-art reactor consequence analyses. The staff discussed the objectives, approach, and potential uses of the analysis. The staff also provided technical details regarding the improvements in the state-of-the-art that would be utilized in the analysis. The staff specifically addressed technical issues regarding scenario selection, accident progression, and consequence analysis in order to obtain early, informal feedback from the Committee members. The primary purpose of the discussions was to inform the Committee of the staff's project plan to enable the Committee to plan future interactions on the key technical subjects of this project.

Committee Action:

This was an information briefing. No Committee action was necessary. The Committee plans to review the staff's progress in addressing technical issues associated with this project.

5. EDO Response to the ACRS Report on the Review of Ongoing Security-Related Activities

The Committee met with representatives of the NRC staff to discuss the EDO's response of June 29, 2006, to comments and recommendations included in the April 24, 2006 ACRS report on ongoing security-related activities. Specifically, the staff responded to a request from the Committee to clarify the EDO's response to one of the recommendations. The staff discussed the preparation of an options paper for the Commission on whether to perform the types of studies discussed in the Committee's recommendation.

Committee Action:

The Committee conditionally accepted the staff's clarification of the EDO response, with particular emphasis on the options paper for further studies. The Committee would like to be kept informed of the staff's progress on the Commission paper.

6. Risk-Informed Criteria for Societal Risk

Dr. Kress presented a proposal to establish risk-informed criteria for considering the acceptability of the risk associated with nuclear power plants. He noted that the current risk metrics, the core damage frequency, and the large early release frequency do not address all types of releases, their frequencies, or other effects such as land contamination. He proposed that a new method be developed, using frequency-consequence curves and actual risk-benefit analyses. If the risk is very small, on the order of 0.1% of the risk associated with other activities in society, then the risk could be judged to be acceptable.

Committee Action

The Committee decided not to endorse Dr. Kress's proposal, but it encouraged him to continue to work on the concept and prepare a white paper in the future.

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

The Committee discussed the status of the quality assessment of research projects selected for FY 2006. The Committee discussed the results of the panel review and the numerical rating scores for the containment capacity studies at Sandia National Laboratory and the melt coolability and concrete interaction program at Argonne National Laboratory.

Committee Action

The Committee plans to complete the draft ACRS report on the quality assessment of selected projects during the October 4-6, 2006 ACRS meeting.

8. Thermal-Hydraulic Phenomena Subcommittee Report

The Chairman of the Thermal-Hydraulic Phenomena Subcommittee provided a report to the Committee summarizing the results of the August 23-24, 2006 meeting with representatives of the NRC staff, Nuclear Energy Institute, PWR Owners Group, and various PWR sump screen vendors concerning their activities related to the resolution of Generic Safety Issue (GSI)-191. The Subcommittee reviewed the tests that have been performed and encouraged both the NRC staff and the industry to continue their research and modeling efforts.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of July 14, 2006 to comments and recommendations included in the June 16, 2006 ACRS letter on the draft final Generic Letter 2006-XX, "Post-Fire Safe-Shutdown Circuit Analysis Spurious Actuations." The Committee decided that it was satisfied with the EDO's response.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from July 14, 2006 through September 6, 2006, the following Subcommittee meetings were held:

- Plant Operations – July 26, 2006

The Subcommittee reviewed inspection, enforcement, and operational activities in Region I.

- Thermal-Hydraulic Phenomena – August 23-24, 2006

The Subcommittee reviewed issues associated with GSI-191 such as sump screen designs and testing, chemical effects, and downstream effects.

- Early Site Permits – September 6, 2006

The Subcommittee reviewed and developed "Lessons-Learned" items as a result of the review of three (North Anna, Grand Gulf, and Clinton) early site permit applications.

- Planning and Procedures – September 6, 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 kept informed of the staff's progress on a Commission paper regarding options for performing additional studies related to the third recommendation in the April 24, 2006 ACRS report on ongoing security-related activities.

- The Committee plans to review the staff's progress on technical issues associated with performing state-of-the-art reactor consequence analyses during a future meeting.
- The Committee would like to be informed of any significant changes made to the proposed revisions to Regulatory Guide 1.23 (DG-1164), "Meteorological Monitoring Programs for Nuclear Power Plants," prior to its final publication.
- The Committee plans to review the draft final version of NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," during a future meeting.
- The Committee suggested that the NRC staff consider revising the guidance associated with 10 CFR Parts 71 and 72 to allow for burnup credit, as is now permitted in the guidance for 10 CFR Part 50.

PROPOSED SCHEDULE FOR THE 536th ACRS MEETING

The Committee agreed to consider the following topics during the 536th ACRS meeting, to be held on October 4-6, 2006:

- Draft Final Revision 3 to Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment"
- Proposed Updates to Regulatory Guides and Standard Review Plan (SRP) Sections in Support of New Reactor Licensing
- Master Integrated Plan for New Reactor Licensing Activities
- Draft Report on the Quality Assessment of Selected NRC Research Projects
- Proposed Revision 1 to Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities"
- Verification and Validation of Selected Fire Models

Sincerely,

/RA/

Graham B. Wallis
Chairman