



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

SL-0533

August 5, 2005

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

Dear Chairman Diaz:

SUBJECT: SUMMARY REPORT - 524<sup>th</sup> MEETING OF THE ADVISORY COMMITTEE ON  
REACTOR SAFEGUARDS, JULY 6-8, 2005, AND OTHER RELATED  
ACTIVITIES OF THE COMMITTEE

During its 524<sup>th</sup> meeting, July 6-8, 2005, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports, letters, and memoranda:

REPORTS:

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

- Safety Aspects of the License Renewal Application for the Donald C. Cook Nuclear Plant, Units 1 and 2, dated July 18, 2005
- Dominion Nuclear North Anna, LLC, Early Site Permit Application and the Associated NRC Final Safety Evaluation Report, dated July 18, 2005
- Assessment of the Quality of the NRC Research Projects, dated July 15, 2005

LETTERS:

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

- Proposed Revision 2 to Regulatory Guide 1.152, "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants," dated July 15, 2005
- Draft Final Regulatory Guide DG-1137, "Guidelines for Lightning Protection of Nuclear Power Plants," dated July 18, 2005

MEMORANDA:

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

- Proposed Generic Letter 2005-XX, "Inaccessible or Underground Cable Failures That Disable Accident Mitigation Systems," dated July 7, 2005

- Proposed Regulatory Guide DG-1128, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants" (Revision 4 to Regulatory Guide 1.97), dated July 7, 2005
- Proposed Generic Letter 2005-XX, "Impact of Potentially Degraded HEMYC/MT Fire Barrier Materials on Compliance with Approved Fire Protection Programs," dated July 7, 2005
- Proposed Revision to Standard Review Plan Section 6.5.2, "Containment Spray as a Fission Product Cleanup System," dated July 7, 2005
- Proposed Rulemaking to Amend 10 CFR Parts 19 and 20: Collection, Reporting, and Labeling Requirements, and Clarification of Dose Determination Methodology, dated July 7, 2005

Subsequent to the meeting, the ACRS members endorsed issuing the following memoranda to Luis A. Reyes, EDO, NRC, from John T. Larkins, Executive Director, ACRS:

- Draft Final Amendment to 10 CFR 50.55a, "Codes and Standards," dated July 25, 2005
- Proposed Generic Letter 2005-XX, "Post-Fire Safe-Shutdown Circuit Analysis Spurious Actuations," dated July 25, 2005

#### HIGHLIGHTS OF KEY ISSUES

1. Final Review of the License Renewal Application for Donald C. Cook Nuclear Plant, Units 1 and 2

The Committee met with NRC staff and representatives of the Indiana Michigan Power Company to review the license renewal application for the Donald C. Cook Nuclear Plant (CNP), Units 1 and 2 and the associated NRC staff's final Safety Evaluation Report (SER). The applicant requested approval for continued operation of each unit for 20 years beyond the current license expiration dates. The operating licenses for Units 1 and 2 expire on October 25, 2014, and December 23, 2017, respectively. Each unit is a four-loop Westinghouse pressurized water reactor enclosed in an ice condenser containment. The applicant has replaced the steam generators for both units and plans to replace both reactor vessel heads by 2007. The applicant described the components and maintenance activities associated with the ice condenser. The draft SER issued in December 2005 contained two open items and two confirmatory items. The open item associated with the use of the System Walkdown Program to manage the effects of aging on the internal surfaces of components was resolved by the applicant by providing information to demonstrate that aging effects on internal surfaces will be effectively managed by other aging management programs. The open item associated with the Flow-Accelerated Corrosion Program was resolved by revising the program to take an exception to the Generic Aging Lessons Learned Report. The confirmatory items were resolved by updating the Final Safety Analysis Report to include additional commitments to

address fatigue. As a result of the staff's review, several components were brought into scope of license renewal. In the May 2005 final SER, the staff concluded that the applicant has satisfied the requirements of 10 CFR Part 54.

#### Committee Action

The Committee issued a report to the NRC Chairman regarding this matter, dated July 18, 2005, concluding that the programs established and committed to by the applicant provide reasonable assurance that CNP Units 1 and 2 can be operated in accordance with their current licensing basis for the period of extended operation without undue risk to the health and safety of the public. The Committee recommended that the application for renewal of the operating licenses for CNP Units 1 and 2 be approved.

#### 2. Final Safety Evaluation Report Related to North Anna Early Site Permit Application

The Committee heard presentations by and held discussions with representatives of the Dominion Nuclear North Anna, LLC (Dominion) and the NRC staff regarding Dominion's application for the North Anna early site permit and the NRC staff's associated final SER. Dominion's application is to locate up to two nuclear power units on the North Anna site. Each unit will be able to produce up to 4300 Mwt. The Dominion application is based on a set of conservative, enveloping parameters defined to allow flexibility in the selection of reactor technology should a decision be made in the future to actually develop the proposed site. The proposed site is entirely within the current North Anna Power Station site about 40 miles north-northwest of Richmond, Virginia.

The NRC staff has identified a number of items that are treated either as permit conditions or as actions that must be addressed at the combined license (COL) stage. The staff has developed criteria for identifying eight permit conditions. The staff has also identified 30 items that need to be considered in conjunction with the review of a COL application should the early site permit be granted.

#### Committee Action

The Committee issued a report to the NRC Chairman regarding this matter, dated July 18, 2005, concluding that the proposed North Anna site, subject to the permit conditions recommended by the staff, can be used for up to two nuclear power units each of up to 4300 Mwt without undue risk to the public health and safety. In addition, the staff's final SER will contribute to the documentary basis for the mandatory public hearing. The Committee stated that it looks forward to working with the staff to improve the early site permit process.

#### 3. Draft Commission Paper on Policy Issues Related to New Plant Licensing

The Committee continued its deliberation on the two policy issues addressed in the draft Commission paper. These two policy issues are the minimum level of safety that new plants need to meet to achieve enhanced safety, and how to account for the risk from multiple reactors at a single site.

#### Committee Action

The Committee plans to continue its discussion and to prepare a report on these two policy issues during its September 8-10, 2005 meeting.

4. Review of the Draft Final Regulatory Guide, DG-1137, "Guidelines for Lightning Protection of Nuclear Power Plants"

The Committee heard presentations by and held discussions with members of the NRC staff and its contractor regarding the Regulatory Guide, DG-1137, "Guidelines for Lightning Protection of Nuclear Power Plants." This Regulatory Guide provides guidance for designing and installing lightning protection systems to ensure that electrical transients resulting from lightning phenomena do not render safety-related systems inoperable or cause spurious operation of such systems. It is intended for new plants but can also be used by existing plants.

This Regulatory Guide endorses four standards developed by the Institute of Electrical and Electronics Engineers (IEEE). The Committee agreed with the staff that DG-1137 and the endorsed IEEE standards provide adequate guidance for use by the industry in designing and installing protection systems at nuclear power plants.

#### Committee Action

The Committee issued a letter to the EDO regarding this matter, dated July 18, 2005, recommending that this Regulatory Guide be issued.

5. Draft Final Revision 2 to Regulatory Guide 1.152, "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants"

The Committee met with NRC staff to discuss the draft final Revision 2 to Regulatory Guide 1.152, "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants." The current Regulatory Guide 1.152, Revision 1 endorses IEEE Std. 7-4.3.2-1993. The new revision of the Regulatory Guide includes two regulatory positions. Regulatory Position 1, "Functional and Design Requirements," endorses IEEE Std. 7-4.3.2-2003 as an acceptable method for satisfying the NRC's regulations with respect to high functional reliability and design requirements for computers used in safety systems of nuclear power plants. Regulatory Position 2, "Security," includes added guidance on digital safety system security. It presents recommendations for security using the framework of a "waterfall" life cycle. Within each phase of this life cycle model, specific recommendations are made for system features and development activities. The staff believes industry guidance will not be ready for at least five years, and it is not prudent to delay addressing cyber security that long. When further industry guidance is available, the staff plans to revise this Regulatory Guide.

#### Committee Action

The Committee issued a letter to the EDO on this matter, dated July 15, 2005, recommending that the revised Regulatory Guide be issued.

6. Subcommittee Report Regarding Risk Management Technical Specification Initiative 4b

The Chairman of the joint Subcommittees on Reliability and Probabilistic Risk Assessment (PRA) and on Plant Operations provided a report to the Committee, summarizing the results of the June 15, 2005 Subcommittee meeting with the NRC staff and representatives of the Nuclear Energy Institute, Electric Power Research Institute (EPRI), South Texas Project Nuclear Operating Company (STP), Southern California Edison (SCE), and Exelon to discuss the status of the development of risk management technical specifications related to Initiative 4b titled, "Use of Configuration Management for Determining Technical Specification Completion Times, Related to the Use of Probabilistic Risk Assessment and Risk Monitoring Tools." Risk Management Technical Specifications (RMTS) Initiative 4b proposes to rely on PRA and risk monitors to calculate technical specification completion times for returning structures, systems, and components to operable status.

Committee Action

The Committee plans to review the RMTS Guidelines as well as the EPRI Human Reliability Analysis Calculator as part of its review of the STP pilot amendment for RMTS Initiative 4b after the staff has completed its review of the RMTS Guidelines.

7. Assessment of the Quality of the Selected NRC Research Projects

The Committee heard reports from the Chairmen of the ACRS panels on the status/interim results of the assessment of the quality of the NRC research projects on the Standardized Plant Analysis Risk (SPAR) Models Development Program and the Steam Generator Tube Integrity Program at the Argonne National Laboratory.

Committee Action

The Committee plans to continue its discussion of this matter during its September 2005 meeting.

8. Safeguards and Security Matters (closed session)

The Committee met with the NRC staff to discuss the status of current security-related research projects, security-related emergency preparedness activities, and plant-specific assessments for identification of mitigation strategies.

Committee Action

This briefing was for information only. The Committee plans to continue interactions with the staff at future meetings and to provide comments on specific projects, as needed.

## RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of June 3, 2005 to comments and recommendations included in the ACRS letter dated March 11, 2005, concerning our interim letter on the draft safety evaluation report on North Anna early site permit application. The Committee in its letter commented on six major elements required in an early site permit application and the staff's findings. These elements are: nature of the proposed site; population in the vicinity of the site; geology and seismicity of the site; meteorology; potential radiological source terms; and emergency plans.

The Committee decided that it was satisfied with the EDO's response. However, regarding the meteorology element, the Committee plans to explore this matter further during its deliberation on the NRC Safety Research Programs.

- The Committee considered the EDO's response of June 9, 2005 to comments and recommendations included in the ACRS letter dated May 13, 2005, concerning guidance for assessing exemption requests from nuclear power plant licensed operator staffing requirements.

The Committee decided that it was satisfied with the EDO's response.

## LIST OF MATTERS FOR THE ATTENTION OF THE EDO

- During the Committee's review of the Dominion Nuclear North Anna early site permit application and the associated final SER, the Committee noted that the use of the early site permit process has revealed several areas where the process can be refined and streamlined. The Committee plans to work with the staff to improve the early site permit process.
- The Committee plans to review the draft final Generic Letter 2005-XX, "Inaccessible or Underground Cables Failures that Disable Accident Mitigation Systems," after reconciliation of public comments.
- The Committee plans to review the draft final version of Regulatory Guide, DG-1128, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants" (Revision 4 to Regulatory Guide 1.97), after reconciliation of public comments.
- The Committee plans to review the draft final version of Generic Letter 2005-XX, "Impact of Potentially Degraded HEMYC/MT Fire Barrier Materials on Compliance With Approved Fire Protection Programs," after reconciliation of public comments.
- The Committee plans to assess the quality of the research project on reactor containment performance being conducted at Sandia National Laboratories, once a pivotal report on this research becomes available.

- The ACRS members plan to review the draft final version of the Generic Letter 2005-XX, "Post-Fire Safe-Shutdown Circuit Analysis Spurious Actuations," after reconciliation of public comments.
- The Committee plans to review the Risk Management Technical Specification Guidelines (RMTS) and the EPRI Human Reliability Analysis Calculator as part of its review of the South Texas Project pilot amendment of RMTS Initiative 4b after the staff has completed its review of the RMTS guidelines.

#### OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from June 2, 2005 through July 5, 2005, the following Subcommittee meetings were held:

- Digital Instrumentation and Control Systems - June 14, 2005  
  
The Subcommittee met with representatives of the NRC staff to review selected digital instrumentation and control research projects and related matters.
- Reliability and Probabilistic Risk Assessment and Plant Operations - June 15, 2005  
  
The Subcommittee met with representatives of the NRC Staff to discuss the status of the development of the Risk Management Technical Specifications Initiative 4b related to the use of PRA and risk monitoring tools.
- Planning and Procedures - July 5, 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.

#### PROPOSED SCHEDULE FOR THE 525<sup>th</sup> ACRS MEETING

The Committee agreed to consider the following topics during the 525<sup>th</sup> ACRS meeting to be held on September 8-10, 2005:

- Final Review of the License Renewal Application for Millstone Power Station, Units 2 and 3
- Interim Review of the Exelon/Clinton Early Site Permit Application and the associated NRC staff's draft Safety Evaluation Report
- Proposed Revision 4 to Regulatory Guide 1.82, "Water Sources for Long-Term Recirculation Cooling Following a LOCA"
- Possible Alternative Embrittlement Criteria to those in 10 CFR 50.46

The Honorable Nils J. Diaz

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- Draft Final Updates to License Renewal Guidance Documents
- Proposed ACRS Report on Policy Issues Related to New Plant Licensing
- Interim Results of the Quality Assessment of Selected NRC Research Projects
- Meeting with the EDO, Deputy EDOs, and NRC Program Office Directors to discuss items of mutual interest.

Sincerely,

**/RA/**

Graham B. Wallis  
Chairman



- Draft Final Updates to License Renewal Guidance Documents
- Proposed ACRS Report on Policy Issues Related to New Plant Licensing
- Interim Results of the Quality Assessment of Selected NRC Research Projects
- Meeting with the EDO, Deputy EDOs, and NRC Program Office Directors to discuss items of mutual interest.

Sincerely,

Graham B. Wallis  
Chairman

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