



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

December 15, 2008

MEMORANDUM TO: Sherry Meador, Technical Secretary
Advisory Committee on Reactor Safeguards

FROM: Cayetano Santos, Chief */RA/*
Reactor Safety Branch
Advisory Committee on Reactor Safeguards

SUBJECT: MINUTES OF THE 557th MEETING OF THE ADVISORY
COMMITTEE ON REACTOR SAFEGUARDS (ACRS),
November 6-8, 2008

I certify that based on my review of the minutes from the 557th ACRS Full Committee meeting, and to the best of my knowledge and belief, I have observed no substantive errors or omissions in the record of this proceeding subject to the comments noted below.

OFFICE	ACRS	ACRS:RSB
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DATE	12/ 15 /08	12/ 15 /08

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CERTIFIED

Date Certified: December 17, 2008

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During its 557th meeting, November 6-7, 2008, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following letter and memoranda:

LETTER

Letter to R. W. Borchardt, Executive Director for Operations, NRC, from William J. Shack, Chairman, ACRS:

- White Paper on "Historical Perspectives and Insights on Reactor Consequence Analyses," dated November 14, 2008

MEMORANDA

Memoranda to R. W. Borchardt, Executive Director for Operations, NRC, from Edwin M. Hackett, Executive Director, ACRS:

- Supplement 1 To NUREG-1875, "Safety Evaluation Report Related to License Renewal of Oyster Creek Generating Station," dated November 14, 2008
- Draft Final Revision to Regulatory Guides 1.125 and 3.25, dated November 14, 2008
- Draft Regulatory Guide DG-1204, dated November 14, 2008
- Proposed Interim Staff Guidance (ISG) DC/COL-ISG-08, dated November 14, 2008
- Withdrawal of Regulatory Guide 3.38, "General Fire Protection Guide for Fuel Reprocessing Plants," dated November 14, 2008

MINUTES OF THE 557th MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
NOVEMBER 6-8, 2008
ROCKVILLE, MARYLAND

The 557th meeting of the Advisory Committee on Reactor Safeguards (ACRS) was held in Conference Room 2B3, Two White Flint North Building, Rockville, Maryland, on November 6-8, 2008. Notice of this meeting was published in the *Federal Register* on October 27, 2008 (72 FR 63740-63741). The purpose of this meeting was to discuss and take appropriate action on the items listed in the meeting agenda. The meeting was open to public attendance.

A transcript of selected portions of the meeting is available in the NRC's Public Document Room at One White Flint North, Room 1F-19, 11555 Rockville Pike, Rockville, Maryland. Copies of the transcript are available for purchase from Neal R. Gross and Co., Inc., 1323 Rhode Island Avenue, NW, Washington, DC 20005. Transcripts are also available at no cost to download from, or review on, the Internet at <http://www.nrc.gov/ACRS/ACNW>.

ATTENDEES

ACRS Members: Dr. William J. Shack (Chairman), Dr. Mario V. Bonaca (Vice-Chairman), Dr. Said Abdel-Khalik (Member-at-Large), Dr. George E. Apostolakis, Dr. Sam Armijo, Dr. Sanjoy Banerjee, Dr. Dennis Bley, Mr. Charles Brown, Dr. Michael Corradini, Mr. Otto L. Maynard, Dr. Dana A. Powers, Mr. Harold Ray, Dr. Michael Ryan, Mr. John Sieber, and Mr. John Stetkar.

I. Chairman's Report (Open)

[Note: Mr. Sam Duraiswamy was the Designated Federal Official for this portion of the meeting.]

Dr. William J. Shack, Committee Chairman, convened the meeting at 8:30 a.m. In his opening remarks he announced that the meeting was being conducted in accordance with the provisions of the Federal Advisory Committee Act. He reviewed the agenda items for discussion and noted that no written comments or requests for time to make oral statements from members of the public had been received. Dr. Shack also noted that a transcript of the open portions of the meeting was being kept and speakers were requested to identify themselves and speak with clarity and volume. <H:\557\1106 FC Transcript.pdf>

II. Chapter 14 of the SER Associated with the Economic Simplified Boiling Water Reactor (ESBWR) Design Certification Application

[Note: Mr. Harold Vandermolen was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff to discuss Chapter 14, "Verification Programs" of the NRC staff's Safety Evaluation Report (SER) with Open Items associated with the ESBWR Design Certification Application.

The staff discussed its review of various elements of this Chapter including the Initial Plant Test Program for Final Safety Analysis Reports and Inspections, Tests, Analyses and Acceptance Criteria (ITAAC). The staff provided an overview and historical perspective on the use of Tier 1, Tier 2, ITAAC, Design Acceptance Criteria (DAC), and their applicability for design certifications, and the overlap between ITAAC and the Initial Test Program. The staff further provided the status of the staff's review of Chapter 14 and the Tier 1 information. Although the staff issued 437 requests for additional information (RAIs) during the course of this review, 364 of these RAIs have already been resolved. The selection criteria and methodology for the various DACs were determined to be consistent with the guidance in Standard Review Plan 14.3. The staff issued 98 RAIs in the course of its review of the initial test program described in Chapter 14, of which 93 have since been resolved. The open items concern digital instrumentation and control systems, human factors engineering, electrical systems, containment systems, reactor systems, and format and consistency issues across similar ITAACs.

The Committee plans to continue its discussion of Chapter 14 in combination with Chapter 7, "Instrumentation and Controls" of the SER associated with the ESBWR Design Certification Application during its December 2008 meeting.

III. Position Paper on Incorporating the International Commission on Radiological Protection (ICRP) Recommendations into 10 CFR Parts 20 and 50

[Note: Mr. Neil Coleman was the Designated Federal Office for this portion of the meeting.]

The Committee met with representatives of the NRC staff to discuss the NRC response to the 2007 recommendations of the ICRP (Publication 103). These recommendations formally replace the ICRP's previous guidance, which was published in 1990, and update the radiation and tissue weighting factors as well as the radiation detriment, based on the latest scientific information regarding the biology and physics of radiation exposure. The NRC staff is developing an options paper that is expected to be provided to the Commission in December 2008. The proposed options include (1) no action; (2) updating 10 CFR Part 50 and Appendix I (but not 10 CFR Part 20), and (3) move toward alignment with ICRP 103. This was an information briefing. No Committee action was needed at this time. The Committee plans to review the options paper on the ICRP recommendations and provide its views.

IV. Status of License Renewal Activities

[Note: Ms. Peter Wen was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff to discuss the current status and recent changes in the license renewal program. The staff described the status of completed, ongoing, and future license renewal applications; the challenge it is facing; the Office of Inspector General (OIG) audit report and recommendations; and the license renewal infrastructure. The staff stated that 68 out of 104 operating units have received renewed licenses or are currently under review. Regarding the OIG audit report, the staff stated that it has addressed all recommendations made by the OIG that would enhance the license renewal program, specifically in the area of documentation of the technical review. The staff is in the process of updating the Standard Review Plan, Generic Aging Lessons-Learned (GALL) Report, and the bases document. The staff will incorporate lessons learned from the review of license renewal applications, operating experience, public comments, and approved Interim Staff

Guidance. The estimated schedule for the GALL Report update is December 2010. The staff stated that overall the license renewal is a successful program. This was an information briefing. No Committee action was necessary.

V. Current Issues Associated with Fire Protection and Related Matters

[Note: Mr. Peter Wen was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff regarding the status of the staff's current fire protection activities, which include: recent Commission guidance, Government Accountability Office (GAO) recommendations and planned staff actions, fire protection closure plan, license amendment requests for pilot plants transitioning to National Fire Protection Association (NFPA) Standard 805, and associated Regulatory Guide and Standard Review Plan development. The staff described the progress made in the above areas. The staff is working with the industry stakeholders on the fire protection closure plan. Regarding the NFPA 805-related activities, the staff stated that Progress Energy (Shearon Harris Plant) and Duke Energy (Oconee Nuclear Site) have been designated as NFPA 805 pilot plants. To date, operators of 48 nuclear power units have sent the NRC letters of intent to adopt the NFPA 805 Standard. In parallel with and learning from the pilot plant amendment reviews, the staff is finalizing its review infrastructures.

The staff proposed the following future actions on the above discussed topics:

- The staff plans to conduct a fire protection briefing on fire-induced circuit failures and resolution of electrical raceway fire barriers in early 2nd Quarter 2009.
- The staff plans to submit for ACRS review NFPA 805 guidance documents (RG 1.205, Revision 1, and SRP Section 9.5.1b) after resolution of public comments, in early 3rd Quarter 2009.

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

VI. Proposed Changes to the Review Process for Subsequent Combined License Applications (SCOLAs)

[Note: Ms. Yoira Sanabria-Diaz was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff to discuss a pilot program for the SCOLA review process. The NRC staff described the current Design-Centered Review Approach (DCRA), which was endorsed by the Commission and consistent with the NRC Policy on Standardization. The current DCRA minimizes rework by early identification of issues during the detailed design work and during the staff review of combined license applications (COLAs). The safety review model includes six phases (6-Phase model), starting from the generation of request for additional information (RAIs) to the development of the Final Safety Evaluation Report. The staff stated that it would be worthwhile to reduce the current review model of 6-Phases to four phases (4-Phase model). The 4-Phase model eliminates the generation of an SER with open items and the associated ACRS review. The staff plans to use the 4-Phase model on the SCOLA review of the V. C. Summer Nuclear Station site as a pilot. The purposes of this pilot are to improve the existing process, to reduce the resources required without

affecting the quality, to enhance the staff's ability to accomplish work with the current budget, and to enhance the staff's ability to manage workload peaks.

The staff recognized the following challenges on the 4-Phase review process: determining which SCOLA reviews will follow the 4-Phase review approach, early resolution of staff issues and the ability of the applicant to respond in a timely manner, ensuring early involvement with the ACRS, and developing measures for effectiveness and efficiency. The staff plans to have future interactions with the ACRS on the topics related to the SCOLA review process. This was an information briefing. No Committee action was necessary.

VII. Subcommittee Reports

US-APWR Subcommittee Report

[Note: Mr. Neil Coleman was the Designated Federal Official for this portion of the meeting.]

The US-APWR Subcommittee Chairman provided a report summarizing the results of the October 23-24, 2008 Subcommittee meeting with representatives of the NRC staff and Mitsubishi Heavy Industries (MHI) to discuss various US-APWR topical reports. The Subcommittee was briefed on the following:

- NRC staff's SER for LOCA Mass and Energy Release Analysis Code Applicability Report
- Thermal Design Methodology
- Fuel Design Criteria and Methodology
- US-APWR Advanced Accumulator
- FINDS: Mitsubishi Fuel Assemblies Seismic Analysis Code

During the November 4-5, 2008, the Subcommittee meeting was briefed on the following four additional topical reports:

- HSI (Human System Interface) System Description and HFE (Human Factors Engineering) Process
- Safety I&C (Instrumentation & Control) System Description Design Process
- Safety System Digital Platform MELTAC (Mitsubishi Electric Total Advanced Controller)
- Defense-in-Depth and Diversity

As additional SERs become available, the Subcommittee will schedule further briefings from the staff and will consider preparing letters at that time.

Plant License Renewal Subcommittee Report

[Note: Mr. Christopher Brown was the Designated Federal Official for this portion of the meeting.]

The Plant License Renewal Subcommittee Chairman provided a report summarizing the results of the November 5, 2008, meeting with representatives of the NRC staff and Southern Nuclear Operating Company regarding the interim review of the license renewal application for the Vogtle Electric Generating Plant and the associated NRC staff's draft SER.

The NRC issued the construction permits for Unit 1 on June 28, 1974, and for Unit 2 on June 28, 1974. The NRC issued the operating licenses for Unit 1 on March 16, 1987, and for Unit 2 on March 31, 1989. SNC submitted the license renewal application on June 27, 2007, and the staff's draft SER was issued on September 8, 2008, which contained no open items, no confirmatory items, three proposed license conditions, and 35 commitments. The Committee plans to discuss the final SER related to the license renewal application for the Vogtle Electric Generating Plant in a future meeting.

VII. Executive Session

[Note: Mr. Edwin M. Hackett was the Designated Federal Official for this portion of the meeting.]

A. Reconciliation of ACRS Comments and Recommendations/EDO Commitments

- The Committee considered the EDO's response of October 27, 2008, to comments and recommendations included in the September 17, 2008, ACRS report on the license renewal application for the Wolf Creek Generating Station, Unit 1. The Committee decided that it was satisfied with the EDO's response.

B. Report of the Planning and Procedures Subcommittee Meeting

Review of the Member Assignments and Priorities for ACRS Reports and Letters for the May ACRS Meeting

Member assignments and priorities for ACRS reports and letters for the February ACRS meeting were discussed. Reports and letters that would benefit from additional consideration at a future ACRS meeting were also discussed.

Anticipated Workload for ACRS Members

The anticipated workload for ACRS members through April 2008 was discussed and the objectives were to:

- Review the reasons for the scheduling of each activity and the expected work product and to make changes, as appropriate
- Manage the members' workload for these meetings
- Plan and schedule items for ACRS discussion of topical and emerging issues

Operating Plan, Self-Assessment, and Summary Matrix

Draft Versions of the ACRS Operating Plan, Self-Assessment, and Summary Matrix of the ACRS reports and letters issued in FY2008 were provided to the members for feedback during the October meeting. Comments received from the members have been incorporated and the final versions of these documents have been sent to the Commission on October 29, 2008.

ACRS Retreat

At the October meeting, the Committee decided to hold a retreat on January 27-28, 2009. This retreat will be held at the Residence Inn, Bethesda. A proposed list of topics for discussion at the retreat was sent to all members for comment on October 29, 2008. The list of topics has been revised incorporating, as appropriate, the comments received from the members. The Committee discussed the need to have a facilitator at the retreat and deferred its decision to the November meeting.

Draft Safety Culture Policy Statement

In an SRM dated February 25, 2008, the Commission directed the staff to continue its broad review of issues related to safety culture and provide a recommendation on how best to update the Commission policy on safety culture. In response to the SRM, the staff is developing a SECY paper with safety culture policy statement and recommendations on how to proceed. In addition, industry is developing a new approach to assess safety culture as part of the Reactor Oversight Process (ROP). In FY2006, the NRC staff implemented an approach to enhance the ROP to more fully address safety culture. Experience from that initiative is being reviewed to determine if any changes need to be made to the ROP. The NRC staff plans to hold a public workshop on safety culture in early CY2009.

Revised Process for Issuing Regulatory Guides

The Regulatory Guide Development Branch (RGDB) in the Office of Nuclear Regulatory Research manages the agency's Regulatory Guide (RG) program through coordination with offices across the agency. The current process for issuing RGs is as follows: The technical staff responsible for the guide coordinates with technical staff from other offices affected by the guide and then transmits the guide to RGDB via memorandum signed by the appropriate Division Director. RGDB reviews the guide for format and content and then transmits the guide to the ACRS for consideration. At the same time, the RG is placed into a concurrence package to be issued. In the case of a final Regulatory Guide, if the formal concurrence resulted in more than grammatical or editorial changes, a revised version is sent back to ACRS for consideration.

In the previous process, the guide would be sent to ACRS after formal concurrence and review by appropriate offices.

Regulatory Guides and Interim Staff Guidance

Draft Final Regulatory Guides

— Draft Final Regulatory Guide 1.125, "Revision 2, Physical Models for Design and Operation of Hydraulic Structures and Systems for Nuclear Power Plants"

Regulatory Guide 1.125, Revision 2 describes the detail and documentation of data and studies that an applicant should include in the preliminary and/or Final Safety Analysis Report to support the use of physical hydraulic model testing for predicting the performance of hydraulic structures and systems for nuclear power plants. Hydraulic

structures are defined as anything that can be used to divert, restrict, stop, or otherwise manage the natural flow of water. The draft final version of this Guide reflects incorporation of public comments, as appropriate.

The Committee considered a proposed revision of this Guide during its May 2008 meeting and did not raise any objection to the staff's proposal to issue this Guide for public comment. The Committee wanted to have an opportunity to review the draft final version of this Guide after reconciliation of public comments.

The staff requests that the ACRS decide whether it wants to review this Guide prior to issuing it final.

— Draft Final Revision 2 to Regulatory Guide 3.25, "Standard Format and Content of Safety Analysis Reports for Uranium Enrichment Facilities"

Regulatory Guide 3.25 endorses the standard format and content for safety analysis reports and integrated safety analysis summaries described in NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," as a process the NRC finds acceptable for submittal of an application to construct or modify and operate a nuclear fuel cycle facility in accordance with the requirements of 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," Subpart H, "Additional Requirements for Certain Licensees Authorized to Possess a Critical Mass of Special Nuclear Material." The current version of this Guide reflects incorporation of public comments, as appropriate.

The staff requests that the ACRS decide whether it wants to review this Guide prior to issuing it final.

Proposed Regulatory Guide

— Draft Regulatory Guide (DG) 1204, "Guidance for [Inspections, Tests, Analyses, and Acceptance Criteria] ITAAC Closure Under 10 CFR Part 52"

DG-1204 endorses Nuclear Energy Institute document, (NEI) 08-01, Revision 1, "Industry Guidance for the ITAAC Closure Process under 10 CFR Part 52, Revision 0." The NEI guidance document provides a general description of the ITAAC process and suggested licensee processes for review and approval of ITAAC closure documents.

The staff plans to issue this Guide for public comment and would like to know whether the Committee wants to review this Guide prior to being issued for public comment.

— Withdrawal of Regulatory Guide 3.38, "General Fire Protection Guide for Fuel Reprocessing Plants"

The NRC is withdrawing Regulatory Guide 3.38, issued for public comment in June 1976, because it is not currently used by any licensee for fuel reprocessing plants and it is not suitable for future facilities such as those proposed by the Global Nuclear Energy Partnership (GNEP).

The staff proposes to withdraw this Guide and seeks Committee's endorsement.

Proposed Interim Staff Guidance

Proposed DC/COL-ISG-08 is a new Interim Staff Guidance (ISG). The purpose of this ISG is to change the NRC staff position on the necessary content of plant-specific technical specifications when a combined license (COL) is issued. This ISG clarifies the staff guidance contained in Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants," Section C.III.4.3, "Combined License Information Items that Cannot be Resolved Before the Issuance of a License," and replaces the related guidance in NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Chapter 16.0, "Technical Specifications," Revision 2, regarding the content of the plant-specific technical specifications to support issuing a COL.

The staff plans to issue this proposed ISG for public comment and would like to know whether the ACRS wants to review this ISG prior to being issued for public comment.

Supplement 1 to NUREG 1875, "Safety Evaluation Report Related to License Renewal of Oyster Creek Generating Station, Docket No. 50-219"

The staff has provided a copy of Supplement 1 to the Oyster Creek Generating Station (OCGS) SER to the ACRS. This supplement was issued to document clarifications provided by the applicant to drywell shell aging management program commitments. It also documents the staff's evaluation of the applicant's response to an April 2008 request for additional information regarding the use of Green's function in calculating fatigue cumulative usage factors for certain OCGS components. The staff concluded that the applicant adequately addressed the staff's concerns regarding the use of Green's function in calculating fatigue cumulative usage factors; thus, the conclusions drawn by the staff in the final SER, regarding fatigue cumulative usage factors, remain valid.

The staff would like to know whether the ACRS wants to review Supplement 1 to the OCGs SER.

Election of Officers for CY-2009

During its December meeting, the Committee will elect Chairman and Vice-Chairman for the ACRS and Member-at-Large for the Planning and Procedures Subcommittee. Section 8.4 of the ACRS Bylaws state:

A member may withdraw his name from consideration by written notice to the Executive Director no later than two weeks before the scheduled election. Accordingly, those members who do not wish to be considered for all or any of the Offices should notify the ACRS Executive Director in writing by November 21, 2008.

Proposed Research Projects for Quality Assessment in 2009

The Office of Nuclear Regulatory Research (RES) has provided a list of proposed research projects for Quality Assessment by the ACRS in 2009 (pp. 14). The Committee needs to select certain projects and establish Panels for assessing the quality of these projects in 2009.

In 2008, the Committee assessed the quality of two research projects and provided the results of its assessments to the RES Director in October 2008. In view of the anticipated heavy workload in 2009, the Committee should consider selecting a maximum of two projects for quality assessment in 2009.

Dr. Powers proposes the following projects and Panels:

- NUREG/CR 6964, "Crack Growth Rates and Metallographic Examinations of Alloy 600 and Alloy 82/182 from Field and Laboratory Materials Testing in PWR Environments"

Panel: Armijo (Chair), Abdel-Khalik, Ray

- NUREG/CR on Diversity and Defense n Depth for Digital Instrumentation and Control Systems

Panel: Brown (Chair), Apostolakis, Sieber

The meeting was adjourned at 7:00 p.m. on November 7, 2008.