

April 6, 2001

The Honorable Richard A. Meserve
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: SUMMARY REPORT - 480TH MEETING OF THE ADVISORY
COMMITTEE ON REACTOR SAFEGUARDS, MARCH 1-3, 2001
AND OTHER RELATED ACTIVITIES OF THE COMMITTEE

Dear Chairman Meserve:

During its 480th meeting, March 1-3, 2001, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following letters. In addition, the Committee authorized Dr. John T. Larkins, Executive Director, ACRS, to transmit the memorandum noted below:

LETTERS

- Draft Report, "Regulatory Effectiveness of the Anticipated Transient Without Scram Rule" (Letter to William D. Travers, Executive Director for Operations, NRC, from George E. Apostolakis, Chairman, ACRS, dated March 8, 2001)
- Electric Power Research Institute RETRAN-3D Thermal-Hydraulic Transient Analysis Code (Letter to William D. Travers, Executive Director for Operations, NRC, from George E. Apostolakis, Chairman, ACRS, dated March 15, 2001)

MEMORANDUM

- Proposed Final Regulatory Guide 1.XXX, "Fire Protection for Operating Nuclear Power Plants" (formerly DG-1097) (Letter to William D. Travers, Executive Director for Operations, NRC, from John T. Larkins, Executive Director, ACRS, dated March 7, 2001)

HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. RETRAN-3D Thermal-Hydraulic Transient Analysis Code

The Committee heard a report from Dr. Graham B. Wallis, Chairman, Thermal-Hydraulic Phenomena Subcommittee, regarding the status of the Subcommittee's review of the

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Electric Power Research Institute (EPRI) RETRAN-3D thermal-hydraulic transient analysis code. The T/H Phenomena Subcommittee most recently discussed this matter with representatives of EPRI and the NRC staff during a meeting held on February 20, 2001. During this meeting, EPRI agreed to reconsider the justifications of the momentum equations used in RETRAN as well as the example problems illustrating their use for modeling specific components. The Office of Nuclear Reactor Regulation (NRR) issued a safety evaluation report (SER) on use of RETRAN-3D in December 2000.

Committee Action

The Committee issued a letter to the EDO, dated March 15, 2001, that included two attachments detailing the major concerns identified by the Thermal-Hydraulic Phenomena Subcommittee regarding use of the momentum equations in RETRAN.

2. Interim Review of the License Renewal Application for Arkansas Nuclear One (ANO) Unit 1

Dr. Bonaca, Chairman of the Plant License Renewal Subcommittee provided a report to the Committee regarding the Subcommittee's review of the ANO Unit 1 license renewal application and the associated NRC staff's SER during a meeting on February 22, 2001. He stated that the scoping and screening methodology used by the applicant to identify structures, systems, and components subject to an aging management review appears well structured and comprehensive. Notwithstanding the remaining open items, the applicant has adequately demonstrated that existing programs and proposed new programs will adequately manage aging effects during the period of extended operation.

Committee Action

The Committee decided not to write an interim letter. The Committee plans to complete its review of the ANO Unit 1 license renewal application in September 2001.

3. South Texas Project Exemption Request

Mr. John D. Sieber, Chairman of the ACRS Subcommittee on Plant Operations, made a presentation to the Committee relating to the South Texas Project (STP) exemption request. The presentation was a brief synopsis of a subcommittee meeting held on February 21, 2001 to discuss categorization of structures, systems, and components (SSCs) at STP. The STP and NRC presentations on special treatment requirements and the Draft Final Safety Evaluation relating to the exemption request will be heard at future meetings.

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Categorization of SSCs is based on the use of plant specific PRAs and on an Expert Panel. The PRA uses the Fussell-Vestelty (FV) importance and the risk achievement worth (RAW). The Expert Panel relies upon five critical questions to which a weighting factor is applied. Components are then ranked according to their risk significance.

At the date of the presentation, there were 12 open items relating to the exemption request yet to be resolved.

Committee Action

This was an information briefing and no committee action was required.

4. Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants

The Committee heard presentations by and held discussions with representatives of the NRC staff concerning the staff's findings and recommendations of the final report on spent fuel pool (SFP) accident risk at decommissioning nuclear power plants.

The staff concluded that it is not feasible to define a generic decay heat level and decay time beyond which a zirconium fire is not physically possible. This conclusion is significant because the elimination of a zirconium fire was the established basis for exemptions from insurance requirements.

The staff plans to provide the Commission with a policy Option paper by May 31, 2001, to address this issue. Regulatory actions which could be affected by policy decisions will be held until Commission direction is received. The staff, however, believes that there is no immediate safety concern and there is no need for immediate regulatory action.

The Nuclear Energy Institute (NEI) representatives briefed the Committee regarding the likelihood of SFP failure given a cask drop, and the fission product releases if the SFP is postulated to be rapidly drained.

Committee Action

The Committee will take this matter under advisement, and plans to meet with the NRC staff during the May 10-12, 2001 ACRS meeting to discuss the proposed policy options and related matters.

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5. Management Directive 6.4 Associated with the Revised Generic Issue Process

The Committee heard presentations by and held discussions with the representatives of the NRC staff regarding Management Directive (MD) 6.4 and the results of the case study performed to determine the effectiveness of using the MD to implement the revised Generic Issue process. The staff presented the lessons learned during the trial use of MD 6.4 in addressing candidate reactor materials generic issues. The staff made several recommendations based on the trial use of draft MD 6.4, including the following:

- Clarify the requirements of the “Initial Screening Stage” to limit the scope of the panel
- Combine the Technical Screening and Technical Assessment Stages to provide a better technical basis for decision making or combine the initial screening and technical stages to simplify the process
- Provide clearer guidance on the Distinction between “Adequate Protection,” and “Substantial Safety Enhancement”

The staff plans to issue the final version of MD 6.4 in June of 2001.

Committee Action

The Committee plans to issue a letter on this matter during the April ACRS meeting.

6. Operating Event at V.C. Summer Nuclear Station

The Committee heard presentations by and held discussions with representatives of the NRC staff and the Electric Power Research Institute (EPRI) Materials Reliability Project (MRP) concerning the technical issues associated with Alloy 82/182 weld cracking and associated reactor coolant system pressure boundary degradation identified at the V.C. Summer Nuclear Power Plant on October 7, 2000. The Committee discussed licensee actions related to the three-inch axial flaw identified on a weld between the reactor vessel nozzle and the “A” hot leg pipe. The weld location was about three feet from the vessel in a section of “spool-piece” piping. The licensee removed the weld defect and associated section of spool piece piping for failure analysis. The Committee discussed the root causes of the “A” weld defect which involved primary water stress corrosion cracking (PWSCC) as well as problems in the original manufacture of the weld. The Committee also discussed the licensee’s examination and identification of PWSCC-related weld defects on the “B” and “C” loop piping. The Committee considered the

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interim inspection guidance and long-term assessment of Alloy 82/182 proposed by the MRP for pressurized water reactors (PWRs). PWSCC was previously thought to be an unlikely phenomena in PWRs.

The Committee discussed the preliminary findings and conclusions of the NRC Special Inspection Team (SIT) that held its exit meeting at the site on February 15, 2001. They considered the guidance in NRC Information Notice (IN) 2000-17 and the associated IN Supplement issued on October 18, and on November 16, 2000, respectively, to inform licensees of the weld cracking phenomena observed at V.C. Summer. The Committee extensively discussed the issues in the staff safety evaluation report issued on February 20, 2001, allowing restart of the Summer unit for one operating cycle.

Committee Action

This briefing was for information only. No Committee action was required.

7. NRC Safety Research Program

The Committee discussed its 2001 final draft report to the Commission regarding the NRC safety research programs.

Committee Action

The Committee finalized its final draft report on March 16, 2001.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

There were no reconciliation items discussed during this meeting.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

During the period from February 1 through February 28, 2001, the following Subcommittee meetings were held:

- Thermal-Hydraulic Phenomena - February 20, 2001

The Subcommittee continued its review of the EPRI RETRAN-3D thermal-hydraulic transient analysis code, and, received information pertaining to NRR's schedule for review of vendor/applicant thermal-hydraulic codes.

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- Joint Meeting on Plant Operations and on Reliability and Probabilistic Risk Assessment - February 21, 2001

The Subcommittee discussed the South Texas Project Nuclear Operating Company's exemption request to exclude certain components from the scope of special treatment requirements in 10 CFR Parts 21, 50, and 100.

- Planning and Procedures - February 28, 2001

The Planning and Procedures 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 FOLLOW-UP MATTERS FOR THE EXECUTIVE DIRECTOR FOR OPERATIONS

- The Committee plans to discuss the special treatment requirements associated with the STP exemption request during the April ACRS meeting and the NRC staff's draft final SER on this matter at the May 2001 ACRS meeting.
- The Committee plans to continue its review of issues related to primary water stress corrosion cracking issue observed at V.C. Summer on October 7, 2000, and requests to be kept informed as more is learned about Alloy 82/182 performance and as NRC and industry actions are completed.
- The ACRS Subcommittee on Thermal-Hydraulic Phenomena plans to hold a meeting in June 2001 to discuss with the NRC staff issues pertaining to significant core power uprates. This meeting will serve as a prelude to the Committee's review of license amendment requests for core power uprates expected to commence this Fall.
- The Committee plans to complete its review of the Management Directive (MD) 6.4 associated with the revised generic issues process after receiving the proposed final MD 6.4.

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PROPOSED SCHEDULE FOR THE 481ST ACRS MEETING

The Committee agreed to consider the following topics during the 481st ACRS Meeting:

Interim Review of the License Renewal Application for Edwin I. Hatch Nuclear Plant Units 1 and 2

Briefing by and discussions with representatives of the NRC staff and Southern Nuclear Operating Company regarding the license renewal application for Hatch Units 1 and 2, associated staff's Safety Evaluation Report (SER), selected Boiling Water Reactor Vessel and Internals Project (BWRVIP) reports and the related staff's safety evaluations.

Proposed Final License Renewal Guidance Documents

Briefing by and discussions with representatives of the NRC staff regarding the proposed final Regulatory Guide 1.188 and Standard Review Plan associated with license renewal, Generic Aging Lessons Learned (GALL) report, and Nuclear Energy Institute (NEI) 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule."

Safety Issues Associated with the Use of Mixed Oxide (MOX) and High Burnup Fuels

Briefing by and discussions with representatives of the NRC staff and the industry regarding safety issues associated with the use of MOX and high burnup fuels in commercial light water reactors.

Thermal-Hydraulic Issues Associated with the AP1000 Passive Plant Design

Briefing by and discussions with representatives of the NRC staff and the Westinghouse Electric Corporation regarding the thermal-hydraulic issues associated with the AP1000 design.

[Note: A portion of this session may be closed to discuss Westinghouse proprietary information applicable to this matter.]

Draft Final Safety Evaluation Report for the South Texas Project Nuclear Operating Company (STPNOC) Exemption Request

Briefing by and discussions with representatives of the NRC staff and STPNOC regarding the staff's draft Final Safety Evaluation Report for the STPNOC exemption request to exclude certain components from the scope of special treatment requirements required by NRC regulations.

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Closure of Generic Safety Issue (GSI)-170, "Reactivity Transients and Fuel Damage Criteria for High Burnup Fuel"

Discussion with representatives of the NRC staff, as needed, regarding the closure of GSI-170.

Subcommittee Report

Report by the Chairman of the Materials and Metallurgy Subcommittee regarding risk-informing 10 CFR 50.46, which was discussed during a joint meeting of the ACRS Subcommittees on Materials and Metallurgy, Thermal-Hydraulic Phenomena, and Reliability and Probabilistic Risk Assessment on March 16, 2001.

Sincerely,

/RA/

George E. Apostolakis
Chairman