



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

October 23, 2009

MEMORANDUM TO:           ACRS Members

FROM:                    Sherry Meador                                 /RA/  
                              Technical Secretary, ACRS

SUBJECT:                 CERTIFICATION OF THE MEETING MINUTES FROM  
                              THE ADVISORY COMMITTEE ON REACTOR  
                              SAFEGUARDS 564<sup>th</sup> FULL COMMITTEE MEETING  
                              HELD ON JULY 8-10, 2009 IN ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on July 22, 2009 as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment:  
As stated



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

July 22, 2009

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 564<sup>th</sup> MEETING OF THE ADVISORY  
COMMITTEE ON REACTOR SAFEGUARDS (ACRS),  
JULY 8-10, 2009

I certify that based on my review of the minutes from the 564<sup>th</sup> 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
NAME	SMeador	CSantos/sam
DATE	07/ 22 /09	07/ 22 /09

OFFICIAL RECORD COPY

CERTIFIED

Date Certified: 07/22/2009

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During its 564<sup>th</sup> meeting, July 8-10, 2009, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following report, letters, and memoranda:

### REPORT

Report to Gregory B. Jaczko, Chairman, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Draft Final Regulatory Guide 1.215, "Guidance for ITAAC Closure Under 10 CFR Part 52," dated July 24, 2009

### LETTERS

Letters to R. W. Borchardt, Executive Director for Operations, NRC, from Mario V. Bonaca, Chairman, ACRS:

- Draft Template NEI-08-08, "Generic FSAR Template Guidance for Life Cycle Minimization of Contamination," and Draft DC/COL- Interim Staff Guidance - 06, dated July 22, 2009
- Draft Final Revision 3 to Regulatory Guide 1.100, "Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants," dated July 27, 2009
- Applicability of TRACE Thermal-Hydraulic System Analysis Code to Evaluate the ESBWR Design and Related Matters, dated July 29, 2009

### MEMORANDA

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

- Supplement 1 to NUREG-1907, "Safety Evaluation Report Related to License Renewal of Vermont Yankee Nuclear Power Station," dated July 15, 2009
- Letter From Citizen Power and Beyond Nuclear Concerning the License Renewal for the Beaver Valley Power Station, dated July 21, 2009
- Proposed Revisions to Regulatory Guides 1.11, 2.5, 3.39, 5.10, 5.15, and DG-8039, dated July 21, 2009
- Proposed Revision 1 to Regulatory Guide 4.2 Supplement 1 (DG-4015), "Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications," dated July 21, 2009
- Withdrawal of Regulatory Guides 7.2, 1.16, 6.3, and 1.135, dated July 22, 2009

MINUTES OF THE 564<sup>th</sup> MEETING OF THE  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

ROCKVILLE, MARYLAND

The 564<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards (ACRS) was held in Conference Room 2B3, Two White Flint North Building, Rockville, Maryland, on July 8-10, 2009. Notice of this meeting was published in the *Federal Register* on June 24, 2009 (72 FR 30174-30175). 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. Mario Bonaca (Chairman), Dr. Said Abdel-Khalik (Vice-Chairman), Mr. J. Sam Armijo (Member-at-Large), Dr. George E. Apostolakis, 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, Dr. William Shack, 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. Mario Bonaca, 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. Bonaca 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.

II. License Renewal Application and the Final Safety Evaluation Report (SER) for the Beaver Valley Power Station

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

The Committee met with representatives of the NRC staff and FirstEnergy Nuclear Operating Company (FENOC), the applicant, to discuss the Beaver Valley Power Station (BVPS) license renewal application and the associated NRC staff's final Safety Evaluation Report (SER).

The applicant discussed the follow-up item from the ACRS Subcommittee meeting concerning inaccessible medium-voltage cables located in manholes. These cables in some instances can become submerged in water. The concern of the Committee and the staff was that inaccessible medium-voltage cables that have been submerged may degrade and not perform their intended safety function. In response to this concern, the applicant committed to minimize exposure of these cables to significant moisture or replace them with those designed for submerged service. In addition, the applicant discussed Unit 1 operating experience regarding the containment liner corrosion identified in 2006. Analyses and evaluations of the Unit 1 containment liner corrosion were performed for FENOC by several vendors that specialize in these types of analyses. Of the three areas of corrosion identified, two were replaced with new plate material. In the third area, the liner showed minimal loss of thickness at the deepest pit and was left in place for further monitoring. The applicant further discussed the containment liner inspection performed in April 2009 on Unit 1, in which a paint blister was discovered on the containment liner revealing through-wall corrosion. The applicant attributed this corrosion to a moist piece of foreign material (wood) which was found embedded in the concrete immediately behind and in contact with the liner. The applicant's corrective actions include removal of the wood, inspection of the concrete, and replacement of the affected section of the liner. Future corrective actions include follow-up ultrasonic examination of the replaced area and visual examinations during the next Unit 1 refueling outage. Supplemental volumetric examinations on both units' containment liners prior to the period of extended operation were also committed to be performed by the applicant.

The NRC staff provided an overview of the BVPS, Units 1 and 2 license renewal review and the license renewal audit and inspection. The staff discussed resolution of the open item relating to medium-voltage non-safety related cables. The staff also discussed its evaluation of the applicant's corrective actions in response to the containment liner corrosion. The BVPS, Units 1 and 2 final SER contained no open or confirmatory items. Based on its review, the staff concluded that the requirements of 10 CFR 54.29(a) have been met.

The Committee completed a report to the NRC Chairman on this matter. Due to new information provided by FENOC regarding the liner inspection, the Committee decided to delay issuance of this report until meeting with the staff and the applicant to discuss the new information during its September 10-12, 2009 meeting.

III. Draft Final Revision 3 to Regulatory Guide 1.100, "Seismic Qualification of Electric and Mechanical Equipment for Nuclear Power Plants"

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

The Committee met with representatives of the NRC staff, MPR Associates, and the Westinghouse Electric Company to discuss draft final Revision 3 to Regulatory Guide (RG) 1.100, "Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants."

This Guide describes methods that the staff considers acceptable for use in establishing the seismic qualification of electrical and active mechanical equipment defined to be important to safety. Draft final Revision 3 to RG 1.100 endorses, with exceptions and clarifications, the June 2005 edition of the Institute of Electrical and Electronics Engineers (IEEE) Standard, IEEE 344-2004, "IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations," and extended the application of this Standard to the seismic qualification of mechanical equipment. In extending the application of IEEE Standard 344-2004 to mechanical equipment, the NRC staff recognized differences in seismic qualification methods for electrical equipment [including instrumentation and control (I&C) components] and mechanical equipment. In November 2007, the American Society of Mechanical Engineers (ASME) issued a revised Standard, ASME QME-1-2007, "Qualification of Active Mechanical Equipment Used in Nuclear Power Plants." This Standard covers both seismic qualification and functional qualification of active mechanical equipment. Revision 3 to draft final RG 1.100 also endorses, with exceptions and clarifications, ASME QME-1-2007.

The principal NRC Staff Positions in Revision 3 of RG 1.100 address specific elements of the seismic qualification guidance in the aforementioned consensus Standards. The most recent change to the IEEE Standard 344-2004 involves updated and expanded guidance concerning the use of past operating experience data to seismically qualify electrical equipment, including I&C components. Appendix QR-A to the ASME Standard QME-1-2007 now recognizes the use of past operating experience as an acceptable method for seismic qualification of active mechanical equipment. Previously, the NRC has accepted the use of experience and/or test data to justify the seismic adequacy of equipment in older operating nuclear power plants that are the subject of Unresolved Safety Issue (USI) A-46.

Representatives from MPR Associates and the Westinghouse Electric Company stated that the revised guidance was biased against the use of past operating experience data by virtue of language in the draft final RG indicating the necessity of staff reviews for each proposed use.

The industry representatives stated that the large number of exceptions cited in the guidance requiring a case-by-case staff review would discourage the use of experience data by licensees and their vendors. In response, the staff explained that it is not the intent of RG 1.100 to preclude the use of experience data to support qualification of equipment at non-USI A-46 plants. The staff also explained that it is not their intent to require a case-by-case review of each proposed use of experience-based seismic qualification data. However, this intent is not clearly stated in the current revision of this Guide.

The Committee issued a letter to the EDO on this matter, dated July 27, 2009, recommending that the staff amend draft final Revision 3 to RG 1.100 to delineate clearly the process for submitting and approving the details of experience data, including applicable implementation procedures, so as to obviate the need for case-by-case review.

#### IV. Applicability of TRACE Code to Evaluate New Light Water Reactor (LWR) Designs

[Note: Dr. Hossein Nourbakhsh was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff to discuss applicability of the TRACE thermal-hydraulic system analysis code to evaluate new LWR designs, specifically, Economic Simplified Boiling Water Reactor (ESBWR) loss-of-coolant accidents (LOCAs).

The NRC staff provided an overview of the regulatory application of the TRACE code. TRACE is being incorporated into the regulatory process for performing confirmatory analyses of new LWR designs. The Committee discussed the staff's assessment of the applicability of TRACE to analyze ESBWR LOCAs.

The Committee also discussed the deficiencies associated with the formulation of the TRACE momentum equation. The momentum formulation in TRACE does not conserve momentum. As pointed out by the TRACE peer review group, for current LWR LOCAs, the treatment of the momentum conservation equation in TRACE can lead to incorrect results for components in which flows merge or change direction. This issue is more important for passive systems where the driving forces are relatively small and need to be accurately modeled in order to correctly predict the system response. Corrections have been made to TRACE to fix, to some extent, the more acute of such problems, but the recommendation made by the peer review group to solve the momentum equations in conservative form has not been implemented. The members noted that the current momentum equation formulation in TRACE, including the recent patches incorporated by the staff, may not be defensible under external scrutiny.

The Committee issued a letter to the EDO on this matter, dated July 29, 2009, with several recommendations, including: the capability of TRACE to predict the effect of trapped noncondensables in the GDSCS and the resulting collapsed liquid level in the reactor pressure vessel should be assessed; the adequacy of TRACE and other analysis methods, such as MELCOR, used for confirmatory analyses of long-term cooling phase of ESBWR LOCAs should be evaluated; TRACE should be assessed for applicability to analyses of coupled neutronic and thermal-hydraulic phenomena important to safety, such as instabilities and anticipated transient without scram (ATWS), in the ESBWR design; ongoing work to demonstrate that TRACE is adequate for confirmatory analyses of LOCAs and other safety-significant thermal-hydraulic phenomena in the new pressurized water reactor (PWR) designs should be completed in a timely fashion to allow application in the design certification process; and TRACE should be improved to properly formulate and solve the momentum equation when the flow changes direction and merges.

VI. Format and Content of the Biennial Research Report to the Commission on the NRC Safety Research Program

[Note: Dr. Hossein Nourbakhsh was the Designated Federal Official for this portion of the meeting.]

The Committee discussed the format and content of the 2010 ACRS biennial report to the Commission on its review and evaluation of the NRC Safety Research Program. The Committee plans to discuss its draft report on its review and evaluation of the NRC Safety Research Program during its October 8-10, 2009 meeting.

VII. Design Certification (DC)/Combined License (COL) Interim Staff Guidance (ISG) -006 and Nuclear Energy Institute (NEI) document NEI 08-08, Revision 1

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

The Committee met with representatives of the NRC staff to discuss Draft Template NEI-08-08, Revision 1, "Generic FSAR Template Guidance for Life Cycle Minimization of Contamination," and Draft interim staff guidance DC/COL-ISG-006, "Interim Staff Guidance on Evaluation and Acceptance Criteria for 10 CFR 20.1406 to Support Design Certification and Combined License Applications."

RG 4.21, "Minimization of Contamination and Radioactive Waste Generation: Life-Cycle Planning," provides guidance for meeting the requirements of 10 CFR 20.1406, "Minimization of Contamination." 10 CFR 20.1406 was promulgated by NRC staff to prevent the recurrence of "legacy decommissioning sites."

The staff provided an overview of NEI-08-08 and DC/COL-ISG-006 and described the role of these documents in the licensing process. Draft Template NEI-08-08 provides a standard approach for new reactors to address the guidance in RG 4.21 and the requirements of 10 CFR 20.1406. The staff is in the process of completing a safety evaluation of NEI-08-08 that will be the basis for endorsing the NEI template. Draft ISG-006 contains the review and approval methods and criteria for use by the staff to review the information in the Design Control documents (DCDs) and in the COLAs and decide whether the requirements of 10 CFR 20.1406 are met.

The Committee issued a letter to the EDO on this matter, dated July 22, 2009, recommending that the definition of the term "radiologically significant" in NEI 08-08 be revised to address unexpected radiological conditions resulting from spills, leaks, unplanned releases, or the identification of radioactive materials in unexpected locations that could have an adverse impact on license termination under Subpart E of 10 CFR Part 20. The Committee also recommended that NEI-08-08 not be endorsed and ISG-06 not be issued until a satisfactory definition of the term "radiologically significant" is developed.

VIII. Draft Final Regulatory Guide 1.215, "Guidance for ITAAC Closure Under 10 CFR Part 52"

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

The Committee met with representatives of the NRC staff to discuss draft final RG 1.215 (DG-1204), "Guidance for ITAAC Closure under 10 CFR Part 52."

RG 1.215 describes a method that the staff considers acceptable for use in satisfying the requirements for documenting the completion of inspections, tests, analyses, and acceptance criteria (ITAAC). In particular, this Guide endorses the methodologies described in the document NEI 08-01, Revision 3, "Industry Guideline for the ITAAC Closure Process under 10 CFR Part 52," as an acceptable method of complying with the requirements of 10 CFR 52.99, "Inspection during construction."

The staff provided an overview of RG 1.215 and NEI 08-01, stating that RG 1.215 promotes a standardized approach for documenting ITAAC closures. NEI 08-01 provides guidance for licensees on the ITAAC closure documentation process. NEI 08-01 references other documents, but this Guide does not endorse any of the referenced documents. The staff stated that the actual inspection process for ITAAC and Design Acceptance Criteria (DAC) are not part of NEI 08-01 and RG 1.215. The staff further discussed the ITAAC closure letter templates and the 225-day notification letters for uncompleted ITAAC, provided in NEI 08-01. The staff also discussed resolution of public comments on DG1204 and DAC.

The Committee issued a report to the NRC Chairman on this matter, dated July 24, 2009, recommending that, prior to issuance, RG 1.215 be revised to specify where the detailed closure process guidance for DAC will be provided. The Committee also recommended that the DAC closure process guidance include a provision for an in-depth review comparable to the usual design certification process to ensure adequacy of the design and that the DAC closure process guidance be provided to the ACRS for review.

IX. Quality Assessment of Selected Research Projects

[Note: Dr. Hossein Nourbakhsh was the Designated Federal Official for this portion of the meeting.]

The Committee discussed its draft report on the assessment of the quality of the following NRC research projects: 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," and Draft NUREG/CR-XXXX, "Diversity Strategies for Nuclear Power Plant Instrumentation and Control Systems." The Committee plans to finalize this report during its September 10-12, 2009 meeting.

## X. Subcommittee Reports

### ESBWR Subcommittee Report

The Chairman of the ESBWR Subcommittee provided a report to the Committee summarizing the results of the June 17-18, 2009, meeting with the NRC staff and GE Hitachi (GEH) to review the resolution of specific issues concerning the ESBWR containment analysis contained in Section 6.2 of the SER. GEH discussed the ESBWR design basis containment analysis performed using TRACG and the confirmatory design basis containment analysis performed using MELCOR. The discussion allowed the Subcommittee to compare the modeling between TRACG and MELCOR. The modified design of the vacuum breaker with the associated isolation valve was also discussed by GEH. However, it was concluded that additional information is needed to guarantee that the temperature sensors and the proximity switches in the design are capable of detecting excessive leakage through the vacuum breaker.

On June 18, 2009, the staff and Dominion presented multiple SER chapters (1, 4, 6, 7, 8, 15, 17, 18, and 19,) with open items, related to the North Anna combined license application. Most of the SER Chapters contained information Incorporated by Reference from the ESBWR DCD. Several technical issues were raised by the Subcommittee that will have to be resolved in the context of the certification of the ESBWR design; such as long term post LOCA containment pressure changes, steam dryer vibration, sump screen blockage, and downstream effects. The Committee plans to review the SER associated with the North Anna COLA at its October 8-10, 2009, meeting.

### Plant License Renewal Subcommittee Report

The Chairman of the Plant License Renewal Subcommittee provided a report to the Committee summarizing the results of the July 7, 2009 meeting, with the NRC staff and representatives of Northern States Power, a Minnesota Corporation (NSPM), to review the draft SER related to license renewal application for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2. PINGP submitted an application to the NRC in April 2008 to extend the PINGP Units 1 and 2 licenses for 20 years. The NRC staff's draft SER, issued in June 2009, contained three open items.

During the meeting, PINGP representatives described the operating history, the license renewal review methodology, and the aging management programs. The staff discussed its aging management review, audit, and inspection along with the open items in the draft SER. The open items were related to vessel internals, waste gas decay tank, and the refueling cavity. Discussion of pertinent issues raised by the subcommittee centered around the following: (1) a decision by PINGP to perform ultrasonic inspection of the bottom thickness of only one of three condensate storage tanks, (2) possible freezing and thawing of electrical cables in manholes, (3) a concern, or lack thereof, regarding the exposure of the containment liner, to borated water, (4) prolonged leakage from the refueling cavity, and (5) the adequacy of the corrective action and root cause analysis. The Committee plans to review the final SER related to the license renewal application for the PINGP Units 1 and 2, at its December 3-5, 2009 meeting.

## XI. Executive Session

[Note: Mr. Edwin 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 June 4, 2009, to comments and recommendations included in the March 18, 2009 ACRS letter concerning Crediting Containment Overpressure in Meeting the Net Positive Suction Head Required to Demonstrate that the Safety Systems Can Mitigate the Accidents as Designed. The Committee decided that, based on the following commitments made by the staff, it was satisfied with the EDO's response.

The staff plans to revise Regulatory Guide 1.82, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident," although it may take some time. The staff plans to factor the ACRS members' questions and suggestions into the on-going Browns Ferry Plant, Units 1, 2, and 3 extended power uprate (EPU) applications. The staff will brief the ACRS on how Browns Ferry EPU applications meet the ACRS March 18, 2009 letter, upon completion of the review. The staff plans to delay issuance of licensing actions that are currently under staff review that relate to containment over pressure (COP) credit.

- The Committee considered the EDO's response of May 22, 2009 to comments and recommendations included in the April 17, 2009 ACRS report on the Safety Aspects of the License Renewal Application for the Vogtle Electric Generating Plant, Units 1 and 2. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of June 1, 2009 to comments and recommendations included in the April 21, 2009 ACRS report on Digital I&C Interim Staff Guidance 5, "Highly Integrated Control Room-Human Factors Issues," and 6, "Licensing Processes." The Committee decided that, based on the following commitments made by the staff, it was satisfied with the EDO's response.

The staff will provide additional guidance, either through incorporation or reference, to ensure that estimates of time required are derived using methods that minimize the potential for bias. In addition, the staff will evaluate how to revise the guidance to address the concern that, as the margin decreases between estimates of time available and time required, there will be increasing potential for uncertainties and bias in the calculations to substantively misrepresent the adequacy of the margin and subsequently decrease confidence in the analysis. Specifically, the staff will evaluate the feasibility of tailoring the analysis and integrated system validation guidance based on the amount of margin between the time available and time required for operator action.

The staff will ensure that the requirement for deterministic behavior is clearly stated in the guidance. The staff will also ensure that the guidance describes methods for determining that the software cannot enter into an undetermined state or that, if such an undetermined state is reached via software or hardware failure, the hardware-based watchdog timer will alert the operators.

Reviewer guidance will be added to ISG-6 to clearly identify that requirement and to ensure consistency between ISG-4 and ISG-6. As such, the staff currently plans to revise Sections C and D of ISG-6 to specify that sufficient design detail be provided to ensure deterministic behavior and independence of each digital I&C safety train.

B. Report of the Planning and Procedures Subcommittee Meeting

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

Member assignments and priorities for ACRS reports and letters for the July 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 October 2009 were 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

Staff Requirements Memorandum

The Staff Requirements Memorandum (SRM) resulting from the ACRS meeting with the Commission on June 4, 2009. In this SRM, the Commission states:

The staff should continue working to resolve the differences of opinion between the Committee and the staff concerning containment overpressure (COP) credit.

Supplement 1 to the Safety Evaluation Report (SER) Related to the Vermont Yankee License Renewal Application

The final SER related to the license renewal of the Vermont Yankee Nuclear Plant required the applicant, Entergy, to perform fatigue analyses on the core spray and recirculation outlet nozzles at the Vermont Yankee plant no later than two years prior to entering the period of extended operation. In its March 20, 2008 report on the Vermont Yankee license renewal application, the Committee agreed with the license condition imposed by the staff. On January 15, 2009, Entergy submitted for staff review the results of its confirmatory environmentally adjusted fatigue cumulative usage factor analyses for the core spray and recirculation outlet nozzles. Based on its review of the analyses, the staff has concluded that Entergy has satisfied the concern identified in the license condition and that the analyses are acceptable. The staff documented its conclusions in Supplement 1 to the final SER and provided a copy of the Supplement for ACRS consideration.

Based on his review of the above Supplement, Dr. Bonaca recommends that the Committee not review this Supplement.

## 2009 Fuel Cycle Information Exchange Conference

On June 23-25, 2009, the NRC hosted the fourth annual Fuel Cycle Information Exchange Conference. The main objective of this Conference was to provide an opportunity for NRC staff, industry, licensees, and other stakeholders to discuss issues involving the regulation of civilian nuclear fuel cycle facilities. Drs. Mike Ryan and John Flack attended this Conference.

## Reappointment of ACRS Members

The Commission has reappointed Drs. Abdel-Khalik and Corradini for a second term.

## Regulatory Guides

### a) Draft Final Regulatory Guide

The staff plans to issue the following Draft Final Regulatory Guide and would like to know whether the Committee wants to review this Guide prior to being issued final.

- Draft Final Revision 2 to Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants"

The staff developed Regulatory Guide 1.189 to provide a comprehensive fire protection guidance document and to identify the scope and depth of fire protection that the staff would consider acceptable for nuclear power plants. This Guide incorporates experience gained over the last three decades and information in many guidance documents by the NRC in the area of the fire protection. The proposed Revision 2 to Regulatory Guide 1.189 updates the resolution of fire-induced circuit failures. During the 480<sup>th</sup> meeting of the ACRS, March 1-3, 2001, the Committee considered the proposed RG 1.189, Rev 0 and decided not to review it. This RG (Rev 0) was issued in April 2001. The staff briefed the Committee on the proposed Revision 1 to RG 1.189, which added information for the application of new plants, during November 2006 and February 2007 meetings. In a letter, dated February 14, 2007, the ACRS recommended that Revision 1 to RG 1.189 be issued. The staff issued this Guide in March 2007.

Since the issuance of Revision 1 to RG 1.189, the staff has been working on Revision 2 to incorporate information described in SECY-08-0093, regarding the resolution of issues related to fire-induced circuit failures. Subsequently, the staff prepared a draft Revision 2 to RG 1.189, as DG-1214, which was issued for public comment in April 2009. The staff received 94 public comments, of which, 83 comments were from NEI and 11 comments were from FPL.

After reviewing these comments and the associated staff's resolution, the Subcommittee's chairman concluded that the bulk of the document did not change from Revision 1. All comments were well thought out and almost all comments were specifically directed toward a portion of the RG text that the commenter believed should be changed. Also, all the comments that were fully accepted or partially

accepted were incorporated into the draft RG. The staff stated a reasonable position related to the two rejected comments. The focus of the changes was in the discussion related to analysis of circuits to assure safe shutdown and particularly related to spurious actuations. No comments were stated which would lead to a conclusion that the draft RG went beyond the regulations or the historical regulations or regulatory guidance. Some inferences to implied guidance contained in past Generic Letters or other staff information which did not appear to have an underpinning in regulations or regulatory guidance were not included in (or was deleted from) the final draft RG.

Based on his review of this Regulatory Guide, Mr. Sieber recommends that the Committee not review this Guide.

#### b) Proposed Regulatory Guides

The staff plans to issue the following Proposed Regulatory Guides for public comment and would like to know whether the Committee wants to review these Guides prior to being issued for public comment.

- Proposed Revision 1 to Regulatory Guide 1.11 (DG-1225), "Instrument Lines Penetrating the Primary Reactor Containment"

The staff issued RG 1.11 in March 1971. The objective of Revision 1 to RG 1.11 is to update the NRC guidance on acceptable methods for the isolation of instrument lines that penetrate the primary containments of light-water-cooled reactors. General Design Criterion (GDC) 55, "Reactor Coolant Pressure Boundary Penetrating Containment," and GDC 56, "Primary Containment Isolation," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10, Part 50, "Domestic Licensing of Production and Utilization Facilities," of the *Code of Federal Regulations*, establish that a plant's principal design criteria require, in part, that each line that penetrates the primary reactor containment and that is part of the reactor coolant pressure boundary or connects directly to the containment atmosphere has at least one locked, closed isolation valve or one automatic valve inside and one automatic valve outside containment "unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis." This Guide defines a basis that the staff considers acceptable to implement the intent of GDC 55 and 56 with regard to instrument lines. This Guide applies to all types of nuclear power plants with a primary containment.

Based on his review of this Proposed Regulatory Guide, Mr. Ray recommends that the Committee review the draft final revision to this Guide after reconciliation of public comments.

- Proposed Revision 1 to Regulatory Guide 2.5 (DG-2001), “Quality Assurance Program Requirements for Research and Test Reactors”

The ANSI and the ANS issued the first version of ANSI/ANS-15.8-1976, the “Quality Assurance Program Requirements for Research Reactors,” in August 1976. The staff subsequently endorsed this guidance in Revision 0 to Regulatory Guide 2.5, “Quality Assurance Program Requirements for Research Reactors,” issued October 1977 and reaffirmed in 1986. Because of the significant changes subsequently made to management programs and to the expected level of detail and documentation of program elements for nonpower (research and test) reactors, ANSI and ANS issued ANSI/ANS-15.8-1995 in 1995 and reaffirmed it in September 2005, to incorporate the acknowledged enhancements to quality assurance programs. The guidance endorsed in the current version of this Guide is outdated. Therefore, a revision of this regulatory guidance is necessary to endorse the updated quality assurance guidance provided in the industry standard.

Based on his review of this Proposed Regulatory Guide, Mr. Stetkar recommends that the Committee review the draft final revision to this Guide after reconciliation of public comments.

- Proposed Revision 1 to Regulatory Guide 4.2 Supplement 1 (DG-4015), “Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications”

Draft Guide 4015 is a proposed revision 1 to Regulatory Guide 4.2 Supplement 1 dated September 2000. DG-4015 is part of a proposed rulemaking to 10 CFR Part 51. This proposed rule is part of the Commission’s intent to review and update, on a 10 year cycle, the findings in Table B-1, Appendix B to Subpart A of Part 51, “Environmental Effect of Renewing the Operating License of a Nuclear Power Plant.” This proposed rule and update to the technical basis documents are

Commission tracking items. Per the rulemaking guidelines, the staff is issuing for comment in parallel the proposed rule and all technical basis documents (i.e.; Regulatory Guide, Environmental Standard Review Plan, NUREG-1555, Supplement 1, Rev. 1; and NUREG-1437, Rev. 1). DG-4015 reorganizes RG 4.2 to conform to 10 CFR 51, Appendix A, and was updated in keeping with the 10-year review of the rule. The draft guide reflects the changes to the rule and is supported by the technical basis for the 10-year update of Appendix B. The overall scope of the Regulatory Guide has not changed.

Based on his review of this Proposed Regulatory Guide, Dr. Ryan recommends that the Committee not review the draft and the final revisions to this Guide.

- Proposed Revision 1 to Regulatory Guide 3.39 (DG-3038), “Standard Format and Content of License Applications for Plutonium Processing and Fuel Fabrication Facilities”

The staff issued Regulatory Guide 3.39 in January 1976. DG-3038 is a proposed revision 1 to RG 3.39 that endorses the standard format and content for safety analysis reports (SARs) described in the current version of NUREG-1718, “Standard Review Plan for the Review of an Application for a Mixed Oxide Fuel Fabrication Facility”, as a method that the NRC staff finds acceptable for meeting the regulatory requirements. DG-3038 directs the reader to documentation regarding the type of information acceptable to the staff for review of an SAR for plutonium processing and fuel fabrication facilities. The SAR may be a separate report submitted as part of the application, or it may be integrated into the license application. This documentation also provides the standard format and content of SARs and related documents submitted as part of an application to construct or modify and operate a plutonium processing and fuel fabrication facility.

Based on his review of this Proposed Regulatory Guide, Dr. Ryan recommends that the Committee review the draft final revision to this Guide after reconciliation of public comments.

- Proposed Revisions to Regulatory Guides 5.10, “Selection and Use of Pressure-Sensitive Seals on Containers for Onsite Storage of Special Nuclear Material”, and 5.15, “Tamper-Indicating Seals for the Protection and Control of Special Nuclear Material”

Draft Guide 5029 revises and combines the information from Regulatory Guides 5.10, “Selection and Use of Pressure-Sensitive Seals on Containers for Onsite Storage of Special Nuclear Material,” and 5.15, “Tamper-Indicating Seals for the Protection and Control of Special Nuclear Material,” dated July 1973 and March 1997, respectively. The updated guidance removes references to devices that are no longer commercially available, corrects references to the regulations that are no longer valid, and reflects recent operating experience regarding the use of various types of seals to protect special nuclear material. The combined guidance will make all information related to seals for special nuclear material available in one location in a more clear and concise format.

Based on his review of this Proposed Regulatory Guide, Dr. Ryan recommends that the Committee review the draft final revision to these Guides after reconciliation of public comments.

- Proposed New Division 8 Draft Regulatory Guide (DG-8039), “Methods for Estimating Effective Dose Equivalent from External Exposure”

Draft Guide 8039 is a proposed new Regulatory Guide which describes dosimetry methods that the NRC considers acceptable for determining effective dose equivalent for external (EDEX) radiation exposures. These methods provide a conservative estimate of EDEX and may be used to calculate total effective dose equivalent (TEDE) in demonstrating compliance with TEDE-based regulatory requirements consistent with the provisions in 10 CFR 20.1201(c).

Licensees will most likely need to provide additional dosimeters if monitoring is required by 10 CFR 20.1502, “Conditions Requiring Individual Monitoring of External and Internal Occupational Dose,” to demonstrate compliance with any of these non-TEDE dose limits. Regulatory Guide 8.34, “Monitoring Criteria and Methods to Calculate Occupational Radiation Doses,” issued July 1992, provides guidance on meeting the monitoring requirements of 10 CFR 20.1502. Therefore, using the methods described below will not, in most cases, lead to any reduction in monitoring requirements. Instead, they may help provide a more accurate estimate of EDEX than may be possible using a single dosimeter when the radiation fields to which the monitored person is exposed are very non-uniform, and particularly when significant parts of the body, especially the torso, are shielded.

Based on his review of this Proposed New Draft Regulatory Guide, Dr. Ryan recommends that the Committee review the draft final version of this Guide after reconciliation of public comments.

c) Withdrawal of Regulatory Guides

The staff plans to withdraw the following Regulatory Guides and would like to know whether the Committee wants to review these prior to being issued.

- Regulatory Guide 7.2, “Packaging and Transportation of Radioactively Contaminated Biological Materials

Regulatory Guide 7.2 was published in June 1974. The regulations for transport of hazardous materials have been revised several times since Regulatory Guide 7.2 was issued. However, neither Regulatory Guide 7.2 nor the referenced ANSI guidance has been revised to keep current with the changing regulations. The ANSI guidance, issued as Standard N14.3-1973, “Packaging and Transportation of Radioactively Contaminated Biological Materials,” by the N14.3 subcommittee has been withdrawn. The transportation of radioactively contaminated biological

materials would be governed by the Department of Transportation (DOT) regulations. Additionally, there has never been an application for a permit to package or transport radioactively contaminated biological material, as described in Regulatory Guide 7.2. The DOT regulations are an acceptable means of meeting the regulations. The staff decided that this Regulatory Guide is no longer needed.

Based on his review of the proposed withdrawal of this Guide, Dr. Ryan recommends that the Committee not object to the staff's proposal to withdraw this Guide.

- Regulatory Guide 1.16, "Reporting of Operating Information-Appendix A Technical Specifications"

Regulatory Guide 1.16 was issued for comment in August 1975 and never finalized. This Guide identifies the content and format of reports required by 10 CFR Part 50 and the Technical Specifications which are Appendix A of the license. The staff decided that this Regulatory Guide is no longer needed.

Based on his review of the proposed withdrawal of this Guide, Mr. Maynard recommends that the Committee not object to the staff's proposal to withdraw this Guide.

- Regulatory Guide 6.3, "Design, Construction, and use of Radioisotopic Power Generators for Certain Land and Sea Applications"

Regulatory Guide 6.3 was published in March 1974 and provides guidance on the safe design, construction, and use of radioisotopic power generators. This Guide supported activities requiring a license pursuant to Title 10 CFR, Parts 30, 40, and 70. Regulatory Guide 6.3 applies to types of devices that are no longer used and have been replaced by other technology. Therefore, no licensing actions for these devices are being submitted or reviewed by license reviewers. The staff decided that this Regulatory Guide is no longer needed.

Based on his review of the proposed withdrawal of this Guide, Mr. Brown recommends that the Committee not object to the staff's proposal to withdraw this Guide.

- Regulatory Guide 1.135, "Normal Water Level and Discharge at Nuclear Power Plants"

Regulatory Guide 1.135 was issued for comment in September 1977 and never finalized. Regulatory Guide 1.135 was intended to provide guidance on estimating the normal ground and surface water elevations at a nuclear power plant site. The determination of normal and flood water elevation is one of the site characteristics required by Title 10 of the *Code of Federal Regulations* (CFR), Part 100, "Reactor Site Criteria," as factors to be considered when evaluating sites for test reactors and stationary power reactor site applications. General Design Criterion (GDC) 2, "Design Basis for Protection Against Natural

Phenomena,” of Appendix A, “General Design Criteria for Nuclear Power Plants,” to 10 CFR Part 50 requires facilities to be designed for protection against the most severe of the natural phenomena that have been historically reported for the site and surrounding area. This includes events such as floods, tsunamis, and seiches. A determination of the normal pool level is not required by GDC 2 and thus, not impacted by the withdrawal of Regulatory Guide 1.135. A review of updated Final Safety Analysis Reports (FSARs) from licensees and applicants determined that only a few FSARs referenced Regulatory Guide 1.135 and no applicant or licensee is currently using it. Applicants and licensees use the guidance in the SRP and ANSI/ANS-2.8-1992, “Determining Design Basis Flooding at Power Reactor Sites” for water level determinations.

Based on his review of the proposed withdrawal of this Guide, Dr. Banerjee recommends that the Committee not object to the staff’s proposal to withdraw this Guide.

### eTravel

All new domestic travel must be processed through eTravel. On July 14-15, 2009 the members will receive an email from [LKister@CWTSatoTravel.com](mailto:LKister@CWTSatoTravel.com) in their NRC email accounts. Members will have 72 hours from the initial email to access the eTravel site to set up their profiles. eTravel does not require CITRIX and it allows individuals to view status of their authorizations and file claims online.

The meeting was adjourned at 7:00 p.m. on July 9, 2009..

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
564<sup>th</sup> FULL COMMITTEE MEETING

July 8-10, 2009

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TODAY'S DATE: July 8, 2009

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1 Emma Wong	NRR/DCI
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7 Matthew Mitchell	NRR/DCE/CUEB
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10 DAVID ALLEY	NRR/DLR
11 Bruce Heida	NRR/ISS/SCUEB
12 Jim Davis	NRR/DLR
13 Sean Min	NRR/DLR/REER
14 On Yee	NRR/DLR
15 JAY ROBINSON	NRR/DLR
16 Rui Li	NRR/DLR
17 Nancy L. Salgado	NRR/DORL/LPLI-1
18 Nadiyah Morgan	NRR/DORL
19 CLIFF DAVIT	NRR/DLR
20 Bill Rogers	NRR/DLR
21 Rachel Vaucher	NRR/DLR. ASA
22 Mita Svicar	NRR/DLR
23 Bruce Lehman	DLR
24 SAMSON LEE	NRR/DLR
25 Chang-yeh yang	NRR/DLR
26 Rarf Fu	NRR/DLR
27 John Dajly	NRR/DLR
28 Andrew Frincharis	NRR/DLR

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11	KAMAL MANOLY	NRR/DE
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13	Thomas Sorebrogh	NRO/DE/CIB2
14	Andy Campbell	NRO/DCTP
15	Ayo Ayebeusi	NRC/RI/DRS/EB3
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17	Hans Ashiv	NRR/DLR
18	BRIAN HOLIAN	↓
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20	Ching Ng	NRO/DE
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22	Chris Hoxie	RES/DSA
23	Steve Bajorek	RES/DSA
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8	NATHAN SUE	RES/DRA
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14	Anthony Dometrovich	FENOC
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24	Curt Bock	Next Era Energy Name Arnold
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
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July 8-10, 2009

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