



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

June 1, 2011

MEMORANDUM TO:           ACRS Members

FROM:                       Sherry Meador                       **/RA/**  
                                  Technical Secretary, ACRS

SUBJECT:                   CERTIFICATION OF THE MEETING MINUTES FROM  
                                  THE ADVISORY COMMITTEE ON REACTOR  
                                  SAFEGUARDS 581<sup>st</sup> FULL COMMITTEE MEETING  
                                  HELD ON MARCH 10-12, 2011 IN ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on April 29, 2011 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**

April 29, 2011

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 581<sup>st</sup> MEETING OF THE ADVISORY  
COMMITTEE ON REACTOR SAFEGUARDS (ACRS),  
MARCH 10-12, 2011

I certify that based on my review of the minutes from the 581<sup>st</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.

<b>OFFICE</b>	ACRS	ACRS:RSB/Sunsi
<b>NAME</b>	SMeador	CSantos/sam
<b>DATE</b>	04/29/11	04/29/11

**OFFICIAL RECORD COPY**

CERTIFIED

Date Certified: 04/29/2011

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During its 581<sup>st</sup> meeting, March 10-12, 2011, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports and memoranda:

### REPORTS

Reports to Gregory B. Jaczko, Chairman, NRC, from Said Abdel-Khalik, Chairman, ACRS:

- SECY-11-0024, "Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews," dated March 16, 2011
- Point Beach Nuclear Plant, Units 1 and 2, Extended Power Uprate Application, dated March 23, 2011
- Status of Groundwater Protection Task Force Efforts, dated March 23, 2011

### MEMORANDA

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

- Draft Final Regulatory Guide 1.149, dated March 10, 2011
- Draft Final Revision to 10 CFR 50.55a, "Codes and Standards," dated March 10, 2011
- Supplement 2 to NUREG-1907, "Safety Evaluation Report Related to the License Renewal of Vermont Yankee Nuclear Power Station, Docket No. 50-271," dated March 10, 2011
- Withdrawal of Regulatory Guide 8.5, dated March 10, 2011

MINUTES OF THE 581<sup>st</sup> MEETING OF THE  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

ROCKVILLE, MARYLAND

The 581<sup>st</sup> meeting of the Advisory Committee on Reactor Safeguards (ACRS) was held in Conference Room 2B1, Two White Flint North Building, Rockville, Maryland, on March 10-12, 2011. Notice of this meeting was published in the *Federal Register* on March 1, 2011 (72 FR 11289-11290) (Appendix I). The purpose of this meeting was to discuss and take appropriate action on the items listed in the meeting schedule and outline (Appendix II). 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. Said Abdel-Khalik (Chairman), Dr. J. Sam Armijo (Vice-Chairman), Mr. John Stetkar (Member-at-Large), Dr. Sanjoy Banerjee, Dr. Dennis Bley, Mr. Charles Brown, Dr. Michael Corradini, Dr. Dana A. Powers, Mr. Harold Ray, Dr. Michael Ryan, Dr. William Shack, and Mr. John Sieber. For a list of other attendees see Appendix III.

I. Chairman's Report (Open)

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

Dr. Said Abdel-Khalik, 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. Abdel-Khalik 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. Commission Paper on the Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews

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

The Committee met with representatives of the NRC staff to discuss SECY-11-0024, "Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews." The staff's briefing discussed the status of the technical and policy issues associated with small modular

reactor (SMR) licensing. The staff described the considerations involved in the recommended licensing approach described in SECY-11-0024. This review process takes a graded approach by performing detailed, in-depth reviews of systems, structures, and components (SSCs) that are both safety related and risk significant while progressively less detailed reviews are performed for SSCs that are determined to be non-safety related, not risk significant, or both. In addition to developing risk informed design specific review frameworks for integral Pressurized Water Reactor (iPWR) designs in the near term, the staff plans to develop a risk-informed, performance-based, regulatory framework for the licensing of iPWRs and non-Light Water Reactor (LWR) SMR designs using the technology neutral framework insights over a longer term.

The Committee issued a report to the NRC Chairman on this matter dated March 16, 2011, concluding that the staff's approach for the license review of iPWRs is an appropriate first step for near-term SMR applications. The longer-term approach for review of non-LWR SMRs was the logical extension of NUREG-1860 (Feasibility Study for a Risk-Informed and Performance-Based Regulatory Structure for Future Plant Licensing), and the proposed pilot studies can provide the necessary information for full development of a new framework, while not putting the licensing process at risk. The Committee recommended that the staff consider the use of Phenomena Identification and Ranking Table (PIRT)-like processes to guide development of the design-specific review plans.

### III. 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 February 9, 2011, to comments and recommendations included in the January 7, 2011 ACRS report on the safety aspects of the license renewal application for the Kewaunee Power Station. The Committee decided that it was satisfied with the EDO's response.
- The Committee considered the EDO's response of February 15, 2011, to comments and recommendations included in the January 19, 2011 ACRS report on the safety aspects of the aircraft impact assessment for the Westinghouse Electric Company AP1000 Design Certification Amendment Application. The Committee decided that it was satisfied with the EDO's response.

#### B. Report of the Planning and Procedures Subcommittee Meeting

### Anticipated Workload for ACRS Members

The anticipated workload for ACRS members through June 2011 was discussed. The objectives were:

- 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

### Regulatory Guides

#### a) Draft Final Regulatory Guide

The staff plans to issue the following Draft Final Regulatory Guide (RG) and would like to know whether the Committee wants to review this Guide prior to being issued final. Draft Final Revision 4 to RG 1.149 (DG-1248), "Nuclear Power Plant Simulation Facilities for Use in Operator Training, License Examinations, and Applicant Experience Requirements," was issued for public comment on May 27, 2010. The public comment period closed on August 27, 2010. This Guide is being revised to endorse the current version American National Standards Institute/American Nuclear Society (ANSI/ANS) Standard 3.5-2009, "Nuclear Power Plant Simulators for Use in Operator Training and Examination." The standard was approved by ANSI/ANS on September 4, 2009.

Based on his review, Dr. Bley recommends that the Committee not review the draft final revision to RG 1.149.

#### b) Withdrawal of Regulatory Guide

The staff plans to withdraw the following RG and would like to know whether the Committee wants to review this Guide prior to being withdrawn.

- Withdrawal of RG 8.5, "Criticality and Other Interior Evacuation signals"

RG 8.5 is being withdrawn because it is no longer needed. This Guide endorses the ANSI/ANS Standard N2.3-1979, "Immediate Evacuation Signal for Use in Industrial Installations," published on September 13, 1979. In 1986 the ANS Standards Subcommittee combined ANSI/ANS-N2.3-1979 with ANSI/ANS-8.3-1986, "Criticality Accident Alarm System," and withdrew ANSI/ANS-N2.3-1979. In December 2010 the NRC issued Revision 2 of RG 3.71, "Nuclear Criticality Safety Standards for Fuels and Material Facilities," which endorses multiple ANSI/ANS standards including ANSI/ANS-8.3-1997.

Based on his review, Dr. Ryan recommends that the Committee not review the staff's basis for withdrawing RG 8.5.

#### 3) Draft Final Revision to 10 CFR 50.55a, "Codes and Standards"

The staff has prepared a draft final revision to 10 CFR 50.55a, "Codes and Standards," that incorporates by reference the following ASME documents:

- 2005 Addenda through 2008 Addenda of Section III, Division 1 of the ASME Boiler and Pressure Vessel Code (ASME B&PV Code)
- 2005 Addenda through 2008 Addenda of Section XI, Division 1 of the ASME B&PV Code
- 2005 Addenda and 2006 Addenda of the ASME Code for Operation and Maintenance of Nuclear Power Plants
- ASME Code Case N-722-1, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated With Alloy 600/82/182 Materials Section XI, Division 1"
- ASME Code Case N-770-1, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material with or without Application of Listed Mitigation Activities"

Based on his review, Dr. Shack recommends that the Committee not review the draft final revision to this rule.

4) Supplement 2 to the Safety Evaluation Report (SER) Related to the Vermont Yankee License Renewal Application

In a March 20, 2008 letter report, the ACRS recommended that the application for renewal of the Vermont Yankee Nuclear Power Station (VYNPS) be approved. The SER for the VYNPS license renewal application was issued in May 2008 as NUREG-1907. Supplement 1 to NUREG-1907 summarizes the staff's review of the applicant's revised metal fatigue calculations. The staff has prepared Supplement 2 to NUREG-1907 to document the staff's review of additional information provided by the applicant incorporating recent industry operating experience as well as annual updates required by 10 CFR 54.21(b). The staff concludes that the supplemental information does not change the conclusion stated in the SER and that the requirements of 10 CFR 54.29(a) have been met.

Based on his review, Dr. Shack recommends that the Committee not review Supplement 2 to the SER.

5) Staff Requirements Memorandum – SECY-10-0121

In a July 27, 2010 letter report, the ACRS provided several recommendations regarding the staff's draft Commission paper on modifying risk-informed regulatory guidance for new reactors. On March 2, 2011, the Commission issued a Staff Requirements Memorandum regarding SECY-10-0121, "Modifying the Risk-Informed Regulatory Guidance for New Reactors," This SRM states that "the staff should continue to use the existing risk-informed framework, including current regulatory guidance, for licensing and oversight activities for new plants, at this time, pending additional analysis and review."

6) Proposed Change to ACRS Bylaws

During the January 2011 meeting, it was proposed that additional time should be allowed for Members to consider/add comments to ACRS reports. This would require a change to the ACRS bylaws. Last month, two proposed revisions to Section 5 of the ACRS Bylaws were presented to the Members for their consideration. Passage of the proposed amendment requires approval of two thirds of the current ACRS Membership.

7) Proposed dates for the meeting with the Commission

The Commission is not available during the time of the June full committee meeting (June 8-10, 2011) and would like to reschedule the briefing to another time in June. There are three possible options:

- June 6<sup>th</sup> – meeting in the morning
- June 16<sup>th</sup> – Or alternatively sometime June 15 - 17
- June 2<sup>nd</sup> – Or alternatively sometime June 1 - 3

8) Proposed topics for the meeting with the Commission

The list of proposed topics for the next meeting with the Commission is as follows:

- Overview (Abdel-Khalik)
- NFPA-805 (Stetkar)
- AP1000 DCD Amendment, Long-term core cooling, and COLA Reviews (Ray)
- ISA/PRA Comparison (Ryan)
- Emergency Planning Rule and Regulatory Guidance (Sieber)
- Use of Risk Insights to Enhance Safety Focus of Small Modular Reactors (Bley)

9) Used Fuel Management Conference

Dr. Ryan would like to attend the Used Fuel management Conference (formerly the Dry Storage Information Forum) in Baltimore, Maryland from May 3-5, 2011.

10) ACRS site visits and meeting with Region II

The meeting and visit has been confirmed for the week of July 25, 2011. It includes visits to the MOX Fuel Fabrication Facility and Tritium Recovery Facility on Tuesday, July 26; a visit to the Vogtle site on Wednesday, July 27; and a meeting with Region II management and staff on Thursday, July 28.

11) ACRS visit to the Naval Nuclear Propulsion Program (NNPP) training facility

ACRS members and staff were invited to visit the NNPP training facility in Charleston, South Carolina. The purpose of this visit is to provide an overview of the NNPP training program to the ACRS in support of their upcoming review of the Gerald Ford class aircraft carrier scheduled to commence in June 2012. The visit has been confirmed for May 24, 2011.

## 12) Quadripartite Meeting

France's Groupe Permanent pour les Réacteurs Nucléaires (GPR) is planning to host the next Quadripartite Plenary Meeting in France. The tentative dates are November 14-18, 2011. There is a possibility of the meeting taking place in the Normandie region (instead of in Paris) in order to facilitate two proposed trips: to the Flamanville site (where an EPR reactor is being built) and to La Hague (where Cogema runs fuel reprocessing facilities). In October 2010, the members were asked to provide suggestions for topics to be discussed during the upcoming meeting. The following list, summarizing the input received from the members, was recently sent to GPR as part of their preparation for the meeting agenda. There will be further interactions on the proposed agenda before a final document is agreed upon by all participants.

### **Licensing Issues:**

- Issues related to power updates
- License Renewal and Life beyond 60
- Plant Life Extension principles across Regulatory regimes

### **Regulatory Issues:**

- Approaches for risk Informed radioactive waste disposal
- Risk-Metrics for Advanced Reactors
- Balancing Defense-in-Depth with Risk-Informed Regulation
- Digital I&C
- Post LOCA Fuel cladding embrittlement regulation
- Ductility criteria or load criteria
- Breakaway oxidation

### **Safety Research:**

- Topics for Safety Research with International Collaborations
- Proper Role of Simulation in Safety Research

### **Operational Experience Issues:**

- Emerging materials degradation issues
- Containment
- Steam generators
- Vessel head penetrations
- Buried piping
- Dissimilar metal welds
- GSI-191 (Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance)
- Transition to NFPA-805 Fire Protection Program
- Organization and Human Factors

13) Transmittal of Documents to Members

Some members have expressed concerns about the transmittal of files by the ACRS staff. These concerns involve the inaccessibility of password protected files and the increasing volume of materials routinely sent to members in the form of emails and CDs. One option for addressing these concerns is the use of the ACRS SharePoint site. Since access to this site is restricted, it can be used to distribute files containing proprietary information without the need for protecting individual files with passwords. This would improve communication and reduce the number of emails. The Members would need a CITRIX account in order to view and download documents from this site.

14) Update on Ongoing Earthquake Studies

There are two ongoing studies that will provide the updated seismic information for use in nuclear power plant licensing for the Central and Eastern United States (CEUS). Both of the studies are sponsored by EPRI, NRC, and DOE and list USGS as a collaborating Agency:

Seismic Source Characterization study of the CEUS

This is the Senior Seismic Hazard Analysis Committee Level 3 investigation that may revise, perhaps to a significant degree, the seismic hazard at nuclear power plants. Current estimates are that it will not be available until January 2012.

Next Generation Attenuation (NGA) models for the CEUS

This is critical information in seismic hazard analyses that will use the results of the seismic source characterization being updated in the first study. This is also a Senior Seismic Hazard Analysis Committee Level 3 investigation. The results of this study are not scheduled to be delivered until January 2014.

An initial draft version was sent to the CEUS-SSC Peer Review Panel Sponsors (NRC, DOE) and the USGS in August 2010 for comment. The large number of responses and comments on the draft version pushed completion of the project to December 2011. The Technical Integration Team is currently working on incorporating the comments into the model report and updating the CEUS-SSC models. The next project briefing for the Peer Review Panel and Sponsors is this June. The Peer Review Panel will provide its final comments on October 24, 2011, and the final report will be distributed to the Sponsors on December 31, 2011. The NRC will then spend 1 to 2 months reviewing the report and providing its comments back to the Technical Integration Team through the Project Manager. The staff does not expect that it will need to make recommendations for significant revisions at that time, since it has been actively participating in the project since its inception.

The final report may not be done until June 2012, since NRC will spend 1 to 2 months reviewing the Peer Review and Sponsor comments and then the Technical Integration Team will consider those comments (no schedule indicated).

Mr. Ray has suggested that Bill Hinze, our ACRS consultant, brief the Committee on the status of these efforts.

15) Status of Selection of New Members

On Friday March 11, 2011, the ACRS and screening panel will interview 3 candidates. The interviews for the fourth candidate are scheduled for the morning of Friday, April 8, 2011.

C. Future Meeting Agenda

Appendix IV summarizes the proposed items endorsed by the Committee for the 582<sup>nd</sup> ACRS Meeting, April 7-9, 2011

A list of documents that were provided to the Committee during the 581<sup>st</sup> ACRS Meeting is listed in Appendix V.

IV. Point Beach, Units 1 and 2, Extended Power Uprate Application

[Note: Mrs. Zena Abdullahi was the Designated Federal Office for this portion of the meeting.]

The Committee met with representatives of the NRC staff, NextEra Energy (the licensee) and their consultants to discuss the Point Beach Nuclear Plant, Units 1 and 2, extended power uprate (EPU) application. The presentations provided an overview of the EPU application and described the safety analyses performed to support the EPU, the change in plant risks due to the EPU, the effects of increased steam generator flow, human factors and operator response times, and power ascension testing. NextEra Energy applied for an EPU of approximately 17% increase above the currently licensed thermal power to 1800 MWt. Major plant modifications and upgrades were performed on the secondary side of the plant to accommodate the higher steam and feedwater flows needed to produce the augmented power. The higher power level is achieved by increasing the average enrichment of fuel assemblies, the amount of new fuel in each reload, the temperature rise across the core, and the operating reactor coolant average temperature. The staff and the licensee presented the results of the analyses that demonstrate the units can operate at the higher power levels and meet the regulatory requirements. The committee review included evaluations of the safety analyses, material effects, flow-induced vibration impacts, risk assessments, electrical system impacts, and the planned plant power ascension testing.

The Committee issued a letter to the NRC Chairman on this matter dated March 23, 2011, recommending that the application for an extended power uprate of Point Beach Nuclear Plants, Units 1 and 2, be approved.

V. Status of Groundwater Protection Task Force Efforts

[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 SECY-11-0019, "Senior Management Review of Overall Regulatory Approach to Groundwater Protection," and its companion memorandum entitled, "Initiatives for Improved Communication of Groundwater

Incidents.” The staff presented the results of the Groundwater Task Force report of June 2010. The overall conclusion of this report was that the NRC is accomplishing its stated mission of protecting public health and safety, and protecting the environment. Four key recommendations were identified. The Senior Management Review Group’s (SMRG) review of the Task Force report led to the recommendations contained in SECY-11-0019 and the associated staff memorandum on improving communications. The staff also described NRC actions and industry activities regarding the evaluation of buried piping and underground tanks at nuclear reactor facilities.

The Committee issued a letter to the NRC Chairman on this matter dated March 23, 2011, concluding that the Committee agreed with the conclusions and recommendations of the SMRG in SECY-11-0019 and the associated staff memorandum. The Committee also recommended that results of routine inspections of the implementation of NEI-07-07, Industry Groundwater Protection Initiative, be considered for an improvement to the radiological effluent performance indicator of the Reactor Oversight Process. The Committee also recommended the continuation of efforts to develop tools to communicate with the public regarding the differences in groundwater protection standards.

VI. Improvements to the Generic Issue Program

[Note: Mr. Kent Howard was the Designated Federal Official for this portion of the program.]

The Committee met with representatives of the NRC staff to discuss the agency’s Generic Issues Program. The staff’s presentation included a historical perspective of the program, key elements of the program, results of generic issues evaluations, and past problems with the program. The staff described the criteria for identifying generic issues, the 5-stage process for resolving these issues, and enhancements to the Generic Issues Program. The staff’s presentation concluded with a description of the status of current generic issues, new proposed issues, and program initiatives. This was an information briefing. No Committee action was necessary.

The meeting was adjourned at 7:00 p.m. on March 11, 2011.

and Transportation of Radioactive and Nonnuclear Hazardous Materials, N14, Subcommittee of the American National Standards Institute (ANSI) in ANSI N14.5-1997, "Radioactive Materials—Leakage Tests on Packages for Shipment," issued 1997, as a process that the NRC staff considers acceptable for meeting the regulatory requirements.

## II. Further Information

The NRC staff is soliciting comments on DG-7008. Comments may be accompanied by relevant information or supporting data and should mention DG-7008 in the subject line. Comments submitted in writing or in electronic form will be made available to the public in their entirety through the NRC's Agencywide Documents Access and Management System (ADAMS).

**ADDRESSES:** You may submit comments by any one of the following methods. Please include Docket ID NRC-2011-0045 in the subject line of your comments. Comments submitted in writing or in electronic form will be posted on the NRC Web site and on the Federal rulemaking Web site Regulations.gov. Because your comments will not be edited to remove any identifying or contact information, the NRC cautions you against including any information in your submission that you do not want to be publicly disclosed.

The NRC requests that any party soliciting or aggregating comments received from other persons for submission to the NRC inform those persons that the NRC will not edit their comments to remove any identifying or contact information, and therefore, they should not include any information in their comments that they do not want publicly disclosed.

*Federal rulemaking Web site:* Go to <http://www.regulations.gov> and search for documents filed under Docket ID NRC-2011-0045. Address questions about NRC dockets to Carol Gallagher (301) 492-3668; e-mail [Carol.Gallagher@nrc.gov](mailto:Carol.Gallagher@nrc.gov).

*Mail comments to:* Cindy K. Bladey, Chief, Rules, Announcements, and Directives Branch (RADB), Office of Administration, Mail Stop: TWB-05-B01M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by fax to RADB at 301-492-3446.

You can access publicly available documents related to this notice using the following methods:

*NRC's Public Document Room (PDR):* The public may examine and have copied for a fee, publicly available documents at the NRC's PDR, Room O1

F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland.

*NRC's Agencywide Documents Access and Management System (ADAMS):* Publicly available documents created or received at the NRC are available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this page, the public can gain entry into ADAMS, which provides text and image files of NRC's public documents. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC's PDR reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov). The draft regulatory guide is available electronically under ADAMS Accession Number ML102350572.

### FOR FURTHER INFORMATION CONTACT:

Bernard H. White, Project Manager, Division of Spent Fuel Storage and Transportation, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; Telephone: 301-492-3303; e-mail: [Bernard.White@nrc.gov](mailto:Bernard.White@nrc.gov).

Comments would be most helpful if received by April 26, 2011. Comments received after that date will be considered if it is practical to do so, but the NRC is able to ensure consideration only for comments received on or before this date. Although a time limit is given, comments and suggestions in connection with items for inclusion in guides currently being developed or improvements in all published guides are encouraged at any time.

Electronic copies of DG-7008 are available through the NRC's public Web site under Draft Regulatory Guides in the "Regulatory Guides" collection of the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/doc-collections/>. Electronic copies are also available in ADAMS (<http://www.nrc.gov/reading-rm/adams.html>), under Accession No. ML102350572. The regulatory analysis may be found in ADAMS under Accession No. ML102350573.

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Dated at Rockville, Maryland, this 25th day of January, 2011.

For the Nuclear Regulatory Commission.

**Thomas H. Boyce,**

*Chief, Regulatory Guide Development Branch, Division of Engineering, Office of Nuclear Regulatory Research.*

[FR Doc. 2011-4558 Filed 2-28-11; 8:45 am]

**BILLING CODE 7590-01-P**

## NUCLEAR REGULATORY COMMISSION

### Advisory Committee on Reactor Safeguards; Notice of Meeting

In accordance with the purposes of Sections 29 and 182b of the Atomic Energy Act (42 U.S.C. 2039, 2232b), the Advisory Committee on Reactor Safeguards (ACRS) will hold a meeting on March 10-12, 2011, 11545 Rockville Pike, Rockville, Maryland. The date of this meeting was previously published in the **Federal Register** on Thursday, October 21, 2010 (74 FR 65038-65039).

*Thursday, March 10, 2011, Conference Room T2-B1, 11545 Rockville Pike, Rockville, Maryland*

*8:30 a.m.-8:35 a.m.: Opening Remarks by the ACRS Chairman (Open)*—The ACRS Chairman will make opening remarks regarding the conduct of the meeting.

*8:35 a.m.-10 a.m.: Commission Paper on the Use of Risk Insights To Enhance the Safety Focus of Small Modular Reactor Reviews (Open)*—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the Commission Paper on the use of risk insights to enhance the safety focus of small modular reactor reviews.

*10:15 a.m.-11:45 a.m.: Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open/Closed)*—The Committee will discuss the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the Full Committee during future ACRS Meetings, and matters related to the conduct of ACRS business, including anticipated workload and member assignments. [**Note:** A portion of this meeting may be closed pursuant to 5 U.S.C. 552(b)(2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of ACRS, and information the release of which would constitute a clearly unwarranted invasion of personal privacy.]

*11:45 a.m.-12 p.m.: Reconciliation of ACRS Comments and Recommendations (Open)*—The Committee will discuss the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

*1 p.m.-3:30 p.m.: Point Beach, Units 1 and 2 Extended Power Uprate Application (Open/Closed)*—The Committee will hear presentations by and hold discussions with representatives of the NRC staff and

NextEra Energy Point Beach, LLC regarding the Point Beach, Units 1 and 2 extended power uprate application and the associated safety evaluation prepared by the NRC staff. [Note: A portion of this session may be closed in order to discuss and protect information designated as proprietary by NextEra Energy Point Beach, LLC, pursuant to 5 U.S.C. 552b(c)(4).]

*3:45 p.m.–5:15 p.m.: Status of Groundwater Protection Task Force Efforts* (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the status of groundwater protection task force efforts.

*5:15 p.m.–7 p.m.: Preparation of ACRS Reports* (Open/Closed)—The Committee will discuss proposed ACRS reports on matters discussed during this meeting. [Note: A portion of this session may be closed in order to discuss and protect information designated as proprietary by NextEra Energy Point Beach, LLC, pursuant to 5 U.S.C. 552b(c)(4).]

*Friday, March 11, 2011, Conference Room T2–B1, 11545 Rockville Pike, Rockville, Maryland*

*1 p.m.–1:05 p.m.: Opening Remarks by the ACRS Chairman* (Open)—The ACRS Chairman will make opening remarks regarding the conduct of the meeting.

*1:05 p.m.–2 p.m.: Improvements to the Generic Issue Program* (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding improvements to the Generic Issue Program.

*2 p.m.–7 p.m.: Preparation of ACRS Reports* (Open/Closed)—The Committee will continue its discussion of proposed ACRS reports. [Note: A portion of this session may be closed in order to discuss and protect information designated as proprietary by NextEra Energy Point Beach, LLC, pursuant to 5 U.S.C. 552b(c)(4).]

*Saturday, March 12, 2011, Conference Room T2–B1, 11545 Rockville Pike, Rockville, Maryland*

*8:30 a.m.–1 p.m.: Preparation of ACRS Reports* (Open/Closed)—The Committee will continue its discussion of proposed ACRS reports. [Note: A portion of this session may be closed in order to discuss and protect information designated as proprietary by NextEra Energy Point Beach, LLC, pursuant to 5 U.S.C. 552b(c)(4).]

*1 p.m.–1:30 p.m.: Miscellaneous* (Open)—The Committee will continue its discussion related to the conduct of

Committee activities and specific issues that were not completed during previous meetings.

Procedures for the conduct of and participation in ACRS meetings were published in the **Federal Register** on October 21, 2010, (75 FR 65038–65039). In accordance with those procedures, oral or written views may be presented by members of the public, including representatives of the nuclear industry. Persons desiring to make oral statements should notify Ms. Ilka Berrios, Cognizant ACRS Staff (*Telephone*: 301–415–3179, *E-mail*: [Ilka.Berrios@nrc.gov](mailto:Ilka.Berrios@nrc.gov)), five days before the meeting, if possible, so that appropriate arrangements can be made to allow necessary time during the meeting for such statements. In view of the possibility that the schedule for ACRS meetings may be adjusted by the Chairman as necessary to facilitate the conduct of the meeting, persons planning to attend should check with the Cognizant ACRS staff if such rescheduling would result in major inconvenience.

Thirty-five hard copies of each presentation or handout should be provided 30 minutes before the meeting. In addition, one electronic copy of each presentation should be emailed to the Cognizant ACRS Staff one day before meeting. If an electronic copy cannot be provided within this timeframe, presenters should provide the Cognizant ACRS Staff with a CD containing each presentation at least 30 minutes before the meeting.

In accordance with Subsection 10(d) Public Law 92–463, and 5 U.S.C. 552b(c), certain portions of this meeting may be closed, as specifically noted above. Use of still, motion picture, and television cameras during the meeting may be limited to selected portions of the meeting as determined by the Chairman. Electronic recordings will be permitted only during the open portions of the meeting.

ACRS meeting agenda, meeting transcripts, and letter reports are available through the NRC Public Document Room (PDR) at [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov), or by calling the PDR at 1–800–397–4209, or from the Publicly Available Records System (PARS) component of NRC's document system (ADAMS) which is accessible from the NRC Web site at

Video teleconferencing service is available for observing open sessions of ACRS meetings. Those wishing to use this service for observing ACRS meetings should contact Mr. Theron Brown, ACRS Audio Visual Technician (301–415–8066), between 7:30 a.m. and 3:45 p.m. (ET), at least 10 days before

the meeting to ensure the availability of this service.

Individuals or organizations requesting this service will be responsible for telephone line charges and for providing the equipment and facilities that they use to establish the video teleconferencing link. The availability of video teleconferencing services is not guaranteed.

Dated: February 23, 2011.

**Andrew L. Bates,**

*Advisory Committee Management Officer.*

[FR Doc. 2011–4504 Filed 2–28–11; 8:45 am]

**BILLING CODE 7590–01–P**

## **NUCLEAR REGULATORY COMMISSION**

[NRC–2011–0006]

### **Sunshine Federal Register Notice**

**AGENCY HOLDING THE MEETINGS:** Nuclear Regulatory Commission.

**DATES:** Weeks of February 28, March 7, 14, 21, 28, April 4, 2011.

**PLACE:** Commissioners' Conference Room, 11555 Rockville Pike, Rockville, Maryland.

**STATUS:** Public and Closed.

#### **Week of February 28, 2011**

*Tuesday, March 1, 2011*

9 a.m. Briefing on Reactor Materials Aging Management Issues (Public Meeting) (Contact: Allen Hiser, 301–415–5650).

This meeting will be webcast live at the Web address—<http://www.nrc.gov>.

#### **Week of March 7, 2011—Tentative**

There are no meetings scheduled for the week of March 7, 2011.

#### **Week of March 14, 2011—Tentative**

There are no meetings scheduled for the week of March 14, 2011.

#### **Week of March 21, 2011—Tentative**

*Thursday, March 24, 2011.*

9 a.m. Briefing on the 50.46a Risk-Informed Emergency Core Cooling System (ECCS) Rule (Public Meeting) (Contact: Richard Dudley, 301–415–1116).

This meeting will be webcast live at the Web address—<http://www.nrc.gov>.

#### **Week of March 28, 2011—Tentative**

*Tuesday, March 29, 2011*

9 a.m. Briefing on Small Modular Reactors (Public Meeting) (Contact: Stephanie Coffin, 301–415–6877).

This meeting will be webcast live at the Web address—[www.nrc.gov](http://www.nrc.gov).



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

Friday, February 11, 2011

**AGENDA  
581st ACRS MEETING  
March 10-12, 2011**

**THURSDAY, MARCH 10, 2011, CONFERENCE ROOM T-2B1, 11545 ROCKVILLE PIKE,  
ROCKVILLE, MD**

- 1) 8:30 AM - 8:35 AM      Opening Remarks by the ACRS Chairman (Open) (SAK/EMH)  
1.1) Opening Statement  
1.1) Items of Current Interest
- 2) 8:35 AM - 10:00 AM      Commission Paper on the Use of Risk Insights to Enhance the  
Safety Focus of Small Modular Reactor Reviews (Open)  
(DCB/MB)  
2.1) Remarks by the Subcommittee Chairman  
2.2) Briefing by and discussions with representatives of the  
NRC staff regarding the Commission Paper on the use of  
risk insights to enhance the safety focus of small modular  
reactor reviews.
- 10:00 AM - 10:15 AM      **\*\*\* BREAK \*\*\***
- 3) 10:15 AM - 11:45 AM      Future ACRS Activities/Report of the Planning and Procedures  
Subcommittee (Open/Closed) (SAK/EMH)  
3.1) Discussion of the recommendations of the Planning and  
Procedures Subcommittee regarding items proposed for  
consideration by the Full Committee during future ACRS  
meetings.  
3.2) Report of the Planning and Procedures Subcommittee on  
matters related to the conduct of ACRS business, including  
anticipated workload and member assignments.

**[NOTE: A portion of this meeting may be closed pursuant to 5 U.S.C. 552b (c) (2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of ACRS, and information the release of which would constitute a clearly unwarranted invasion of personal privacy.]**

- 4) 11:45 PM – 12:00 PM      Reconciliation of ACRS Comments and Recommendations  
(Open) (SAK/CS/YDS)  
Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.
- 12:00 PM - 1:00 PM      **\*\*\* LUNCH \*\*\***
- 5) 1:00 PM - 3:30 PM      Point Beach, Units 1 and 2 Extended Power Uprate Application  
(Open/Closed) (SB/ZA)  
5.1)    Remarks by the Subcommittee Chairman  
5.2)    Briefing by and discussions with representatives of the NRC staff and NextEra Energy Point Beach, LLC regarding the Point Beach, Units 1 and 2 extended power uprate application and the associated safety evaluation prepared by the NRC staff.
- [NOTE: A portion of this session may be closed in order to discuss and protect information designed as proprietary by NextEra Energy Point Beach, LLC, pursuant to 5 U.S.C 552b(c)(4)]**
- 3:30 PM - 3:45 PM      **\*\*\* BREAK \*\*\***
- 6) 3:45 PM – 5:15 PM      Status of Groundwater Protection Task Force Efforts (Open)  
(MTR/DAW)  
6.1)    Remarks by the Subcommittee Chairman  
6.2)    Briefing by and discussions with representatives of the NRC staff regarding the Status of Groundwater Protection Task Force Efforts.
- 7) 5:15 PM – 7:00 PM      Preparation of ACRS Reports  
7.1)    Commission Paper on the Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews (DCB/MB)  
7.2)    Point Beach, Units 1 and 2 Extended Power Uprate Application (SB/ZA)  
7.3)    Status of Groundwater Protection Task Force Efforts (MTR/DAW)  
7.4)    Commission Paper on the Use of Containment Accident Pressure in Analyzing Emergency Core Cooling System and Containment Heat Removal System Pump Performance in Postulated Accidents (WJS/ZA)

**FRIDAY, MARCH 11, 2011, CONFERENCE ROOM T-2B1, 11545 ROCKVILLE PIKE, ROCKVILLE, MD**

- 8) 1:00 PM - 1:05 PM      Opening Remarks by the ACRS Chairman (Open) (SAK/EMH)
- 9) 1:05 PM - 2:00 PM      Improvements to the Generic Issue Program (Open) (DAP/KLH)  
9.1)    Remarks by the Subcommittee Chairman  
9.2)    Briefing by and discussions with representatives of the NRC staff regarding improvements to the Generic Issue Program.
- 10) 2:00 PM - 7:00 PM      Preparation of ACRS Reports  
10.1)    Commission Paper on the Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews (DCB/MB)  
10.2)    Point Beach, Units 1 and 2 Extended Power Uprate Application (SB/ZA)  
10.3)    Status of Groundwater Protection Task Force Efforts (MTR/DAW)  
10.4)    Commission Paper on the Use of Containment Accident Pressure in Analyzing Emergency Core Cooling System and Containment Heat Removal System Pump Performance in Postulated Accidents (WJS/ZA)

**SATURDAY, MARCH 12, 2011, CONFERENCE ROOM T-2B1, 11545 ROCKVILLE PIKE, ROCKVILLE, MD**

- 11) 8:30 AM - 1:00 PM      Preparation of ACRS Reports  
Continue discussion of the proposed ACRS reports listed under Item 10. There may be a 15 break at some point during this activity.
- 12) 1:00 PM - 1:30 PM      Miscellaneous (Open)(SAK/EMH)  
Discussion of matters related to the conduct of Committee activities and specific issues that were not completed during previous meetings, as time and availability of information permit.

**NOTES:**

- When appropriate, members of the public and representatives of the nuclear industry may provide their views during the briefings.
- During the meeting, phone number 301-415-7360 should be used in order to contact anyone in the ACRS Office.
- Presentation time should not exceed 50 percent of the total time allocated for a given item. The remaining 50 percent of the time is reserved for discussion.
- Thirty five (35) hard copies and one (1) electronic copy of the presentation materials should be provided to the ACRS in advance of the briefing.
- One (1) electronic copy of each presentation should be emailed to the Designated Federal Official 1 day before the meeting. If an electronic copy cannot be provided within

this timeframe, presenters should provide the Designated Federal Official with a CD containing each presentation at least 30 minutes before the meeting.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
581<sup>st</sup> FULL COMMITTEE MEETING

March 10-12, 2011

PLEASE PRINT

TODAY'S DATE: March 10, 2011

	<u>NAME</u>	<u>NRC ORGANIZATION</u>
1	Stephanie Coffin	NRO/ARP
2	Lynne Brown	NRC/DSM/SIRI
3	Neil Ray	NRO/DE/CLBZ
4	Arlon O. Costa	NRO/ARP
5	TERRY BELTZ	NRR/DORL
6	Renevt Pascardli	NRR/DORL
7	Tony Mandola	NRR/SALPB
8	Ben Parks	NRR/SALPB
9	Len Ward	NRR/SALPB
10	Stanley Gardocki	NRR/SBPB
11	ED SMITH	NRR/DSS/SBPB
12	GRIS CASO	NRR/DSS/SBPB
13	Steve Jones	NRR/DSS/SBPB
14	JIBAR PATEL	ORR/DRA/APLA
15	William McCormac II	NRR/DE/EEEB
16	LINDINE SHOPS	NRR/DIAS/IHPB
17	JOHN TSAO	NRR/DI/CPNB
18	Jonathan Ortega	NRR/DE/EQVB
19	Aaron Armstrong	NRR/DE/EQVB
20	ROBERT PATTIS JR	NRR/DE/EQVB
21	Kamishaw Martin	NRR/DIAS/IHPB
22	Gargie Kotzalas	OEDO
23	Heise Land	NRR/DORL
24	Barry Miller	NRR/DPR
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
581<sup>st</sup> FULL COMMITTEE MEETING

March 10-12, 2011

PLEASE PRINT

TODAY'S DATE: March 11, 2011

	<u>NAME</u>	<u>NRC ORGANIZATION</u>
1	Jim O'Driscoll	NRO/DSRA/SPCV
2	JOHN KAUFFMAN	RES/DRA/OEGIB
3	Jose Ibarra	RES/DRA
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
580<sup>th</sup> FULL COMMITTEE MEETING

March 10 -12, 2011

PLEASE PRINT

TODAY'S DATE: March 10, 2011

	<u>NAME</u>	<u>AFFILIATION</u>
1	Mike Miller	Nextera Energy
2	Norman Hanley	STEWI
3	Jim Connelly	NextEra Energy
4	Ray Diemel	Manduca
5	ROBERT BRAIN	SHAW
6	Harv Hanneman	NextEra Energy
7	Victoria Anderson	UEI
8	DAVID FINK	Westinghouse
9	Kim Bawlska	Westinghouse
10	LEA ABBOTT	NextEra
11	Brett Kellerman	Westinghouse
12	STEVE HALL	NEXT ERA ENERGY
13	Ken Garner	Westinghouse
14	Jay Kabadi	nextEra Energy
15	Larry Meyer	NextEra Energy
16	JEFF JEFFRIES	CONG
17	Theresa Darling	CENB
18	DANA MILLAR	ENERGY
19	JERRY BURFORD	ENERGY
20	Chris Gayley	APR Associates
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**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 – 0001**

**AGENDA  
582<sup>nd</sup> ACRS MEETING  
April 7-9, 2011**

**THURSDAY, APRIL 7, 2011, CONFERENCE ROOM T-2B1, 11545 ROCKVILLE PIKE,  
ROCKVILLE, MD**

- 1) 8:30 AM - 8:35 AM      Opening Remarks by the ACRS Chairman (Open) (SAK/EMH)  
1.1) Opening Statement  
1.2) Items of Current Interest
- 2) 8:35 AM - 10:30 AM      Selected Chapters of the Safety Evaluation Report (SER) with  
Open Items Associated with the Calvert Cliffs, Unit 3 Combined  
License Application Referencing the U.S. Evolutionary Power  
Reactor (Open/Closed) (DAP/DAW)  
2.1) Remarks by the Subcommittee Chairman  
2.2) Briefing by and discussions with representatives of the  
NRC staff, UniStar, and AREVA regarding Chapters 4, 5,  
8, 10, 11, 12, 16, 17, and 19 of the SER with Open Items  
associated with the Calvert Cliffs, Unit 3 combined license  
application referencing the U.S. EPR design

**[NOTE: A portion of this session may be closed to protect  
information that is proprietary to AREVA and its contractors  
pursuant to 5 U.S.C. 552b(c)(4).]**

- 10:30 AM - 10:45 AM      **\*\*\* BREAK \*\*\***
- 3) 10:45 AM - 12:45 PM      Commission Paper on Emergency Planning for Small Modular  
Reactors (Open) (DCB/MB)  
3.1) Remarks by the Subcommittee Chairman  
3.2) Briefing by and discussions with representatives of the  
NRC staff regarding a draft Commission Paper on  
emergency planning for small modular reactors
- 12:45 PM - 1:45 PM      **\*\*\* LUNCH \*\*\***

- 4) 1:45 PM - 4:15 PM      Draft Final Regulatory Guide 1.152, "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants," and Cyber Security Related Activities (Open) (CB/CEA)
- 3.1) Remarks by the Subcommittee Chairman
  - 3.2) Briefing by and discussions with representatives of the NRC staff regarding Draft final Regulatory Guide 1.152, "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants," the staff's resolution of public comments, and cyber security related activities

4:15 PM - 4:30 PM      **\*\*\* BREAK \*\*\***

- 5) 4:30 PM – 7:00 PM      Preparation of ACRS Reports
- 5.1) Selected Chapters of the Safety Evaluation Report (SER) with Open Items Associated with the Calvert Cliffs, Unit 3 Combined License Application Referencing the U.S. Evolutionary Power Reactor (Open/Closed) (DAP/DAW)
  - 5.2) Commission Paper on Emergency Planning for Small Modular Reactors (Open) (DCB/MB)
  - 5.3) Draft final Regulatory Guide 1.152, "Criteria for Use of Computers in Safety Systems of Nuclear Power Plants," and Cyber Security Related Activities (CB/CA)

**FRIDAY, APRIL 8, 2011, CONFERENCE ROOM T-2B1, 11545 ROCKVILLE PIKE, ROCKVILLE, MD**

- 6) 10:00 AM – 10:05 AM      Opening Remarks by the ACRS Chairman (Open) (SAK/EMH)

- 7) 10:05 AM - 11:30 AM      Human Factors Considerations in Emerging Technology in Nuclear Power Plants (Open) (DCB/HPN)
- 7.1) Remarks by the Subcommittee Chairman
  - 7.2) Briefing by and discussions with representatives of the NRC staff regarding human factors considerations in emerging technology in nuclear power plants

11:30 AM - 12:30 PM      **\*\*\* LUNCH \*\*\***

- 8) 12:30 PM - 2:00 PM Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open/Closed) (SAK/EMH)
- 8.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the Full Committee during future ACRS meetings.
- 8.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments.

**[NOTE: A portion of this meeting may be closed pursuant to 5 U.S.C. 552b (c) (2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of ACRS, and information the release of which would constitute a clearly unwarranted invasion of personal privacy.]**

- 9) 2:00 PM – 2:15 PM Reconciliation of ACRS Comments and Recommendations (Open) (SAK/CS/YDS)  
Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

2:15 PM - 2:30 PM **\*\*\* BREAK \*\*\***

- 10) 2:30 PM – 3:30 PM Preparation for Meeting with the Commission (Open) (SAK, et al./EMH, et al.)  
Discussion of the topics for an upcoming meeting with the Commission

- 11) 3:30 PM – 7:00 PM Preparation of ACRS Reports  
Continue discussion of the proposed ACRS reports listed under Item 5. There may be 15 minute breaks at some point during this activity.

**SATURDAY, APRIL 9, 2011, CONFERENCE ROOM T-2B1, 11545 ROCKVILLE PIKE, ROCKVILLE, MD**

- 12) 8:30 AM - 1:00 PM Preparation of ACRS Reports  
Continue discussion of the proposed ACRS reports listed under Item 5. There may be 15 minute breaks at some point during this activity.

- 13) 1:00 PM - 1:30 PM Miscellaneous (Open) (SAK/EMH)  
Discussion of matters related to the conduct of Committee activities and specific issues that were not completed during previous meetings, as time and availability of information permit.

**NOTES:**

- When appropriate, members of the public and representatives of the nuclear industry may provide their views during the briefings.
- During the meeting, phone number 301-415-7360 should be used in order to contact anyone in the ACRS Office.
- Presentation time should not exceed 50 percent of the total time allocated for a given item. The remaining 50 percent of the time is reserved for discussion.
- Thirty five (35) hard copies and one (1) electronic copy of the presentation materials should be provided to the ACRS in advance of the briefing.
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LIST OF HANDOUTS  
581<sup>ST</sup> ACRS MEETING  
MARCH 10-12, 2011

- I. Opening Remarks by the ACRS Chairman
  - 1. Opening Remarks
  - 2. Items of Interest
  
- II Commission Paper on the Use of Risk Insights to Enhance the Safety Focus of small Modular Reactor Reviews
  - 3. Table of Contents
  - 4. Proposed Meeting Agenda
  - 5. Status Report
  - 6. SECY-11-0024, Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews, 2/18/2011
  - 7. Draft Rev. 3, NUREG-0800, Standard Review Plan, Introduction
  - 8. Presentation Slides – ACRS Future Plant Design Subcommittee meeting 2/9/2011
    - a. Industry Evaluation of Preliminary Staff Response to SRM
    - b. Advanced reactor Program Overview – NRO
  - 9. Staff Requirements – COMGBJ-10-0004/COMGEA-10-0001 – “Use of Risk Insights to Enhance Safety Focus of Small Modular Reactor Reviews,” dated 8/31/2010
  - 10. SECY 10-0034, “Potential Policy, Licensing, and Key Technical Issues for SMR Design”
  - 11. Topical/Technical reports submittal/review schedule list (draft)
  - 12. Two letters on TVA licensing assumption
  - 13. iPWR General reactor Summaries prepared by iPWR Task 3 Review Team (National Labs) for NRC – contains Proprietary Information
  - 14. Slides from 12/16/10 NRC public meeting with industry on SRM Licensing and policy issues
  - 15. SSC designation (two documents) NuScale and mPower dated 10/2010 prepared by National Labs for the NRC
  - 16. SECY-09-0056, “Staff Approach Regarding a Risk-Informed and Performance-Based Revision to Part 50 of Title 10 of the *Code of Federal Regulations* and Developing a Policy Statement on Defense-in-Depth for Future Reactors,” 4/7/2009
  - 17. List of NGNP White Papers
  - 18. NEI Position Paper SMR Pre-application Engagement, 1/14/2011
  - 19. NEI Position Paper License Structure for Multi-Module Small Modular Reactor Facilities, 12/2010
  - 20. INL/EXT-10-18178, License Structure for Multi-Module Facilities, 8/2010
  - 21. INL/EXT-09-17139, Next Generation Nuclear Plant Defense-in-Depth Approach, 12/2009

LIST OF HANDOUTS  
581<sup>ST</sup> ACRS MEETING  
MARCH 10-12, 2011

V Point Beach, Units 1 and 2 Extended Power Uprate Application

22. Table of Contents
23. Purpose
24. Background
25. Safety Analysis
26. Summary
27. ACRS Staff Subcommittee Status Report Slides
28. NRR Staff Subcommittee Slides
29. NEXTERA Subcommittee Slides
30. NEXTERA Subcommittee Risk Analysis
31. NEXTERA Energy Presentation (Backup Slides)
32. Power Accession Testing Plan

VI. Status of Groundwater Protection Task Force Efforts

33. Agenda
34. Status Report
35. U.S. NRC, *Groundwater Task Force Final Report*, June 2010
36. SECY-11-0019, Senior Management Review of Overall Regulatory Approach to Groundwater Protection, February 9, 2011



**Presentation to the ACRS  
Full Committee**

**Advanced Reactor Program**

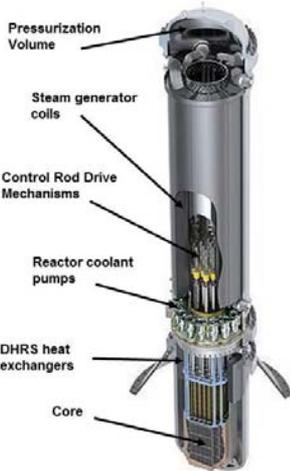
March 10, 2011



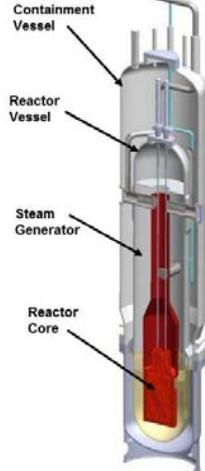
## **Current SMR Activities**

*William Reckley, Chief  
Advanced Reactors Branch 1  
Office of New Reactors*

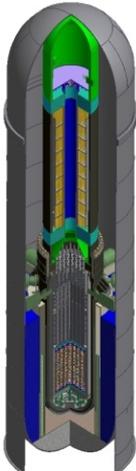
# Advanced Reactor Program



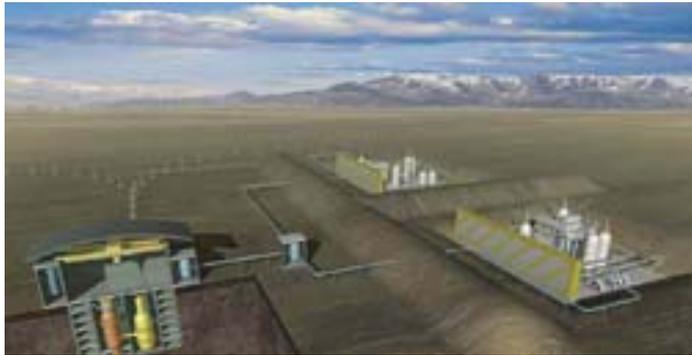
**mPower (Babcock & Wilcox)**  
125 MWe



**NuScale (NuScale)**  
45 MWe



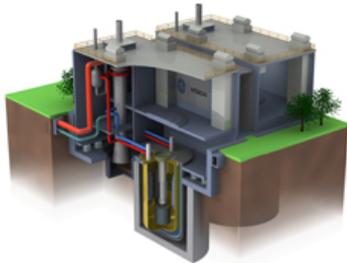
**Westinghouse**  
200 MWe



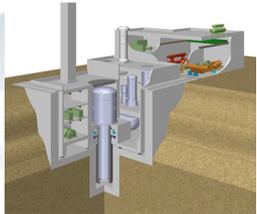
**NGNP - HTGR**



**TVA Clinch River**



**GE-H PRISM**



**Toshiba 4S**

**Fast Reactors**

# Licensing Process Issues

- License for prototype reactors
- License structure for multi-module facilities
- Manufacturing licenses

# Design Requirement Issues

- Defense in depth
- Use of probabilistic risk assessment
- Appropriate source term and dose consequence analyses
- Key component and system designs
- Aircraft Impact Assessments

# Operational Issues

- Operator staffing
- Operational programs
- Construction/installation issues
- Industrial facilities using nuclear process heat
- Security and Safeguards
- Offsite emergency preparedness
- Loss of large areas due to fires or explosions

# Financial Issues

- NRC annual fees
- Insurance and liability (Price Anderson)
- Decommissioning funding

# Control Room Staffing

- Approach
  - ⊕ Tasking Analyses (NUREG 0711)
  - ⊕ Staffing Exemptions (NUREG 1791)
- Related Issues
  - ⊕ Plant Design, Event Analyses and Simulation
  - ⊕ Overall Plant Staffing
- Possible framework, approaches expected to Commission in 3<sup>rd</sup> Quarter FY2011

# Security

- Approach
  - ✦ Security Assessments – Preliminary Designs
- Related Issues
  - ✦ Plant Designs, Mechanistic Source Term
- Performing Issue Identification and Ranking Assessment
- Possible framework, approaches expected to Commission in early FY2012

# Emergency Planning

- Approach
  - ⊕ Engaging stakeholders on alternatives, including graded approaches based on evaluation of public dose in relation to PAG values resulting from severe accident
- Related Issues
  - ⊕ Mechanistic Source Term
  - ⊕ Process Heat Applications (NGNP)
- Possible approach described in upcoming SECY
- ACRS Full Committee Meeting – April 7, 2011

## Summary of Key Technical and Policy Issue SECY Dates

SECY PAPER	DATE TO THE COMMISSION
Control Room Staffing	Q3 FY 2011
Risk-Informed Licensing	SECY-2011-0024 (Feb 2011)
Mechanistic Source Term	Q4 FY 2011
Emergency Planning	Q3 FY2011 (~April)
Physical Security	Q1 FY 2012
Manufacturing Licenses	TBD
Multi-Module Facilities	Q2 FY2011
Annual Fees	Complete (7 Feb 11)
Insurance	TBD
Decommissioning Funding	Q2 FY2011



# **Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews**

**[SECY-11-0024]**

March 10, 2011

# Introduction

Staff response to SRM – COMGBJ-10-0004/COMGEA-10-0001

- Staff should provide the Commission a policy paper ...
  - Near-term focus on integral pressurized water reactors (iPWRs):
    - Development of a framework ...
    - Align review focus and resources ...
    - Develop risk-informed licensing review plans for each ...
  - Long-term focus:
    - Develop a new risk-informed regulatory framework ...
- SECY-11-0024, “Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews”
  - NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition,” “Introduction,” Draft Revision 3 (SECY enclosure)
  - [02/18/11; ML110110688; publicly available]

ACRS Future Plant Design Subcommittee – meeting 02/09/11

# SECY-11-0024

## iPWR Review Framework

### Approach:

- More risk-informed review process – graded approach
  - ⊕ ... detailed, in-depth review for SSCs determined to be both safety related and risk significant and progressively less detailed review for SSCs determined to be nonsafety related, not risk significant, or both
- More integrated review process –
  - ⊕ ... improve integration of the performance-based programmatic requirements that are applicable to SSCs into the SSC review process

### Status Quo:

- ✓ Consistent with current regulations
- ✓ Consistent with Commission policy
- ✓ No change to SSC safety related/nonsafety related determination
- ✓ No change to SSC risk significance determination process

# iPWR Review Framework – Integrated

## SRP Acceptance Criteria for SSCs

- ❖ Design-related criteria
- ❖ Performance-oriented criteria
  - ⊕ Capability
  - ⊕ Availability
  - ⊕ Reliability
  - ⊕ Maintainability

## Program Requirements

- ❖ Applicable to applicants for certified design or COL
- ❖ Staff review to support DC and COL issuance
- ❖ Include performance-based requirements
  - ❖ Technical Specifications
  - ❖ Availability Controls (e.g., RTNSS)
  - ❖ Startup Test Program
  - ❖ Maintenance Rule
  - ❖ Reliability Assurance Program
  - ❖ ITAAC

# Correlation: Performance-Oriented Acceptance Criteria & Performance-Based Program Requirements

## Acceptance Criteria Attribute

Capability

Availability

Reliability

Maintainability

## Program Requirements

Technical Specifications

Availability Controls

Reliability Assurance Program

Maintenance Rule

Initial Test Program

ITAAC

(inspections, tests, analyses and acceptance criteria)

## iPWR Review Framework – Integrated

Observation – For most SSCs, SRP acceptance criteria include criteria that address aspects of demonstrated performance (i.e., performance-oriented criteria) in addition to criteria that address aspects of design. Certain program requirements (e.g., technical specifications, availability controls for SSCs subject to RTNSS, maintenance rule) include performance-based measures (e.g., availability, reliability, maintainability) that correlate with performance-oriented acceptance criteria.

Review –

- Design-related criteria – no change to review process
- Performance-oriented criteria – Where correlation exists, framework provides for identifying program requirements as part of the SSC review and using these requirements to augment or replace, as appropriate, technical analysis and evaluation techniques applied to address performance-oriented acceptance criteria.  
[e.g., inclusion of SSC within applicant’s reliability assurance program and maintenance rule program may be sufficient to satisfy performance-oriented acceptance criteria pertaining to reliability, availability, and maintainability of SSC.]

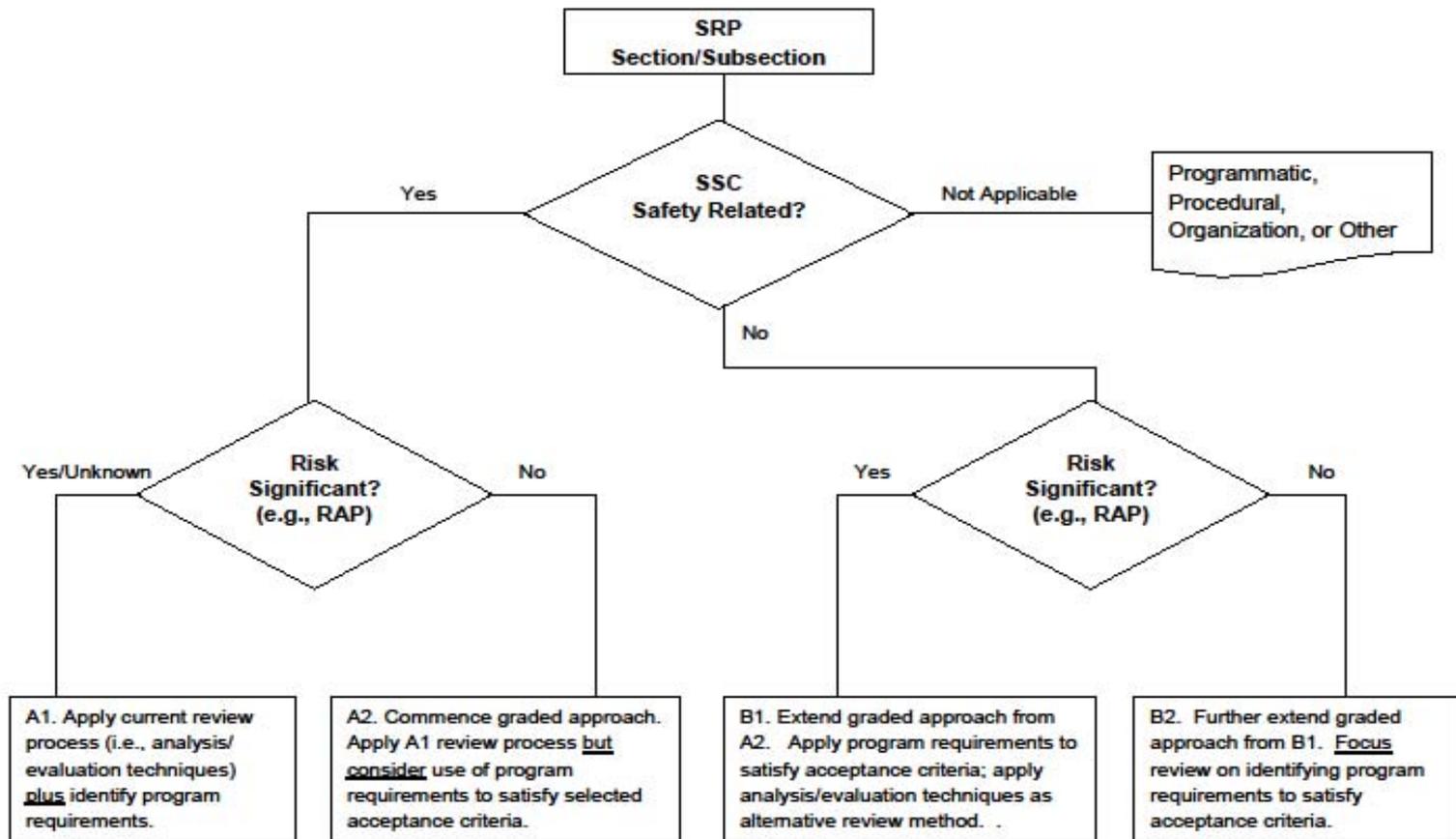
# iPWR Review Framework – Risk-Informed

## Graded review approach for SSCs

- Safety importance and risk significance determine level of review
- Detailed, indepth analysis and evaluation review (analogous to the current review process) applied to safety-related and risk-significant SSCs and progressively less-detailed review to other SSCs

Determination of whether SSC is safety related, risk significant, or both is prerequisite to implementing review framework  
(e.g., risk significance may be determined using process similar to that used in identifying SSCs included in the reliability assurance program)

# iPWR Review Framework – Risk-Informed



\* For programmatic, procedural, organization, or other non-SSC topics (e.g., quality assurance, training, human factors engineering, health physics programs, operating procedures), the current review process is applied as provided in the SRP.

# iPWR Review Framework – Examples

## 9.2.1 STATION SERVICE WATER SYSTEM

B1 (system determined to be nonsafety related and risk significant)

SRP Section 9.2.1 identifies the following acceptance criteria:

- *Protection against natural phenomena. Information that addresses requirements of GDC 2 regarding the capability of structures housing the service water system (SWS) and the SWS itself to withstand the effects of natural phenomena will be considered acceptable if the guidance of Regulatory Guide (RG) 1.29, Position C.1 for safety-related portions of the SWS and Position C.2 for nonsafety-related portions of the SWS are appropriately addressed.*

**Review:** Criterion is design-related and requires technical analysis/evaluation techniques to address effects of natural phenomena.

- *Environmental and Dynamic Effects. Information that addresses the requirements of GDC 4 regarding consideration of environmental and dynamic effects will be considered acceptable if the acceptance criteria in following SRP sections, as they apply to SWS, are met: SRP Sections 3.5.1.1, 3.5.1.4, 3.5.2, and SRP Section 3.6.1.*

**Review:** Criterion is design-related and requires technical analysis/evaluation techniques to address effects regarding internal interactions

- *Sharing of Structures, Systems, and Components. Information that addresses the requirements of GDC 5 regarding the capability of shared systems and components important to safety to perform required safety functions will be considered acceptable if the use of the SWS in multiple-unit plants during an accident in one unit does not significantly affect the capability to conduct a safe and orderly shutdown and cooldown in the unaffected unit(s).*

**Review:** Criterion is not applicable to single-module site (analysis/evaluation techniques may be necessary for subsequent modules of a multi-module site)

# iPWR Review Framework – Examples

## 9.2.1 STATION SERVICE WATER SYSTEM (cont)

- *Cooling Water System. Information that addresses the requirements of GDC 44 regarding consideration of the cooling water system will be considered acceptable if a system to transfer heat from SSCs important to safety to an ultimate heat sink is provided. In addition, the SWS can transfer the combined heat load of these SSCs under normal operating and accident conditions, assuming loss of offsite power and a single failure, and that system portions can be isolated so the safety function of the system is not compromised.*

**Review:** GDC 44 includes both design-related and performance-oriented criteria. Design-related would be addressed by analysis/evaluation techniques. Performance-oriented may be satisfied by program requirements (e.g., RTNSS availability controls, initial test program)

- *Cooling Water System Inspection. Information that addresses the requirements of GDC 45 regarding the inspection of cooling water systems will be considered acceptable if the design of the SWS permits inservice inspection of safety-related components and equipment and operational functional testing of the system and its components.*

**Review:** GDC 45 addresses performance-oriented “maintainability” – which may be satisfied by program requirements (e.g., combination of maintenance rule program, initial plant testing)

- *Cooling Water System Testing. Information that addresses the requirements of GDC 46 regarding the testing of cooling water systems will be considered acceptable if the SWS is designed for testing to detect degradation in performance or in the system pressure boundary so that the SWS will function reliably to provide decay heat removal and essential cooling for safety-related equipment.*

**Review:** GDC 46 addresses performance-oriented “reliability, availability, and maintenance” – which may be satisfied by program requirements (e.g., combination of RTNSS availability controls, reliability assurance program, and maintenance rule)

# iPWR Design-Specific Review Plan

- ❖ Implement iPWR review framework for each application
  - Revised NUREG-0800 SRP Introduction
- ❖ Design-specific review plan includes:
  - ❖ Unique plan for each iPWR design
  - ❖ Schedule(s) for pre-application and application activities
    - ❖ e.g., LWR DC and COL reviews
  - ❖ Standard Review Plan “tailored” to design (i.e., SRP sections added/deleted/modified/retained as appropriate to design)
  - ❖ Safety Evaluation Report template “tailored” to design (correspond to tailored SRP sections)
- ❖ Expand scope of pre-application activities

# iPWR Design-Specific Review Plan

Pre-application activities include:

- ❖ Topical/technical reports – vendor submittal and staff review
- ❖ Audits of vendor information, programs, and processes
- ❖ Review of conceptual/draft/preliminary design information
- ❖ Determination (preliminary) of SSCs – safety-related or non-safety-related; risk significant or non-risk significant
- ❖ Requests for additional information (informal)
- ❖ Documentation of pre-application review in SER template format

Post-application activities include:

- ❖ Application Acceptance Review (formal protocol)
- ❖ Requests for additional information (formal)
- ❖ Determination (final/confirmatory) of SSCs – safety-related or non-safety-related; risk significant or non-risk significant
- ❖ ACRS meetings
- ❖ Review of completed/finalized application information
- ❖ Preparation of final SER

# Coordination with Applicants

- ❖ SECY-11-0024 activities aimed at improving effectiveness and efficiency of staff review process for iPWRs (i.e., no changes to regulatory requirements applicable to SSCs or applications)
- ❖ However –
  - ⊕ review process would be aided by improved documentation of SSCs and program requirements in applications
- ❖ Staff is engaging with potential applicants and other stakeholders – e.g., public regulatory workshops, NEI, ANS white papers

# New Risk-informed Regulatory Structure (advanced reactors – HTGRs, LMRs)

Risk-Informed, Performance-Based Structure development:

- ❖ iPWR insights
  - ❖ Conduct pilot study – apply principles of technology neutral framework (e.g., NUREG-1860) for review of application
  - ❖ Develop insights applicable to technology neutral framework
  - ❖ Schedule – FY2013
- ❖ HTGR insights
  - ❖ Continue NGNP pre-application interactions and review activities (e.g., white papers, ANS (draft) 53.1, public meetings)
  - ❖ Compare/contrast NGNP regulatory approach with principles of technology neutral framework
  - ❖ Conduct NGNP comparison study – apply principles of technology neutral framework for review of application
  - ❖ Develop insights applicable to technology neutral framework
  - ❖ Schedule – FY2014-15

# New Risk-informed Regulatory Structure (advanced reactors – HTGRs, LMRs)

Risk-Informed, Performance-Based Structure development:

- ❖ LMR insights
- ❖ Continue limited pre-application interactions with potential applicants (e.g., PRISM, 4S)
- ❖ Review ANS Standard 54.1 (under development)
- ❖ Continue limited participation in international forums
- ❖ Develop insights applicable to technology neutral framework

Staff recommendation to Commission

- ❖ Consolidate insights – iPWRs, NGNP, LMRs
- ❖ Develop recommendation to Commission
- ❖ Coordinate/integrate into Chairman’s memorandum (02/11/2011) – chartered task force regarding new regulatory approach

# Future Interactions

- Plant Design Familiarization
- Plant Safety Features
- Plant Risk Assessments
- NRC Review Plans & Guidance
- Policy Issues

**DRAFT 3/8/2011 09:45**

**Point Beach  
Extended Power Uprate (EPU)  
ACRS Full Committee**

**March 10, 2011**

# Agenda

- ➔ **EPU Overview..... Larry Meyer**
  - **Modifications & Effects Related to Safety / Risk / Operations..... Steve Hale**
  - **Safety Analysis Overview..... Jay Kabadi**
  - **Reduction in Plant Risk..... Steve Hale**
  - **Effects of Increased Steam Generator Flow Velocity..... Steve Hale**
  - **Human Factors and Operator Response Times / Actions Outside Control Room..... Mike Millen**
  - **Power Ascension Testing..... Mike Millen**

Picture of Team

# A Big Package – Making Our Plant Better in Many Ways

- **Safer**
  - Improved plant risk profile
  - Upgraded AFW and control room ventilation
- **Many Important Legacy Issues Resolved**
- **More Tolerant of Secondary Component Failures**
- **More Reliable**
- **Site Personnel Integration Throughout The Project**
  - Up to 10 Plant SROs assigned
  - Strong ownership and teamwork
  - Pride in online work performed safely
  - 2,000,000 work hours without injury

## Picture of Feedwater Heaters

Picture of Main Transformer

Picture of one phase of Generator breaker

Picture of AFW Pump

Picture of Main Feedwater Pump

# Agenda

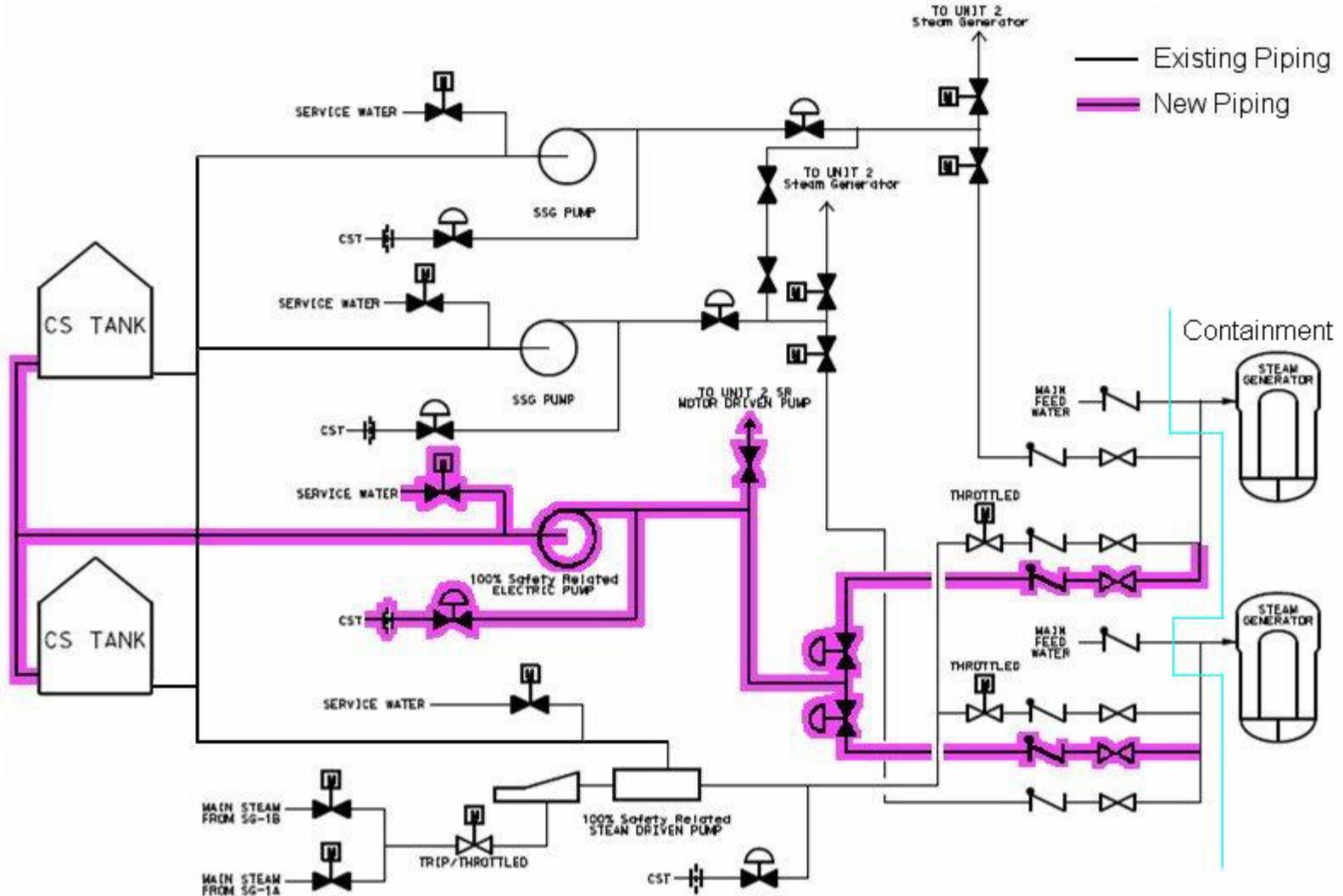
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# Implementing Auxiliary Feedwater (AFW) modifications that improve safety margins, system reliability and availability

- **New, higher capacity, “unitized” motor-driven Auxiliary Feedwater pumps in Primary Auxiliary Building (PAB)**
- **Maintain existing AFW pumps as standby pumps**
- **Improve 480 V bus margins during Loss of Offsite Power**
- **Elimination of manual operator actions**
  - Automated suction switchover to safety related water supply
  - Increased backup air supply for AFW pump mini-recirculation valves
  - Eliminated manual alignment of shared motor-driven AFW pumps

# AFW System - Major Flow Paths Per Unit With Shared Standby Steam Generator (SSG) pump System

## Graphic 1



# Modifications are being implemented that improve safety and plant margins

- **Fast acting Main Feedwater Isolation Valves**
  - Improves containment peak pressure response to main steam line breaks
- **Loss of voltage relay time delay setting changes**
  - Improves ability to maintain off-site power during transmission grid voltage transients
- **Reactor Protection System and Engineered Safety Features Actuation System (RPS/ESFAS) setpoint changes**
  - Documented uncertainty analyses using NRC-approved methodology
- **New Main Generator output breakers**
  - Improves response to generator trip
  - Improves normal voltage levels on safety-related buses

# **Modifications and changes are being implemented to improve the overall plant risk profile**

- **AFW automatic suction switchover to safety related water supply**
- **Increased backup air supply for AFW mini-recirculation valves**
- **Eliminated manual alignment of shared motor-driven AFW pumps**
- **Defense in depth by retaining existing shared AFW pumps as standby pumps**
- **Providing self-cooled air compressor**
- **Procedure change to improve reliability of Reactor Coolant System (RCS) depressurization**

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# Safety Analyses: Conservatism/Improvements

- **Key changes beneficial to safety analysis**
  - Improved methods
  - Reduction of hot channel enthalpy rise factor ( $F_{\Delta H}$ )
  - Reduction in axial offset
  - Improvements in AFW system
- **Conservative inputs/assumptions**
  - Conservative physics parameters
  - Bounding plant operating parameters
  - Conservative trip setpoints
- **Conservative analysis Departure from Nucleate Boiling Ratio (DNBR) limit**
  - Safety Analysis Limit (SAL) for DNBR is conservatively set to maintain margin to the DNBR design limit

# Conservative analysis methods applied for non-LOCA events with all results meeting acceptance criteria

	Event	Criteria	Result
<b>Decrease (Loss) in RCS Flow</b> (Reduced Primary Cooling)	Loss of Flow (Cond III)	DNBR (SAL*) $\geq 1.38$	1.41
	Locked Rotor (Cond IV)	RCS Pres $\leq 3120$ psia Rods-in-DNB $\leq 30\%$	2653 psia 25%
<b>Overheating</b> (Reduced Secondary Cooling)	Loss of Load (Cond II)	RCS Pres $\leq 2748.5$ psia MSS Pres $\leq 1208.5$ psia	2741.9 psia 1205.6 psia
	Loss of Feedwater (Cond II)	Przr Mix Vol $\leq 1000$ ft <sup>3</sup>	928 ft <sup>3</sup>
	ATWS	RCS Pres $\leq 3215$ psia	3175.1 psia
<b>Overcooling</b>	HFP MSLB (Cond III or IV)	DNBR (SAL*) $\geq 1.30$ below 1 <sup>st</sup> MVG	1.411
		DNBR (SAL*) $\geq 1.38$ above 1 <sup>st</sup> MVG	1.644
		LHR $\leq 22.54$ kW/ft	22.51 kW/ft
	HZP MSLB (Cond IV)	DNBR (SAL*) $\geq 1.45$ LHR $\leq 22.54$ kW/ft	1.616 21.64 kW/ft

\* Safety analysis limit DNBR has margin compared to the DNBR design limit

MVG = Mixing Vane Grid

## Conservative analysis methods applied for non-LOCA events with all results meeting acceptance criteria (continued)

	Event	Criteria	Result
<b>Reactivity Addition</b>	Rod Withdrawal @ Power (Cond II)	DNBR (SAL*) $\geq$ 1.337 RCS Pres $\leq$ 2748.5 psia	1.337 2692 psia
	Rod Ejection (Cond IV)	Fuel Enthalpy $\leq$ 200 cal/g Fuel Melt (at hot spot) $\leq$ 10%	176.4 cal/g 9.8%

\* Safety analysis limit DNBR has margin compared to the DNBR design limit

# Large Break LOCA analysis performed using NRC approved Best Estimate ASTRUM with results meeting acceptance criteria

	<b>Pre-EPU Value (1683 MWt)</b>	<b>EPU Unit 1 Value (1811 MWt)</b>	<b>EPU Unit 2 Value (1811 MWt)</b>	<b>Acceptance Criteria</b>
<b>95/95 Peak Cladding Temperature ( F)</b>	2128	1975	1810	< 2200
<b>50<sup>th</sup> Percentile Peak Cladding Temperature (°F)</b>	1225 (with ASTRUM)	1306	-	-
<b>95/95 Maximum Local Oxidation (%)</b>	8.52	2.61	2.57	< 17.0
<b>95/95 Core Wide Oxidation (%)</b>	0.81	0.386	0.154	< 1.0
<b>Coolable Geometry</b>	Long term cooling is maintained via operator actions. No impact on coolable geometry.			
<b>Long-Term Cooling</b>				

# Small Break LOCA safety margin is assured by core design limit selection

Parameter	Pre - EPU		EPU	
Analyzed Core Power (MWt)	1683		1811	
Hot Channel Enthalpy Rise Factor [ $F_{\Delta H}$ ]	1.80		1.68	
Maximum Relative Power in the Hot Assembly [ $P_{HA}$ ]	1.667		1.62	
Axial Offset (%)	30		13	
Steam Generator Tube Plugging Level (%)	25		10	
Replacement Steam Generator Model	44F – Unit 1	$\Delta$ 47 – Unit 2	44F – Unit 1	$\Delta$ 47 – Unit 2

# Small break LOCA analysis performed using NRC-approved NOTRUMP evaluation model demonstrated acceptable results

Parameter	Pre - EPU		EPU		Limit
	Unit 1	Unit 2	Unit 1	Unit 2	
Limiting Break Size	3-Inch		3-Inch		-
PCT (°F)	1205	1094	1049	1103	2200
Maximum Transient Local Oxidation (%)	0.03	0.02	0.01	0.02	17
Maximum Core-Wide Oxidation (%)	< 1	< 1	< 1	< 1	1

# Agenda

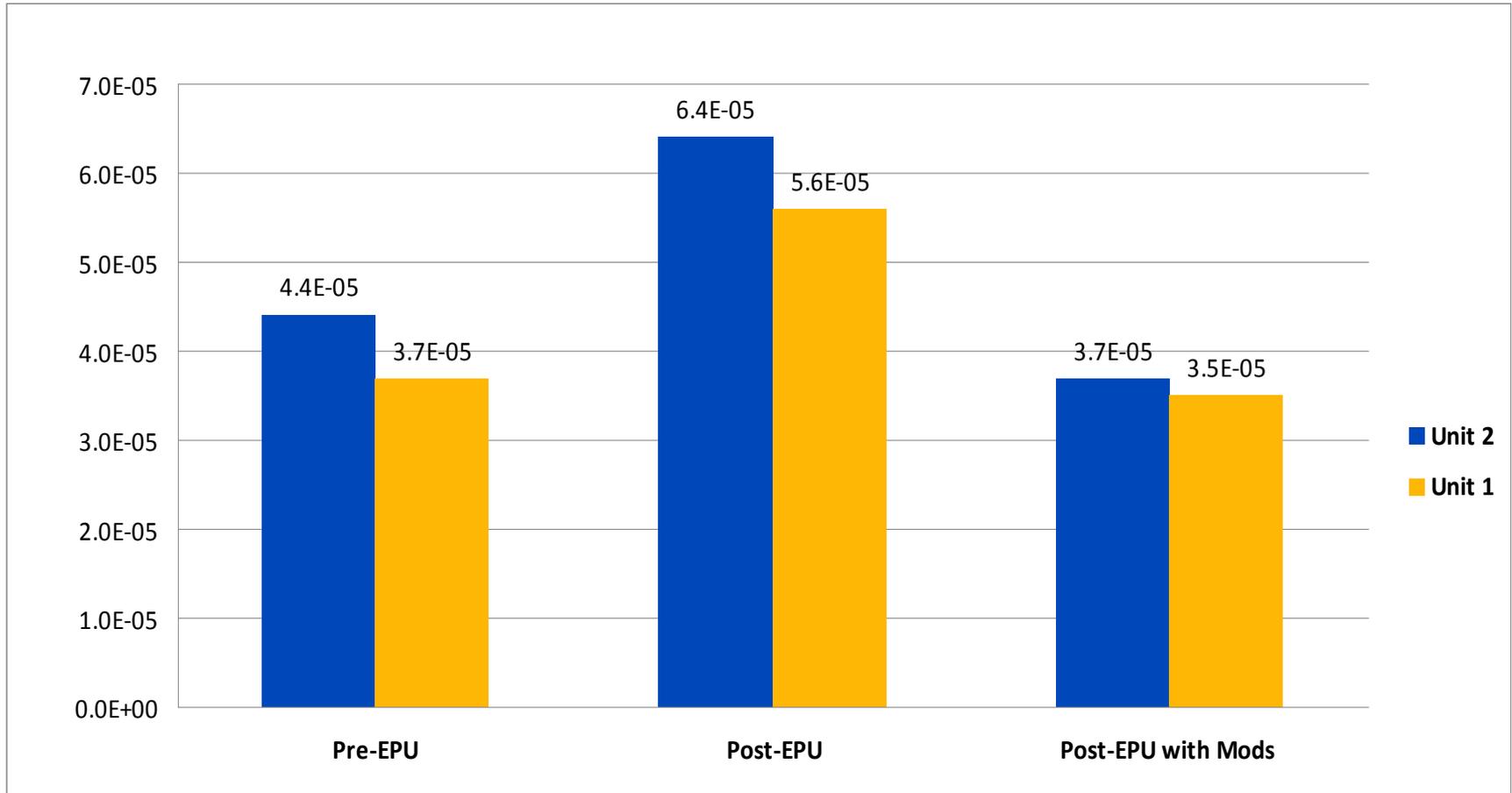
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# Overall the changes due to EPU resulted in a reduction to plant risks

- **Plant modifications were incorporated into the models**
- **Plant changes that resulted in a risk reduction**
  - AFW system changes
    - Increase backup air supply for AFW mini-recirculation valves
    - Auto switchover of AFW suction
    - Eliminated manual alignment of shared motor-driven AFW pumps
  - Provide self-cooled air compressor
  - Feedwater/Condensate system changes
  - Procedure change to improve reliability of RCS depressurization

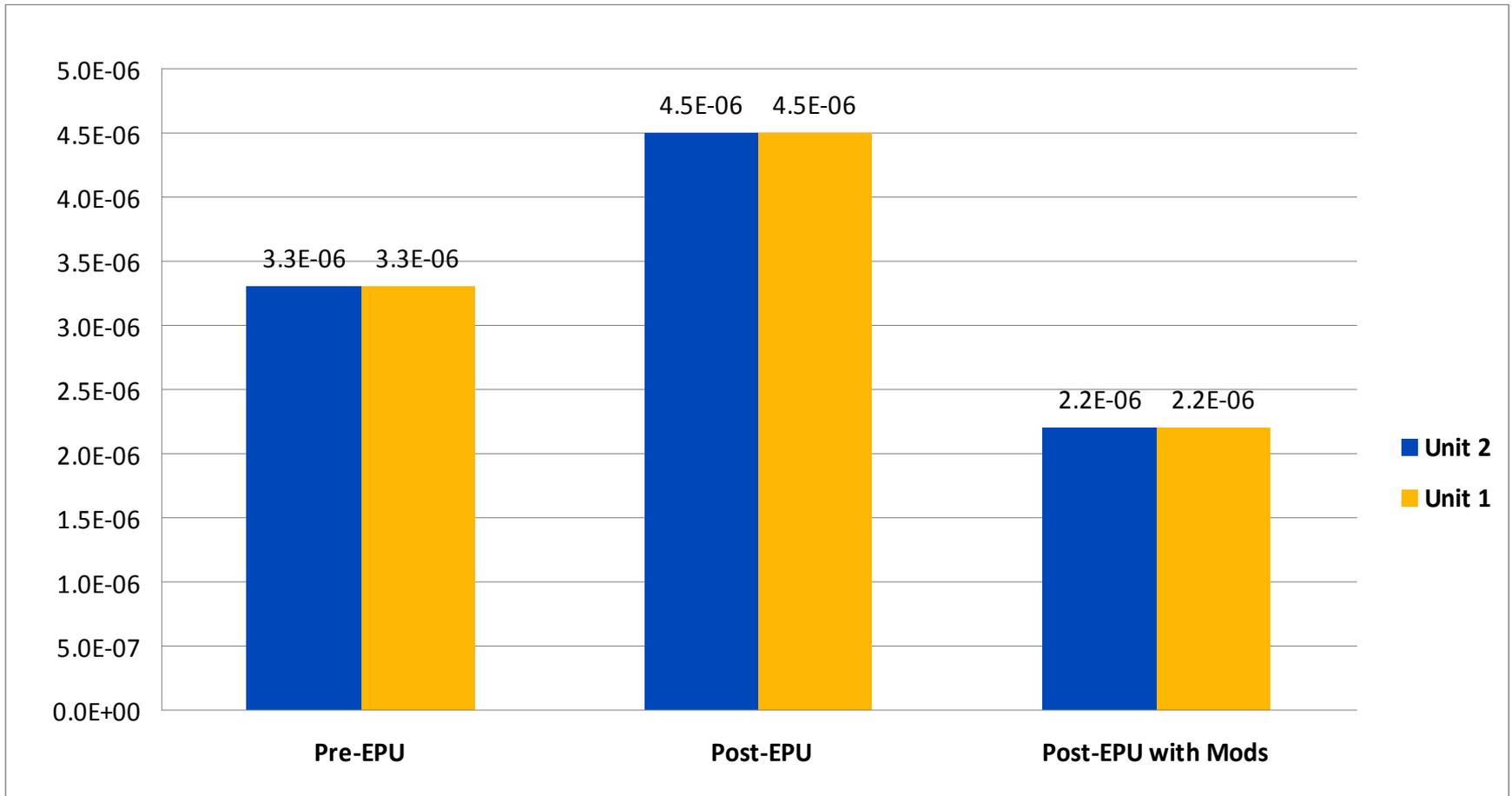
# With the installed plant modifications, the Core Damage Frequency (CDF) decreases below the present value

## EPU Impact on CDF



# With the installed plant modifications, the Large Early Release Frequency (LERF) decreases below the present value

## EPU Impact on LERF



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# Analyses demonstrated acceptable steam generator tube wear at EPU conditions

Parameter	Acceptance Criteria	Results
Fluidelastic stability ratio	<1.0	Met with margin
Amplitude of tube vibration due to turbulence no greater than 1/2 of the gap between tubes (.180 in) <sup>1</sup>	<0.09 in	Met with margin
Demonstrate that unacceptable tube wear will not occur after the EPU <sup>2</sup>	<0.020 in	Met with margin
FIV-induced tube stresses remain below the fatigue endurance limit of the material	<20 ksi at 1E11 cycles	Met with margin

## Notes:

1. This considers the worst-case scenario that the adjacent tubes are moving 180 degrees out of phase
2. 40% wear depth for the Model 44F and Δ47 steam generators would be 0.4 x 50 mils = 20 mils

# Steam Generator parameters at EPU conditions are comparable to the current industry operating experience

Plant	Steam Generator Model	Velocity (Downcomer Tube Entrance) [ft/sec]	Volumetric Flow Rate U-Bend [ft <sup>3</sup> /sec]	Velocity (V) (U-Bend Entrance) [ft/sec]	Mixture Density ( $\rho$ ) [lb/ft <sup>3</sup> ]	$\rho V^2$ (U-Bend) [lb/ft-sec <sup>2</sup> ]
Point Beach 1	44F	12.02	880	18.2	3.60	1190
Point Beach 2	$\Delta$ 47	9.68	728	13.4	4.27	995
Turkey Point 3 and 4	44F	12.26	731	15.1	4.52	1031
Kewaunee	54F	12.09	817	15.1	5.11	1160
Indian Point 2	44F	None given	783	16.2	3.80	995
Indian Point 3	44F	12.12	818	16.9	4.06	1154

Operating experience shows excessive tube wear is not a concern for uprate condition

## **Based on excellent steam generator operating performance no tube wear issues are expected at EPU conditions**

- **Hundreds of reactor operating years with no indication of tube vibration problems with steam generators comparable to Point Beach**
- **Periodic steam generator tube inspections have provided no indication of unusual tube wear**
- **Although not anticipated by analysis, on-going steam generator tube inspections will provide early indication if problems were to occur**

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# There has been significant Operations involvement and participation on the project

- **Human Factors**

- Design guidelines followed for optimization of human factors for new controls
- New motor-driven AFW controls located on control boards near Steam Generator indicators matching location of turbine-driven pump controls
- Plant equipment locations considered for ease of access

- **Procedure Changes**

- Changes to emergency operating procedure set due to new AFW pumps, addition of MFIVs, and use of containment spray on sump recirculation
- No significant change in strategy or operator actions
- Procedures validated in simulator

# **No new actions outside of the Control Room are required; some have been eliminated**

- **Eliminated actions outside of the Control Room**
  - Eliminated the need for local actions to reset Control Room filter fan breaker
  - Eliminated the need for local actions to gag AFW recirc valves for loss of Instrument Air (24 hour backup)
  - Eliminated Post Accident Sampling System (PASS) requirement to sample and analyze within 3 Hours
- **No other actions outside of the Control Room are affected by EPU**

# Some Operator response times and actions have changed, but are not considered to be a burden to the Operators

- **Control Room Operator Response Times**
  - Steam Generator Tube Rupture Event
    - Operator actions and response times remain unchanged due to EPU
  - Large Break LOCA
    - Establish Containment Spray on sump recirculation (20 minutes from time Refueling Water Storage Tank supplied Containment Spray injection is secured)
    - Transfer from containment spray recirculation to cold leg recirculation (3 hours and 10 minutes following termination of Safety Injection, 10 minutes from termination of Containment Spray)
  - Removed action for operators to manually transfer AFW suction to service water

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# Testing approach will ensure plant systems and equipment are operating within design limits without large transient testing

- Perform individual component testing to ensure components are meeting design requirements and expected performance
- Calibrate and test control systems; monitor their performance through power ascension to ensure individual system and integrated response is as expected
- Monitor pump flows and valve positions through power ascension to ensure equipment is performing as designed
- Perform limited transient testing including turbine overspeed trip test, and Steam Generator and Feedwater Heater level deviation testing to monitor integrated control system response

Testing approach is consistent with the current operating philosophy to minimize real challenges to the Operators and operating plant

## **All testing is performed in a controlled deliberate manner**

- **Power Ascension Test Procedure coordinates hold points required during power escalation and directs individual testing activities and data acquisition**
- **Power is increased in a slow and deliberate manner**
- **Power ascension is stopped at pre-determined power levels for steady state data gathering and formal parameter evaluation**
- **Data is evaluated to pre-established acceptance criteria**
- **If unexpected plant conditions occur, the test will be stopped and power reduced to the last acceptable operating configuration or as directed by plant procedures**
- **A Test Review Board will be established to review and approve of test results at all power plateaus**
- **Management approval at selected power plateaus**
- **Anticipated duration of power ascension is 21 days**

# Questions?

# Backup Material Testing

# Testing approach will ensure plant systems and equipment are operating within design limits without large transient testing

- **Begins with individual test procedures during Modes 5 and 6 to demonstrate that structures, systems and components will perform satisfactorily**
  - Breaker and control checks
  - Control system initial setup and checks
  - Uncoupled motor runs
  - Individual valve testing

# Testing approach will ensure plant systems and equipment are operating within design limits without large transient testing (continued)

- **Low power testing (5-15%)**

- Turbine Generator checks and calibrations such as Turbine supervisory instruments, Electro Hydraulic Control system functional testing, Generator testing, Turbine vibration testing, Gland Steam system checks
- Rotating equipment checks (flows, vibration, etc.)
  - Condensate pumps and Heater drain pumps
  - Feedwater pumps including transfer from recirculation to the feedwater regulating valves
- Turbine Stop and Governor Valve Testing and Turbine Overspeed trip testing
- Monitor piping vibration

# Testing approach will ensure plant systems and equipment are operating within design limits without large transient testing (continued)

- **Power testing (15-50%)**
  - Control system tuning
    - Heater drain tank level and recirculation valves, Feedwater Regulating valves, Feedwater heater drain valves, Feedwater pump recirculation valves
  - Steam Generator level transient tests
  - Condensate and Feedwater Pump flow data and pump swaps
  - Establish dual Condensate and Feedwater pump lineup
  - Monitor rotating equipment and piping vibration
  - Monitor radiation levels

# Testing approach will ensure plant systems and equipment are operating within design limits without large transient testing (continued)

- **Power testing (50-85%)**
  - Turbine Stop and Governor valve testing
  - Control system tuning
    - Heater drain tank level and recirculation valves
    - Feedwater Regulating valves
    - Feedwater heater drain valves
    - Feedwater pump recirculation valves
  - Steam Generator level transient tests
  - Condensate and Feedwater pump flow data
  - Feedwater heater 4 and 5 dump valve testing
  - Monitor rotating equipment and piping vibration
  - Monitor radiation levels

# Testing approach will ensure plant systems and equipment are operating within design limits without large transient testing (continued)

- **Power testing (85-100%)**

- Turbine Generator performance testing
- Control system tuning
  - Heater drain tank level and recirculation valves
  - Feedwater Regulating valves
  - Feedwater heater drain valves
  - Feedwater pump recirculation valves
- Condensate and Feedwater pump flow data
- Feedwater heater 1, 2 and 3 dump valve testing
- Cross over steam dump testing
- Monitor rotating equipment and piping vibration
- Monitor radiation levels
- Steam Generator moisture carryover testing
- Leading Edge Flow Measurement (LEFM) calibration checks

Questions?

# **Backup Material Boron Precipitation**

# Backup Material

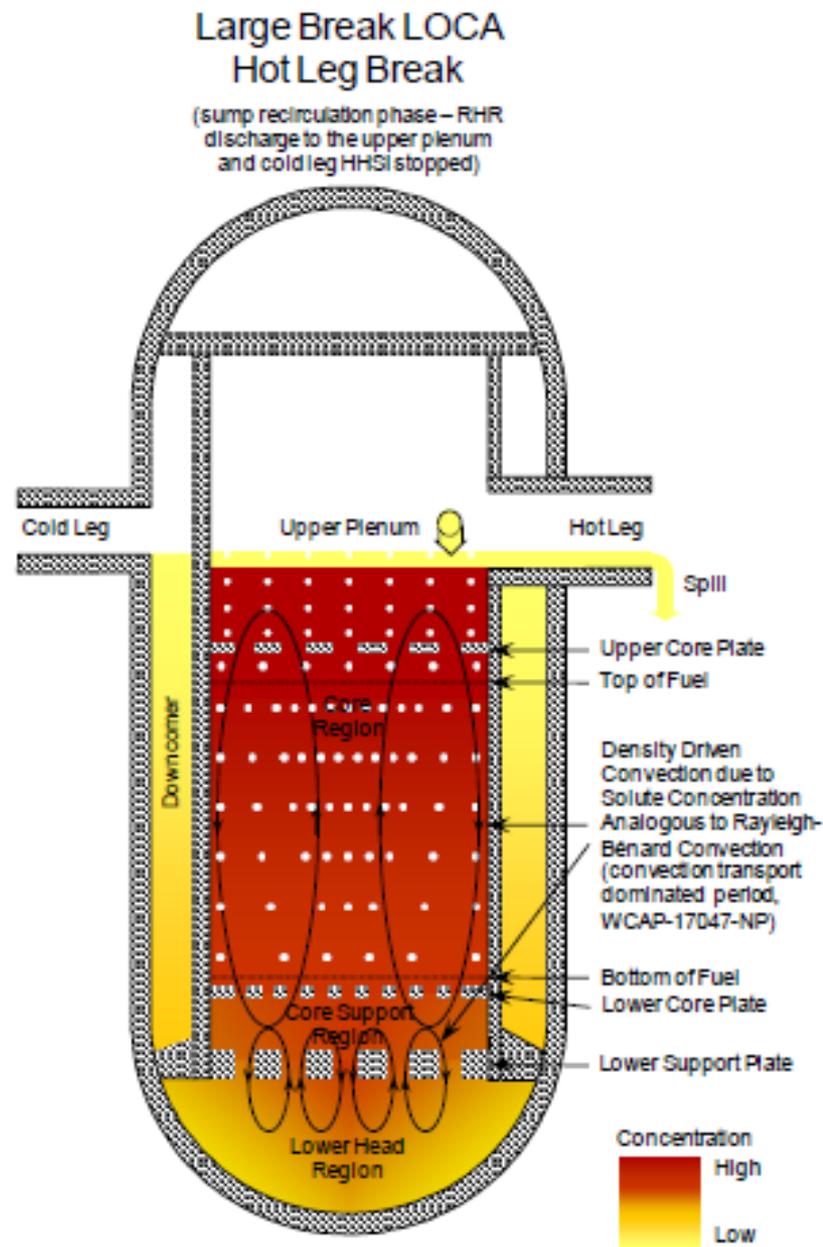


Figure 1 Predominant Bulk Solute (Boric Acid) Concentration Transport Phenomena between Core and Lower Plenum and within Lower Plenum



**Point Beach Units 1 and 2  
Extended Power Uprate  
ACRS Full Committee Meeting**

**EPU Power Ascension and Testing**

**Robert L. Pettis, Jr., P.E.**

Senior Reactor Engineer  
Quality and Vendor Branch  
Division of Engineering  
Office of Nuclear Reactor Regulation

## **EPU Test Program**

- Standard Review Plan (SRP) 14.2.1, "Generic Guidelines for Extended Power Uprate Testing Programs," specifically developed for EPU, provides guidance for staff reviews of proposed EPU test programs; based on Regulatory Guide 1.68 and plant specific initial test program.
- EPU test program should include testing sufficient to demonstrate structures, systems, and components will perform satisfactorily at the proposed uprated power level.

## **EPU Test Program (continued)**

- Staff guidance considers original power ascension test program and EPU-related plant modifications.
- SRP guidance acknowledges that licensees may propose alternative approaches to testing with adequate justification. Specific review and acceptance criteria provided in SRP for staff evaluation of alternative approaches.

## **EPU Test Program (continued)**

- PBNP's program consists primarily of steady-state testing; does not include Large Transient Testing (LTT), e.g., Plant Trip, Load Swing and Load Reduction tests.
  - Test program will monitor important plant parameters during EPU power ascension
  - TS surveillance and post-modification testing will confirm the performance capability of the modified components
  - Acceptance criteria (Level 1 and 2) will be established and incorporated into test procedures by PBNP (ref: 10 CFR 50, Appendix B, and RG 1.68, Appendix A, Section 5)

# Large Transient Testing

- Licensee justification for not performing LTT addressed certain review criteria discussed in SRP 14.2.1; consistent with previous staff approved EPU.s.
  - LOFTRAN, used to simulate large load reduction transients, demonstrated acceptable performance
  - Industry operating experience at EPU power levels (Ginna and Kewaunee), including unplanned events at PBNP involving reactor trips, produced expected results
  - No new thermal-hydraulic phenomena introduced by modifications or changes in operating conditions
  - Extent of EPU modifications for balance-of-plant systems; computer modeling of plant transients

## Staff Summary

- SRP 14.2.1 allows licensee justification for not performing all initial test program power ascension tests
- LTT not needed for Code analyses benchmarking
- Staff considered PBNP operating history, industry experience at EPU power levels, and no introduction of new credible thermal-hydraulic phenomena
- Extent and scope of EPU modifications
- Licensee conformance to staff approved SRP

## Staff Conclusion

- The proposed EPU test program satisfies the NRC's acceptance criteria based on 10 CFR 50, Appendix B, Criterion XI, "Test Control;" RG 1.68, Appendix A, "Power Ascension Tests;" and applicable staff guidance and review criteria in SRP 14.2.1 for EPU's
- Licensee's use of LOFTRAN to predict performance at PBNP during uprated operational transients is acceptable as primary basis for not performing LTT
- Industry operating experience at uprated power levels at similar PWRs (e.g., Ginna and Kewaunee)

# Ginna EPU Startup Test Report

- Dynamic performance during power ascension was monitored, documented and evaluated against pre-determined acceptance criteria. Test data evaluated against its performance acceptance criteria (e.g., design predictions or limits)
- Due to number of BOP modifications, transient testing performed to provide additional confidence in the validity of LOFTRAN models and assumptions of plant modifications and integrated plant response to transients

# Ginna EPU Startup Test Report

- Large Transient Tests in the Ginna PATP
  - Turbine Overspeed trip at 20% EPU power
  - 10% Load Change at 30 and 100% EPU power
  - Manual Turbine Trip at 30% EPU power
  - Turbine Stop, Governor and Intercept Valve testing at 50% EPU power
  - SG Level/FW Flow Dynamic Test at 30 and 100% EPU power

Results: All parameters responded as expected according to the predicted design program

# **GINNA EPU TRANSIENT OPERATING EXPERIENCE AT 100% EPU POWER (117% OLTP)**

- January 27, 2007: Plant trip due to loss of electrical generation
- March 16, 2007: Plant trip and safety injection signal due to MSIV closure
- December 30, 2009: Plant trip due to loss of EHC System pressure

NRC approved Ginna EPU on July 11, 2006

# QUESTIONS



**U.S.NRC**

UNITED STATES NUCLEAR REGULATORY COMMISSION

*Protecting People and the Environment*

# **581<sup>st</sup> Meeting of the Advisory Committee on Reactor Safeguards**

## **Point Beach Units 1 and 2 Extended Power Uprate**

**March 10, 2011**

# Introduction

**Allen G. Howe**

**Deputy Director**

**Division of Operating Reactor Licensing**

**Office of Nuclear Reactor Regulation**

**Terry A. Beltz**

**Senior Project Manager**

**Division of Operating Reactor Licensing**

**Office of Nuclear Reactor Regulation**

# Agenda

- **EPU Overview**
- **Modifications and the Effects Related to Safety, Risk, and Impact on Operations**
- **Discussion of Reduction in Plant Risk**
- **Safety Analysis Overview**
- **Boron Precipitation Follow-up**
- **High Energy Line Break**
- **Effects of Increased SG Flow Velocity**
- **Human Factors and Operator Response Times**
- **Power Ascension Testing**

## **EPU Overview**

- **EPU application submitted on April 7, 2009**
- **Licensing Report (Attachment 5)**
- **Auxiliary Feedwater Modification**
- **HELB Methodology**
- **RPS/ESFAS Setpoint Methodology**
- **Total of 12 supplements to the application**
- **Alternate Source Term application submitted on December 9, 2008**



**U.S.NRC**

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*Protecting People and the Environment*

**Point Beach Units 1 and 2  
Extended Power Uprate  
ACRS Full Committee Meeting**

**Safety Analysis**

**Leonard Ward, Ph.D.**

**Nuclear Performance and Code Review Branch**

**Division of Safety Systems**

**Office of Nuclear Reactor Regulation**

# Post-LOCA Boric Acid Precipitation

- Point Beach ECCS Design
  - Two-loop reactor coolant system
  - 695 psia accumulators
  - Low-pressure upper plenum injection (135 psia)
  - High head safety injection
    - Terminated upon drainage of RWST
  - High concentration boric acid makeup tank
- Hot leg break limiting for precipitation
  - LPSI and HHSI during injection mode provides flushing for first 20 minutes
  - HHSI secured at 20 minutes (recirculation mode)
    - Boric acid buildup begins

## Control of Boric Acid

- Large Breaks
  - Reinitiate HHSI prior to precipitation
- Assumptions
  - 1971 ANS Decay Heat + 20%
  - Mixing volume is Time Dependent
  - PWST and SIT Concentration 3200 ppm

## **Model Assumptions (NRC Staff and Licensee)**

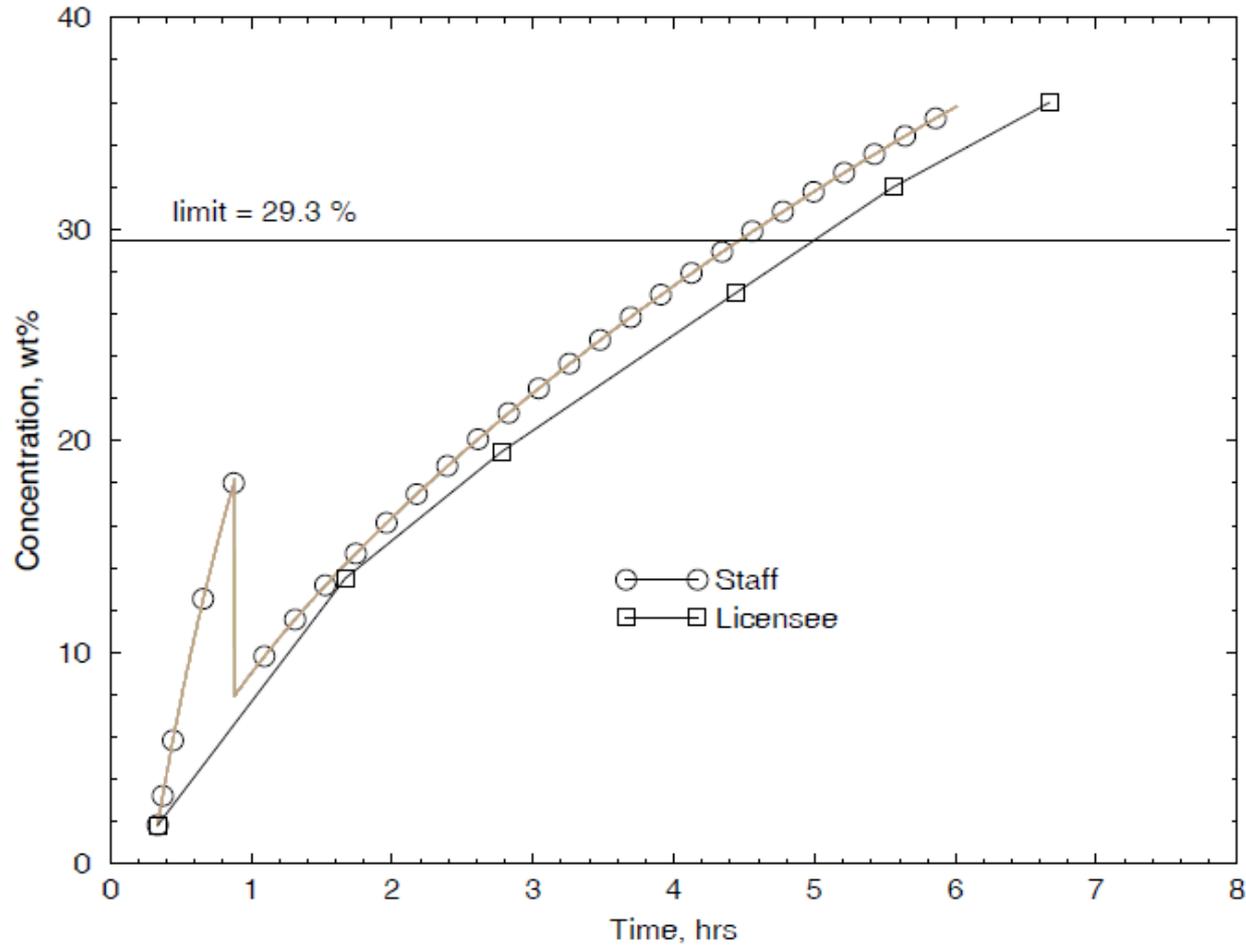
- 1971 ANS Decay Heat Standard + 20%
- Mixing volume is time-dependent
- RWST and SIT concentrations 3200ppm

# Review Results

- Precipitation timing:
  - 4 hours 50 minutes (licensee)
  - 4 hours 25 minutes (staff)
- Licensee must initiate HHSI before precipitation is predicted to occur
  - Licensee modified the timing requirement to 3 hr 20 minutes
    - Originally was 4 hours 20 minutes – 4 ½ hour effective flush time
    - Staff was concerned about insufficient safety margin
  - Licensee agreed to terminate flow from BAST during LOCA (If not, causes a two hour precipitation time)
  - Flushing flow can be initiated in 10 minutes
    - Licensee confirmed 10 minute operator action time
    - Testing as part of operator training and qualification program
- Staff RELAP5 calculations confirmed non-limiting nature of SBLOCA

## Boric Acid Concentration vs time

Point Beach Units 1 & 2, 20 Minute Delay



# Conclusions

- Staff analysis confirmed
  - Non-limiting nature of SBLOCA (RELAP5)
  - Timing for boric acid precipitation
- Staff identified concerns with timing for boric acid precipitation control
  - Licensee revised boric acid precipitation control approach to satisfy staff concerns
  - Terminate boric acid storage tank flow
  - Initiate flushing flow earlier
- Staff finds Long Term Cooling evaluation acceptable



**Point Beach Units 1 and 2  
Extended Power Uprate  
ACRS Full Committee Meeting**

**High Energy Line Break Methodology**

**William (Billy) Jessup**

**Mechanical & Civil Engineering Branch**

**Division of Engineering**

**Office of Nuclear Reactor Regulation**

# HELB Methodology Overview

- NRC staff reviewed licensee's methodology and technical justification for proposed HELB reconstitution
- HELB reconstitution at Point Beach focuses primarily on:
  - Reassessment of piping systems classified as high energy systems
  - Updated criteria used to postulate pipe breaks outside containment
  - Use of new code to evaluate compartment pressure and temperature responses to HELBs
- Current PBNP licensing basis requirements related to HELB are based on the Giambusso Letter criteria (1972)
- Acceptance criteria based on compliance with PBNP General Design Criterion (GDC) 40
- Protection for engineered safety features against dynamic effects and missiles resulting from plant equipment failures

## NRC Staff Review

- Reassessment of high energy line designations based on current licensing basis criteria
  - Eight systems meet the High Energy Line Criteria
- Break postulation criteria updated to use ASME B&PV Code Section III stress equations
  - ASME equations used for HELBs have been reconciled to equations used in code of construction
  - New breaks postulated at EPU conditions
- GOTHIC code used to determine compartment pressure and temperature responses due to HELBs
  - Staff accepted use of GOTHIC and found analysis results acceptable at EPU conditions

# Summary

- NRC staff review of proposed HELB reconstitution covered three primary areas
- NRC staff found the licensee's identification of high energy lines and dynamic effects protection acceptable
- HELB postulation methodology criteria using ASME stress equations was found to be acceptable by the NRC staff
- Licensee utilized LOFTRAN and RELAP5 for determining HELB M&E release analyses, corresponding compartment pressure and temperature responses determined with GOTHIC
- NRC staff found the licensee's approach for M&E release and compartment responses acceptable, results of analyses were also reviewed, verified, and found acceptable

# Health Physics Aspects of Groundwater Protection

A Presentation for the  
Advisory Committee on Reactor Safeguards  
10-Mar-11

Richard Conatser  
Health Physicist, NRR

# Outline

- Component Parts of the “Leak/Spill” Issue
- Strategy and Regulatory Framework
- NRC Review of Licensee’s Implementation of the GPI
- Summary



# Component Parts – Leak/Spill Issue

- **Engineering** – Prevent/Mitigate at the Source
- **Health Physics** – Monitor and Protect
  - Monitor the aftereffects
  - Ensure adequate protection of public (no challenge to Regs)
  - Public doses are very small (0.00 to 0.1 mrem per year)
  - Actual health impacts are not expected
  - Risks are similar to activities we normally consider safe
- **Environment** – Good Stewards
  - Environmental issues beyond regulations
  - NRC policy – Protecting people protects the environment
- **Communications** – Unambiguous and understandable



# Strategy & Regulatory Framework



- **Short-term Strategy**

- Continue NRC Inspections and Oversight
- Assess Implementation of Voluntary Initiatives
  - NRC Inspections
  - NRC Temporary Instructions
- Identify Gaps in Effectiveness of Voluntary Initiatives
- Verify if Implementation Status is Improving (Routine Processes)

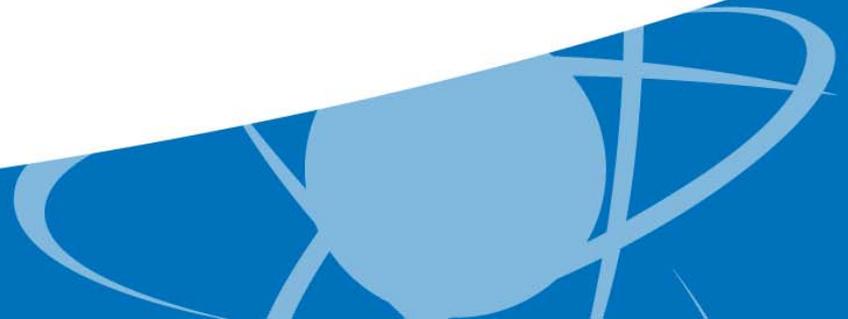
- **Long-term Strategy**

- Based on Gaps, Evaluate Need for More Regulatory Activities



# Assessment of Voluntary Initiative

- NRC Temporary Instruction – TI-2515/173
- Snapshot of 2008-2010
- Overall average 92% program elements were in GP Programs
  - ~60% of sites had all 42 tasks in GP Program
  - Gaps in some tasks at ~40% of the sites (e.g., remediation)
- Gaps entered into the licensee's corrective action program
- Gaps related to readiness to manage leaks and spills
- NRC will continue oversight and inspections to close gaps



# Summary

- Engineering – Prevent/Mitigate Leaks (Next Speaker)
  - Even though Doses are Low, We Want Doses ALARA
  - Minimize pipe leakage
- Health Physics – Monitor and Protect
  - Low Safety Significance (Similar to Tasks Considered Safe)
  - Additional Staff Actions to Improve Transparency
  - Continue to Assess Industry Initiatives & Close Gaps
- Environment
  - Regulations are based on adequate protection
- Communications (Web, Fact Sheets, Outreach, List of Leaks)



# Groundwater Task Force Report

A Presentation for the  
**Advisory Committee on Reactor Safeguards**  
March 10, 2011

Louise Lund

# Agenda

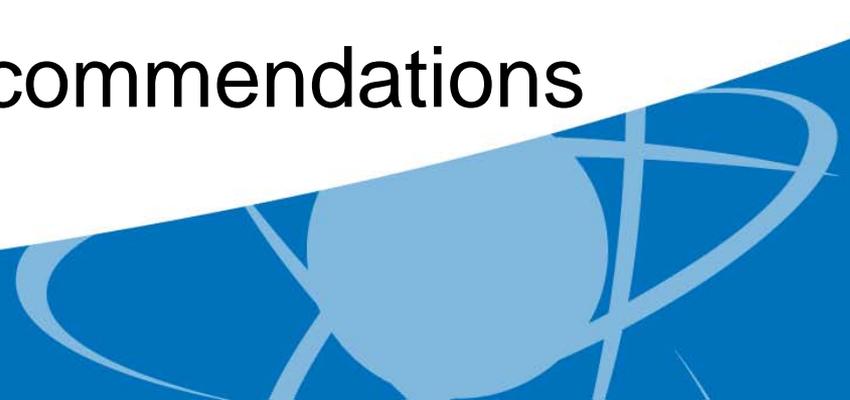
- Findings of the Groundwater Task Force
- Conclusions and key recommendations
- Senior Management Review
- Next steps



# Groundwater Task Force Report (issued June 11, 2010)



- Completed review of charter items
- Determined facts and observations
- Developed conclusions and recommendations
- Identified four themes
- Identified 16 specific conclusions
- Identified four key recommendations



# Overall Finding

- After a thorough review, the GTF determined that the NRC is accomplishing its stated mission of protecting public health, safety, and protection of the environment through its response to groundwater leaks/spills. Within the current regulatory structure, NRC is correctly applying requirements and properly characterizing the relevant issues.

# Themes

- Theme 1 – Reassess NRC’s regulatory framework for groundwater protection
- Theme 2 – Maintain barriers as designed to confine licensed material
- Theme 3 – More reliable NRC response
- Theme 4 – Strengthen trust



# Conclusions

- NRC response to leaks/spills has varied widely and has been case specific
- NRC Event Reports alert the public to leaks but no process exists to update the public on resolution or consequences
- NRC radiological effluent performance indicator does not provide meaningful data regarding groundwater contamination
- NRC processes do not disseminate low level groundwater experience to inspectors
- NRC findings associated with groundwater contamination that were based solely on “public confidence” require review
- NRC should consider incorporating the industry’s voluntary groundwater protection initiative (NEI 07-07) into the regulatory framework for groundwater protection

# Conclusions

- NRC communication methods do not promptly relay NRC staff assessments of groundwater incidents. Consider using third-party validation methods for groundwater incidents
- NRC regulations do not address the maintenance of non-safety related piping and tanks that contain radioactive fluids
- NRC regulations regarding radiological impacts of facility operations vary for different types of facilities (e.g., power and research reactors, fuel cycle, in-situ recovery)
- The final decommissioning rule does not require early remediation even if potential contamination of drinking water aquifers or subsurface water bodies exists
- NRC staff should develop methods to more effectively communicate information on incidents involving a loss of confinement to the public
- NRC public Web site information is fragmented and in some cases, out of date

# Conclusions

- International regulatory authorities effectively communicate radiological monitoring results annually in a public report to their legislatures
- More than 65 countries (including the U.S.) use the International Atomic Energy Agency's International Nuclear and Radiological Event Scale to explain the significance of events associated with radiation
- Timely information exchange and cooperation regarding operational events that are below regulatory limits will help regulatory authorities respond to emergent issues such as buried piping tritium leaks
- NRC and international regulators should cooperatively develop technical understanding of radionuclide transport through environmental pathways

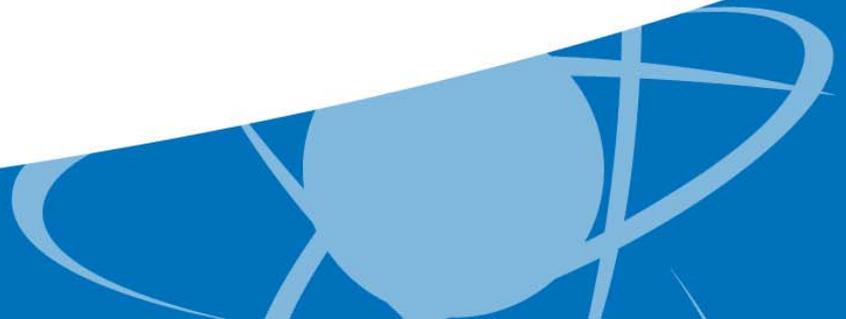


# Key Recommendations

- Identify the policy issues associated with an assessment of the NRC's groundwater protection regulatory framework
- Once the policy issues are addressed, implement conforming changes to incorporate appropriate enhancements in the Reactor Oversight Program
- Consider development of specific actions to address the key themes and conclusions in this report
- Conduct a focused dialogue with EPA, States, and international regulators to develop a collaborative approach for enhanced groundwater protection strategies

# Senior Management Review

- The Executive Director for Operations established a senior management review group to evaluate the GTF report, identify next steps, and make recommendations to the Commission about potential policy or regulatory changes



# 10/4/10 Public Meeting



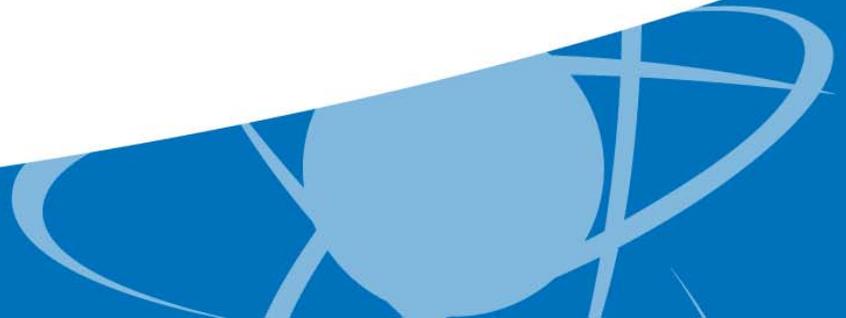
- Environmental Protection Agency
- Department of Energy
- US Geological Survey
- State of Illinois
- Canadian Nuclear Safety Commission
- National Mining Association
- Conference of Radiation Control Program Directors
- Health Physics Society
- Prairie Island Indian Community
- Nuclear Energy Institute
- Licensees
- Public advocacy groups

# **SECY Paper: Overall Regulatory Approach to Groundwater Protection**



## **Discusses:**

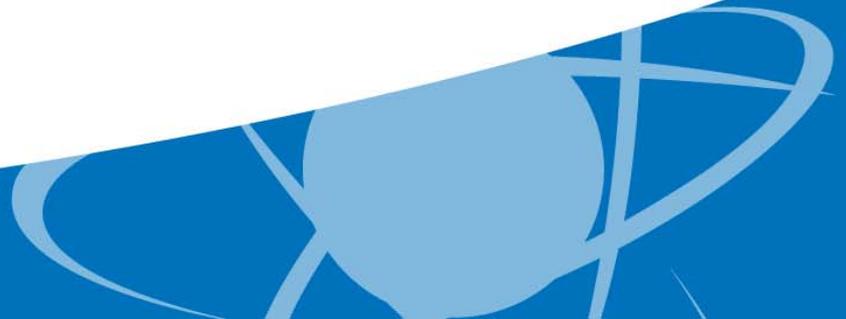
- Regulatory Framework**
- Incorporating the Voluntary Industry Initiative on Groundwater Protection Into the Regulatory Framework**
- Considering Modifications to the Regulatory Framework to Address Maintenance of Non-safety Related Piping and Tanks That Contain Radioactive Material**
- Revising the Current Radiological Effluent Performance Indicator in the Reactor Oversight Program**
- Considering Immediate Remediation of Spills at NRC-licensed Facilities**



# **Chairman Memorandum: Initiatives for Improved Communication of Groundwater Incidents**

## **Discusses:**

- Improved Communication Strategies**
- Improved Annual Effluent Reports**
- International Outreach**
- Communication with States**



# Next Steps

- **Await direction from Commission on activities described in SECY paper**
- **Implement initiatives for improved communication**



# Evaluation of Buried Piping at Nuclear Reactor Facilities

Bob Hardies  
Nuclear Regulatory Commission  
Senior Level Advisor  
Office of Nuclear Reactor Regulation  
March 10, 2011

# Summary

- NRC's objectives related to buried piping
  - Maintenance of intended safety function
  - Releases remain below regulatory limits
- Current regulations and industry activities are adequate with regard to these objectives
- NRC is monitoring and responding to events related to buried piping
- NRC is working to assess licensee implementation of the Buried Piping Integrity Initiative and the Underground Piping and Tanks Integrity Initiative



# Background

- The Groundwater Protection Initiative led to enhanced groundwater monitoring and communication practices
- Several leaks from buried piping in 2008 and 2009 resulted in groundwater contamination
- September 3, 2009, Chairman Jaczko tasked the staff with providing a summary of activities related to buried pipe
- Industry establishes the Buried Piping Integrity Initiative, November, 2009
- December 3, 2009, SECY 09-0174 (ML093160004)
  - Look at regulations, codes and standards and industry activities

# Background

- Leaks at Vermont Yankee in 2010 from underground piping (in a concrete vault) generated significant stakeholder interest
  - Definitions:
    - Buried – In intimate contact with soil or concrete; it can be cathodically protected
    - Underground – Below grade in a vault or chase. In contact with air.
- May 18, 2010, Buried Piping Action Plan (ML101480739)
- September 14, 2010, Buried Piping Action Plan update (ML102590171)
- Meetings with industry 10/22/2009, 2/24/2010, 9/21/2010, 3/30/2011
- Letter to industry August 18, 2010 (ML102300270)

# Buried Piping Action Plan

- Data collection
  - Historical rate of incidence
  - Affected systems
  - System classifications
  
- Program assessment
  - Buried Piping Integrity Initiative and Underground Piping and Tanks Integrity Initiative
  - Temporary Instruction for NRC inspection of Initiative activities
  
- Codes and standards
  
- Regulatory activities
  - Website
  - License renewal
  - Identify additional needs

# Codes and Standards

- ASME Code
  - Met with ASME, Section XI management August 6, 2010
  - In November Section XI established a committee to address leaks from buried piping
    - Consideration of enhanced inspection requirements
    - Consideration of extension of scope to nonsafety-related piping that contains tritium
- NACE International (formerly National Association of Corrosion Engineers)
  - Task group to develop standards for nuclear buried piping
  - First task group meeting September, 2010

# NRC Actions

- Inspection
  - Temporary Instruction for inspection of buried piping activities
    - Implementation by June 2011
    - Temporary Inspection instructions may exist through 2015
    - Seeking to understand implementation of:
      - Risk ranking processes
      - Inspection techniques and processes
  
- License renewal
  - Revised buried piping aging management program

# Industry Activities

- Buried Piping Integrity Initiative, November 2009
  - Initiative requirements:
    - Write program and procedures
    - Ranking
    - Inspection Plan
    - Inspection
    - Asset Management plan
- Underground Piping and Tanks Integrity Initiative, September 2010
  - Similar requirements with added scope

# Performance

- Seeking to establish a pre-2010 incidence rate for leaks as a performance baseline
- Monitoring operating experience
- Evaluating need for commitments for initiative

# Conclusions

- NRC's objectives related to buried piping
  - Maintenance of intended function
  - Releases remain below regulatory limits
- Current regulations and industry activities are compatible with these objectives
- NRC is monitoring current events related to buried piping
- NRC is performing action plan activities, including monitoring outcomes of industry initiatives



**Presentation to the ACRS  
Full Committee**

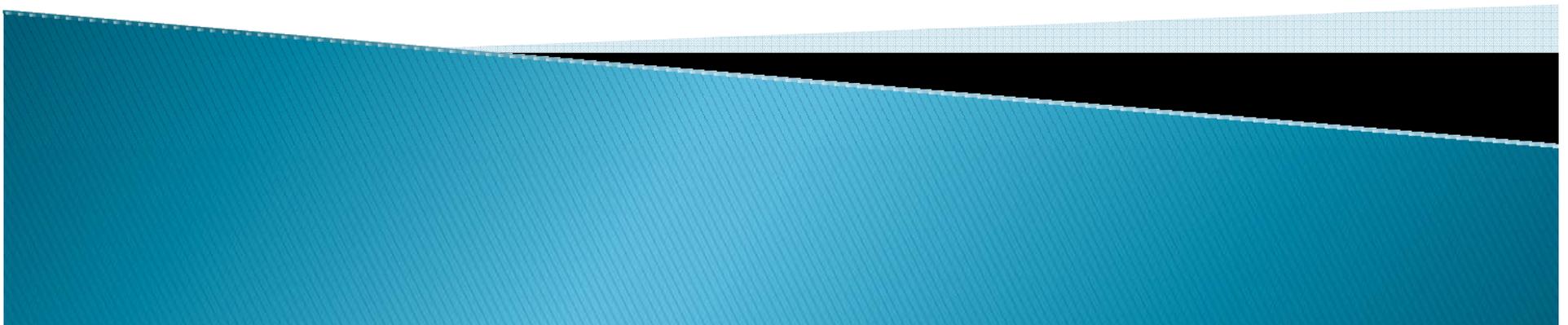
**Advanced Reactor Program**

March 10, 2011

# Generic Issues Program Overview

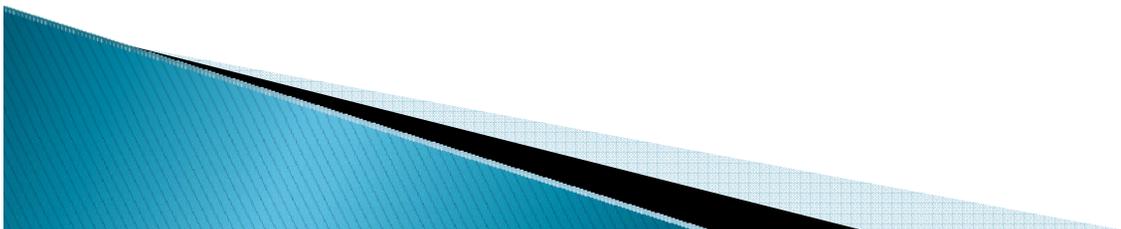
ACRS Full Committee Briefing

March 11, 2011



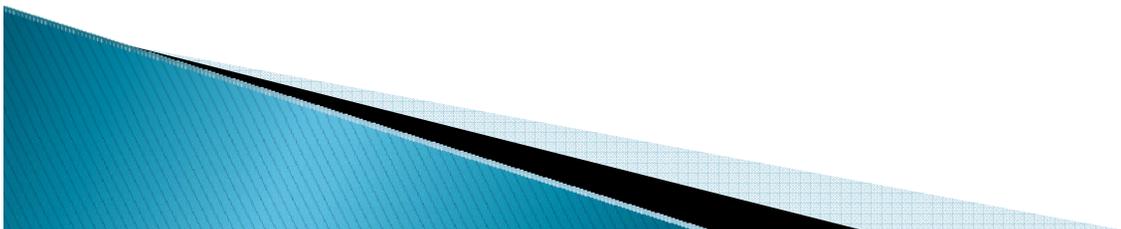
# Agenda

- ▶ **Historical Perspective**
  - Basis of Generic Issues Program
  - Key Elements of the Generic Issues Program
  - Results of Generic Issue Evaluations
  - Past Program Problems
- ▶ **Fundamentals of the Generic Issue Program**
  - Generic Issue Criteria and Process
  - Generic Issues Program Enhancements
- ▶ **Current Issues**
  - Current Generic Issues
  - New Issues and Program Initiatives



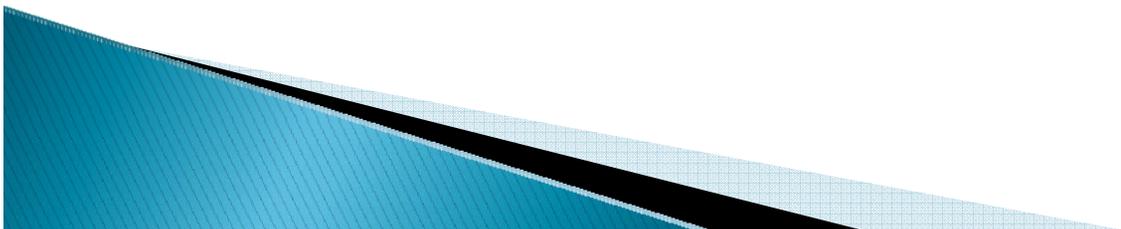
# Basis of Generic Issues Program

- ▶ Energy Reorganization Act of 1974 (1977 amendment)
  - “Sec. 210. Unresolved Safety Issues Plan
    - The Commission shall develop a plan providing for the specification and analysis of unresolved safety issues relating to nuclear reactors and shall take such action as may be necessary to implement corrective measures with respect to such issues. Such plans shall be submitted to the Congress on or before January 1, 1978, and progress reports shall be included in the annual report of the Commission thereafter.”

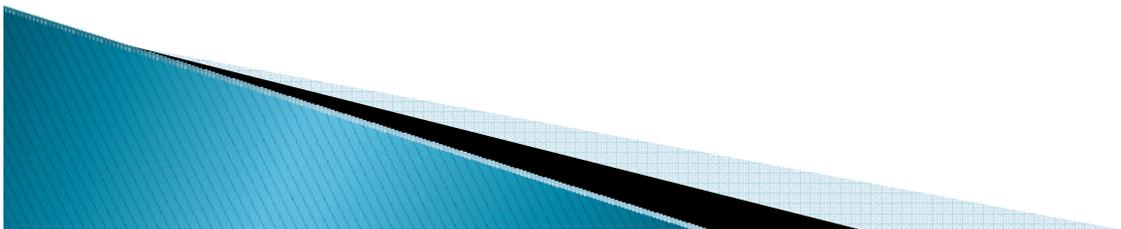
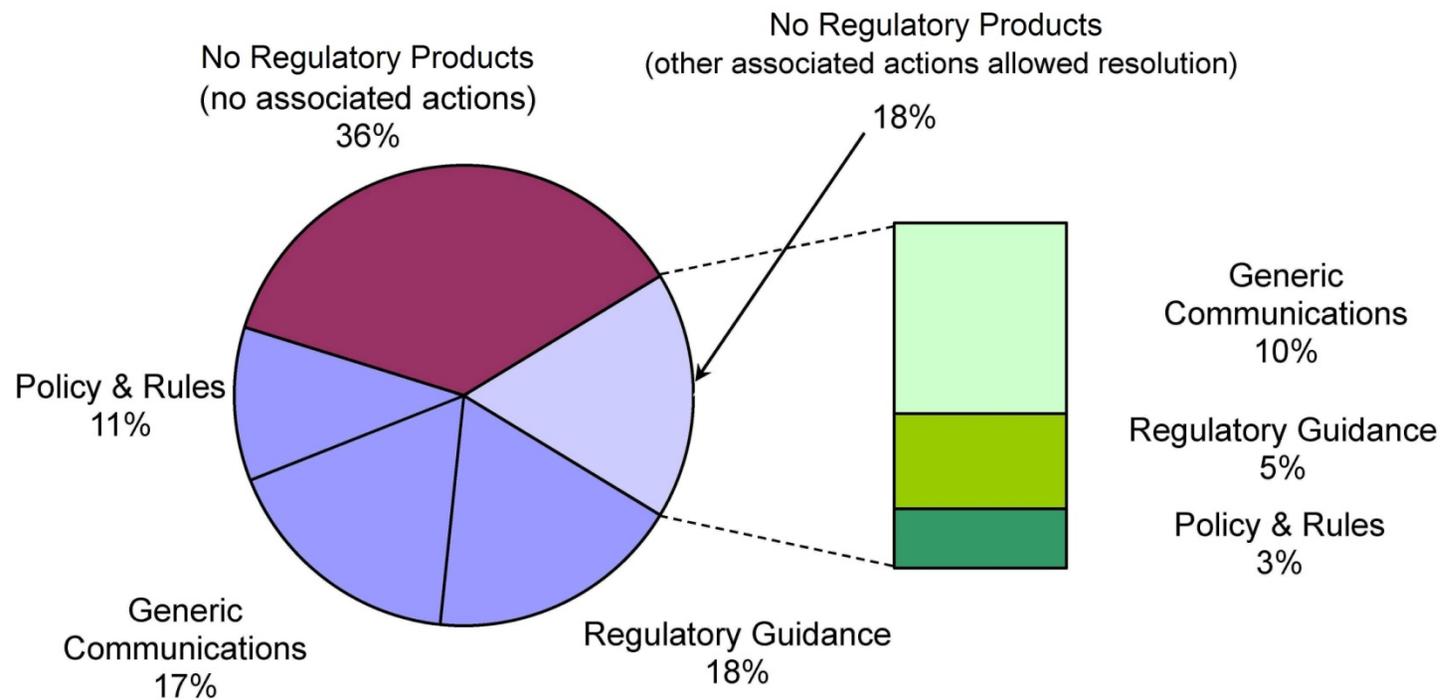


# Key Elements of the GI Program

- ▶ Unresolved Safety Issue is a special case of Generic Issue (GI)
- ▶ 853 Generic Issues since 1976
- ▶ Part 52 has requirements to use NUREG-0933
- ▶ Reporting
  - Annual SECY on the Program
  - Semi-annual reporting to Congress
  - Quarterly reports on issue status



# Results of Generic Issue Evaluations



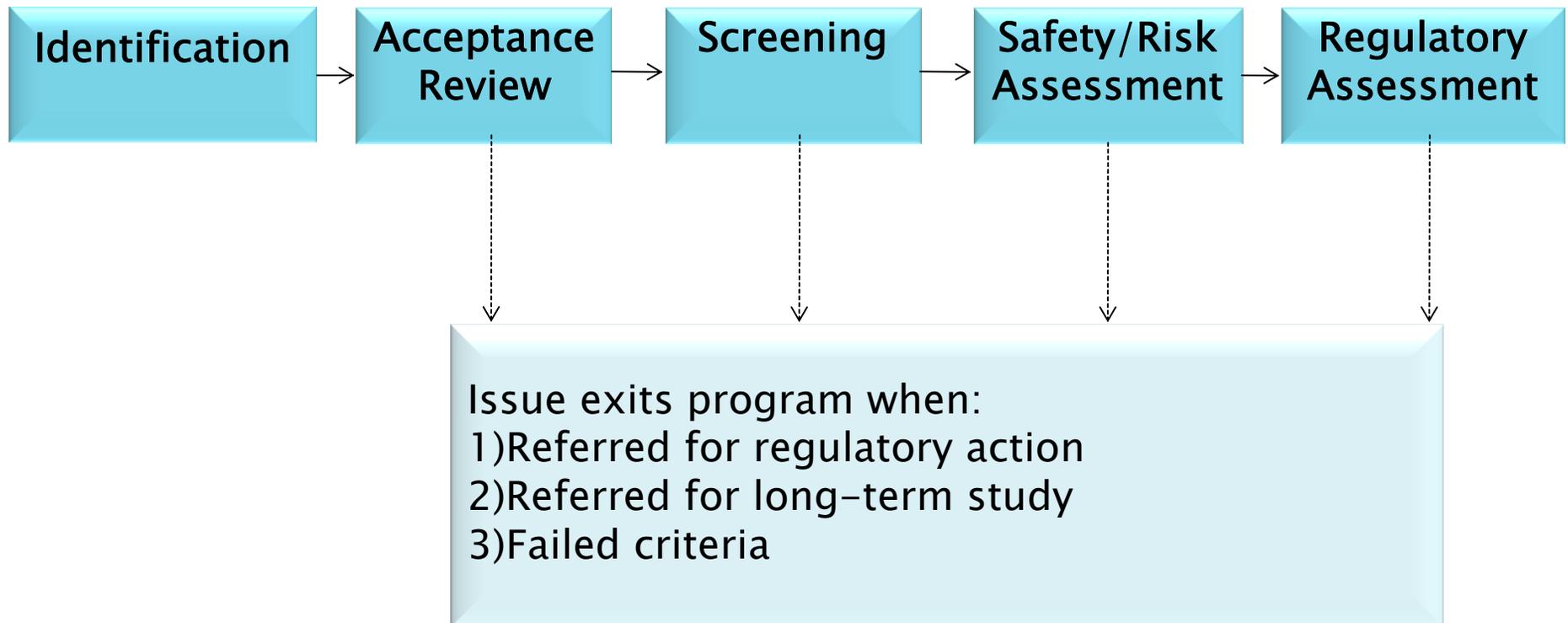
# Past Program Problems

- ▶ Ownership and accountability not clear
- ▶ Weak management emphasis on resolution
- ▶ Program staff geared toward tracking and reporting rather than resolving issues
- ▶ Disagreement on proposed resolutions surfaced late in process
- ▶ Minimal public engagement
- ▶ Issues put in or excluded from program at management discretion
- ▶ Regulatory Offices and regions not aware of issues being worked

# GI Criteria

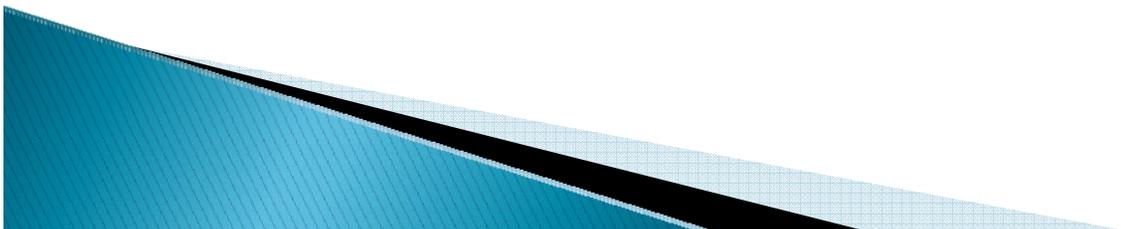
- 1) Affects public health and safety
- 2) Applies to two or more facilities
- 3) Not readily addressable through other regulatory processes
- 4) Can be resolved by regulation, policy, or guidance
- 5) Risk or safety significance can be adequately estimated
- 6) Well defined, discrete, technical
- 7) May involve review, analysis, or action by licensees

# GI 5-Stage Process



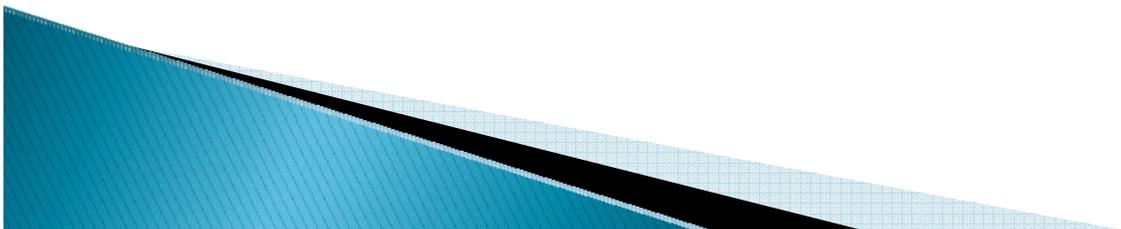
# Generic Issue Program Enhancements

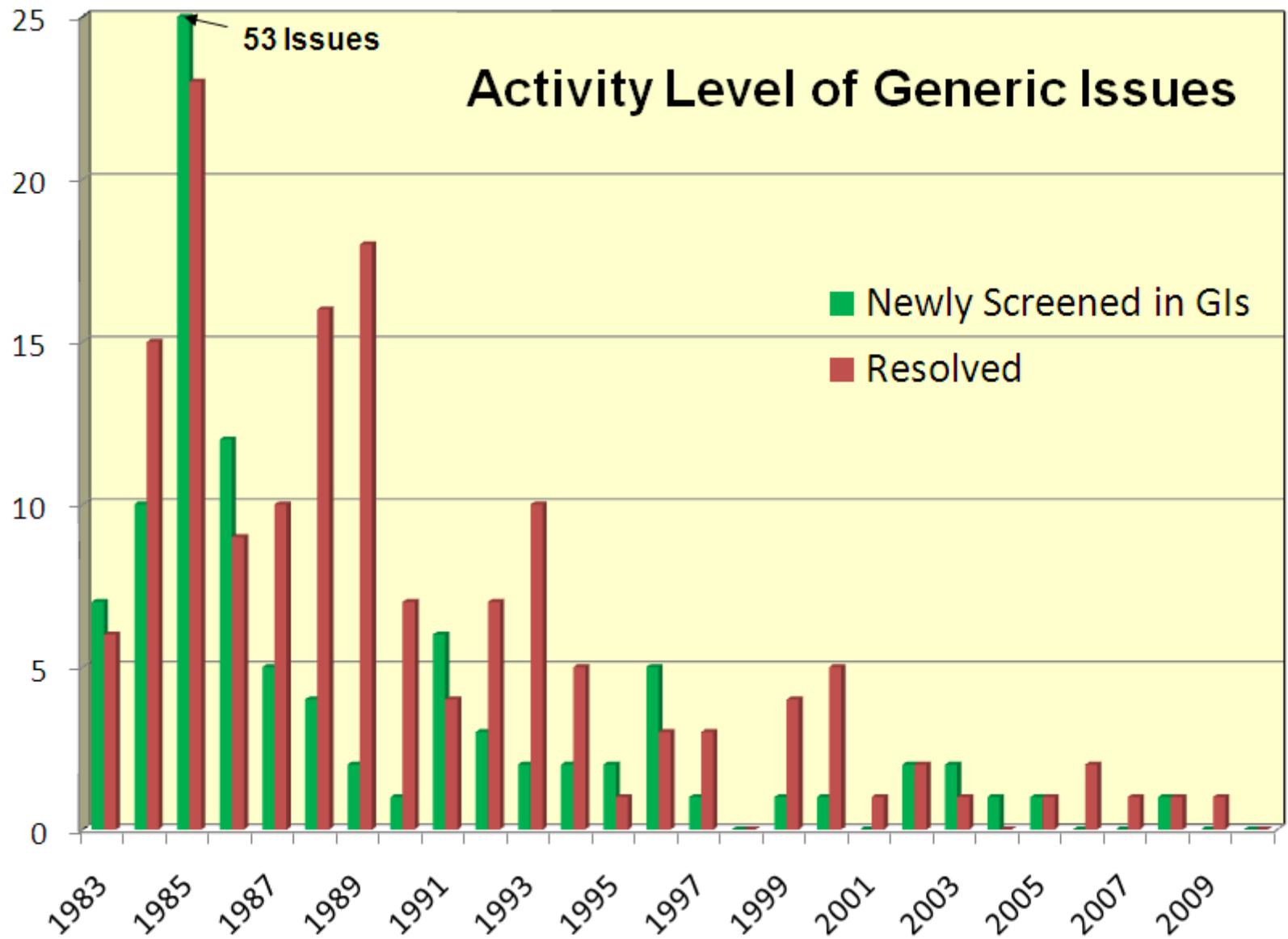
- ▶ Find appropriate home for issues
- ▶ Apply appropriate technical resources
- ▶ Screening / Assessment panels
- ▶ Concurrence of stakeholder offices
- ▶ Issues that meet the criteria for a GI get a Communication Plan and public meeting



# Current Generic Issues

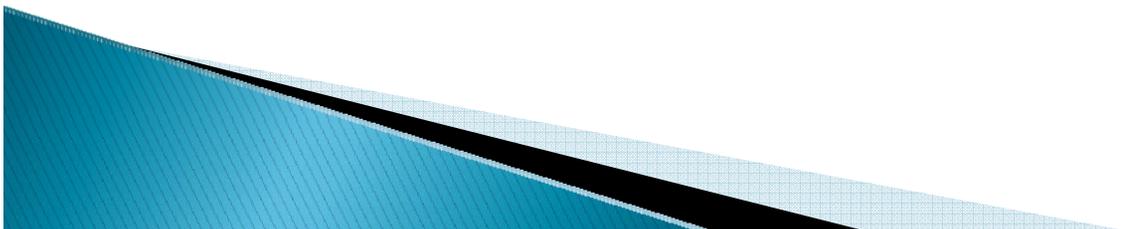
- ▶ GI-186, Heavy Load Drops (Mar. 2011)
- ▶ GI-189, Susceptibility of Ice condenser and Mark III Containments to Early Failure from Hydrogen Combustion (Mar. 2011)
- ▶ GI-191, Assessment of Debris Accumulation on PWR Sump
- ▶ GI-193, BWR ECCS Suction Concern (in S/RA)
- ▶ GI-199, Updated Probabilistic Seismic Hazard Estimates in CEUS (in ROI)





# New Issues and Program Initiatives

- ▶ Two Proposed Issues
  - Multi-unit risk (Pre-GI-001)
  - Dam Failure (Pre-GI-009)
- ▶ Contemporary issues are complex



# Program Initiatives

- ▶ Improve access to information in NUREG-0933
- ▶ Disposition older, low priority issues still in system
- ▶ Increase awareness of the program
- ▶ Increase visibility of proposed issues
- ▶ Increase tracking/accountability of proposed issues transferred out for additional research

