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

December 14, 2007

MEMORANDUM TO: Carol A. Brown, Technical Secretary
Advisory Committee on Reactor Safeguards

FROM: William J. Shack */RA/*
ACRS Chairman

SUBJECT: MINUTES OF THE 547th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS), November 1 - 3, 2007

I certify that based on my review of the minutes from the 547th 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.

NA
Comments

ADAMS Accession: ML073470905

	SUNSI		
NAME	JFlack		
DATE	12/13/2007		

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CERTIFIED

Date Issued: 12/14/07
Date Certified: 12/13/07

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MINUTES OF THE **547th** ACRS MEETING

November 1-3, 2007

APPENDICES

During its 547th meeting, November 1-3, 2007, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following report and letters.

REPORT

Report to Dale E. Klein, Chairman, NRC, from William J. Shack, Chairman, ACRS:

- Staff's Implementation of Lessons Learned from Reviews of Early Site Permit Applications, dated November 19, 2007.

LETTERS

Letters to Luis A. Reyes, Executive Director for Operations, NRC, from William J. Shack, Chairman, ACRS:

- Interim Letter: Southern Nuclear Operating Company Application for the Vogtle Early Site Permit and the Associated NRC Safety Evaluation Report with Open Items, dated November 20, 2007.

- Interim Letter: Chapters 2, 5, 8, 11, 12, and 17 of the NRC Staff's Safety Evaluation Report with Open Items Related to the Certification of the ESBWR Design, dated November 20, 2007.

MINUTES OF THE 547thMEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
November 1-3, 2007
ROCKVILLE, MARYLAND

The **547nd** meeting of the Advisory Committee on Reactor Safeguards (ACRS) was held in Conference Room 2B3, Two White Flint North Building, Rockville, Maryland, on **November 1 - 3, 2007**. Notice of this meeting was published in the *Federal Register* on **October 22, 2007** (72 FR **203**) (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. William J. Shack (Chairman), Dr. Mario V. Bonaca (Vice-Chairman), Dr. Dennis Bley, Dr. Said Abdel-Khalik (Member-at-Large), Dr. Sam Armijo, Dr. Sanjoy Banerjee, Dr. Michael Corradini, Mr. Otto L. Maynard, Dr. Dana A. Powers, Mr. Jack Sieber, and Mr. John Stetkar. For a list of other attendees, see Appendix III.

I. Chairman's Report (Open)

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

Dr. William J. Shack, Committee Chairman, convened the meeting at 8:30 A.M. He announced in his opening remarks that the meeting was being conducted in accordance with the provisions of the Federal Advisory Committee Act. In addition, he reviewed the agenda for the meeting and noted that no written comments or requests for time to make oral statements from members of the public had been received. Dr. Shack also noted that a transcript of the open portions of the meeting was being kept and speakers were requested to identify themselves and speak with clarity and volume. He discussed the items of current interest and administrative details for consideration by the full Committee.

HIGHLIGHTS OF KEY ISSUES

1. Extended Power Uprate Application for the Susquehanna Power Plant

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

The Committee met with representatives of the NRC staff and Pennsylvania Power and Light Company (PPL, the licensee), to discuss the extended power uprate (EPU) application for the Susquehanna Steam Electric Station (SSES) and the associated NRC staff's safety evaluation (SE). The PPL application requested that operation of SSES Units 1 and 2 be increased from 3489 MWt to 3952 MWt, which corresponds to approximately 14% above the current licensed

thermal power. Previously, SSES received NRC approval for a 6 % power uprate (4.5% stretch power uprate in 1993, and 1.4% measurement uncertainty recapture uprate in 2001). The power uprate on both units is expected to be completed by 2010 and will make SSES Unit 1 and 2 the highest powered BWRs in the US. PPL plans to implement the full uprate in phases, with Unit 1 implementing the EPU in 2010 and Unit 2 in 2009. The meeting focused on the SSES plant response, safety systems and components capabilities, and performance at the extended power uprate. The applicant and staff described the analyses supporting the steam dryer integrity and performance and the adequacy of the planned steam dryer power ascension testing and monitoring at EPU conditions.

The review of the SSES EPU application also required a review of the fuel vendor's (AREVA) analytical methods and codes in order to ensure their applicability within the ranges for which they are qualified and benchmarked, as well as to ensure that the uncertainties accounting for their accuracy remain valid for the SSES EPU core thermal-hydraulic conditions. Based on the content of the staff's SE and the October 9 -10, 2007 Subcommittee meeting presentations and discussions, the Power Uprate Subcommittee determined that the AREVA methods review had unresolved technical issues that needed to be addressed in an updated SE. Another Power Uprate Subcommittee meeting was held on November 14, 2007 to address technical issues such as:

- Qualification data supporting the neutronic methods
- Propagation of the void quality correlation uncertainties to the safety analyses
- Reliability of the neutron monitoring instrumentation in the presence of bypass voiding
- Anticipated transient without scram (ATWS) instability analyses conclusions supporting the AREVA cores
- Potential for pellet-clad interaction (PCI) failures of the AERVA ATRIUM-10 non-barrier fuel used in SSES cores

2. Vogtle Early Site Permit (ESP) Application

[Note: Mr. David C. Fischer was the Designated Federal Official for this portion of the meeting.]

The Committee met with representatives of the NRC staff and Southern Nuclear Operating Company (SNC) to discuss the application submitted by SNC for the Vogtle ESP, and the associated NRC staff Safety Evaluation Report (SER) with Open Items. The Vogtle ESP application is different from previously reviewed ESP applications in two significant ways. The Vogtle ESP application references a specific reactor design, i.e., AP1000, rather than relying on a plant parameter envelope based on several reactor designs. The Vogtle ESP application also proposed complete and integrated emergency plans, including an emergency planning ITAAC [inspection, testing, and analyses acceptance criteria], rather than providing only major features of an emergency plan. These differences have probably resulted in fewer ESP conditions arising in the SER for the application. In the SER with Open Items the staff asked the applicant to further assess the post-construction hydrology of the site, the seismic hazard at the site, and weather extremes at the site.

3. Staff's Implementation of the Lessons Learned from the Review of ESP Applications

[Note: Mr. David C. Fischer was the Designated Federal Official for this portion of the meeting.]

In response to a November 8, 2006, Staff Requirements Memorandum, the Committee met with representatives of the NRC staff to discuss the efficiency and effectiveness of staff's implementation of lessons learned from its review of ESPs. The staff explained the extent to which it had implemented each recommendation in the Committee's September 22, 2006, letter to the Executive Director for Operations on ESP lessons learned.

4. Research Reports on Aircraft Impact Study – New Reactor Designs

[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 the results of the study performed to determine the vulnerabilities of an aircraft impact on new reactors of four designs, namely, the AP1000, ABWR, ESBWR, and the EPR. Because National Security Information and Safeguards Information were involved in this briefing, it was closed to the public. The staff stated that, as specified by the Commission, pertinent information from the study has been provided to the properly cleared individuals in the industry involved in new reactor designs. The staff has initiated a similar study for the US-APWR design, the results of which will be available in 2008.

5. ESBWR Design Certification Review

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

The Committee met with representatives of the NRC staff and General Electric – Hitachi Nuclear Energy Americas, LLC, (GEH) to discuss six Chapters from the staff's SER with Open Items related to the ESBWR design certification application. At the request of the staff, we agreed to review the staff's SER on a chapter-by-chapter basis to help timely completion of the review, as well as effective resolution of our concerns prior to issuing the final SER. The staff and GEH described SER Chapters 2, 5, 8, 11, 12, and 17 with open items and combined license (COL) action items. During this meeting, the Committee identified issues in addition to those that the staff identified in these SER Chapters. One of these issues relates to the need for the staff to investigate the adequacy of controls on post-weld grinding to prevent degradation of the resistance of austenitic stainless steels and nickel-based alloys to various stress corrosion cracking mechanisms. Another issue relates to the need for more controls on reactor coolant water chemistry in order to prevent irradiation assisted stress corrosion cracking of materials.

6. Draft ACRS Report on the NRC Safety Research Program

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

The ACRS provides the Commission a biennial report presenting the Committee's observations and recommendations concerning the overall NRC Safety Research Program. During the November 2007 meeting, the Committee discussed the draft ACRS 2008 report on the NRC Safety Research Program. The Committee also discussed the scope of long-term research the Agency needs to consider.

7. Executive Session

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

A. RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS/EDO COMMITMENTS

- The Committee considered the EDO's response of October 24, 2007, to comments and recommendations included in the September 26, 2007, ACRS letter on the RES staff's proposed resolution of Generic Issue 156.6.1, "Pipe Break Effects on Systems and Components Inside Containment." The Committee decided that it was satisfied with the EDO's response.

- The Committee considered the EDO's response of October 26, 2007, to comments and recommendations included in the September 26, 2007, ACRS report on the review of the license renewal application for the Pilgrim Nuclear Power Station. The Committee decided that it was satisfied with the EDO's response.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

The following Subcommittee meetings were held during the period from October 6, 2007, through October 31, 2007:

- Power Uprates — October 9-10, 2007

The Subcommittee reviewed the application by PPL for an extended power uprate for Susquehanna Steam Electric Station Units 1 and 2 and the associated staff's safety evaluation.

- Early Site Permits — October 24, 2007

The Subcommittee reviewed the application submitted by SNC for the Vogtle ESP and the associated NRC staff's Draft Safety Evaluation Report (DSER) with Open Items. The Subcommittee also discussed the efficiency and effectiveness of staff's implementation of lessons learned from its review of ESP applications.

- ESBWR — October 25, 2007

The Subcommittee discussed several SER Chapters with Open Items associated with the ESBWR design certification application.

- AP1000 — October 31, 2007

The Subcommittee discussed the AP1000 design and related issues resulting from the proposed revisions to 10 CFR Part 52, Appendix D.

- Planning and Procedures — October 31, 2007

The Subcommittee discussed proposed ACRS activities, practices, and procedures for conducting Committee business and organizational and personnel matters relating to ACRS and its staff.

LIST OF MATTERS FOR THE ATTENTION OF THE EDO

- The Committee plans to continue its discussion on the Extended Power Uprate application for the Susquehanna Steam Electric Station during its December 6-8, 2007, meeting.

- The Committee plans to review the final SER on the Vogtle ESP application during a future meeting.

- The Committee plans to review the staff's resolution of the open items in SER Chapters 2, 5, 8, 11, 12, and 17 associated with the ESBWR design certification application during future meetings. Since many of the systems described in these chapters may interact with systems discussed in other SER chapters, the committee plans to review the safety implications of any system interactions during future meetings.

- The Committee would like the opportunity to review ESBWR reactor coolant system (RCS) chemistry controls in future meetings.

- The Committee plans to continue its discussion of the draft ACRS report on the NRC Safety Research Program during its December 6-8, 2007, meeting.

PROPOSED SCHEDULE FOR THE 548th ACRS MEETING

The Committee agreed to consider the following topics during the 548th ACRS meeting, to be held on December 6-8, 2007:

- Draft Final NUREG-1829, "Estimating Loss-of-Coolant Accident (LOCA) Frequencies Through the Elicitation Process," and Draft NUREG-XXXX, "Seismic Considerations for the Transition Break Size"

- AREVA Enhanced Option III Long Term Stability Solution (Topical Report ANP-10262)

- State-of-the-Art Reactor Consequence Analysis (SOARCA)

- Draft ACRS Report on the NRC Safety Research Program

- Extended Power Uprate Application for the Susquehanna Nuclear Power Plant

B. REPORT ON THE MEETING OF THE PLANNING AND PROCEDURES SUBCOMMITTEE HOLD ON OCTOBER 31, 2007

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

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

Anticipated Workload for ACRS Members

The anticipated workload for ACRS members through February 2008 is attached. The objectives are to:

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

During this session, the Subcommittee also discussed and developed recommendations on items requiring Committee action.

ACRS/ACNW&M Operating Plan, Self-Assessment, and Letter Matrix

The ACRS/ACNW&M operating plans, self-assessments, and letter matrices were sent to the Commission on October 25, 2007. Comments received from the members were incorporated into the final version.

Election of Officers for CY 2008

During its December meeting, the Committee will elect Chairman and Vice Chairman for the ACRS and Member-at-Large for the Planning and Procedures Subcommittee. Section 8.4 of the ACRS Bylaws state "A member may withdraw his name from consideration by written notice to the Executive Director, no later than two weeks before the scheduled election." Accordingly, those members who do not wish to be considered for all or any of the Offices should notify the ACRS Executive Director in writing by November 23, 2007.

ACRS Retreat in 2008

The Committee held its last retreat on January 26-27, 2006. During that retreat the Committee, among other items, discussed a proposed response to the Commission request, noted below, in the December 20, 2005 SRM.

> Following its retreat in January 2006, the ACRS should inform the Commission how the Committee plans to manage the increased workload resulting from the anticipated receipt of new reactor designs and combined license applications.

The Committee decided not to have a retreat in 2007. The Committee needs to decide whether it wants to hold a retreat in 2008.

Proposed Revisions to ACRS Subcommittee Structure

The ACRS Subcommittee structure is being revised. This will include changes to member/staff assignments. A revised Subcommittee structure will be sent to the members following the November ACRS meeting for review and comment. During the December meeting a revised version, incorporating the members' comments, will be provided to the Committee for endorsement.

Quadripartite Working Group Meeting

The Quadripartite Working Group (WG) meeting on Sump Screen Blockage was held in Germany on October 17-18, 2007. Drs. Banerjee and Wallis along with Zena Abdullahi and Mugeh Afshar-Tous attended this meeting. ACRS had the lead on: Overview of U.S. Investigations/Analyses; and Downstream and Chemical Effects on Sump Screen Blockage. Dr. Banerjee should provide a summary of the highlights of this meeting along with actions, agreements, assignments, and follow-up items resulting from this meeting.

France's Groupe Permanent Réacteurs (GPR) will host the second Quadripartite WG meeting in Paris, France on the general topic of "EPR." The ACRS members attending this working group meeting are Dr. Powers, Dr. Bonaca, and Mr. Stetkar. Dr. Powers, Chairman of the EPR Subcommittee, proposed the following topics:

- PRA
- Digital I&C
- Fire Risk
- Quality Assurance

GPR will not be able to host this meeting on October 9-10, 2008 and the other three Quadripartite Meeting member countries have suggested October 16-17, 2008, which is not suitable for ACRS.

GPR is unable to host a Digital I&C WG meeting in October 2008 because the analysis of the detailed I&C for EPR will be presented to the GPR at the end of 2008. Therefore, Japan's Nuclear Safety Commission (NSC) will host the third Quadripartite WG meeting in Japan on the general topic of "Digital I&C" in October 2009.

Christmas Party

The members have been sponsoring a Christmas party to the ACRS/ACNW&M Office staff in December of each year. The Committee should decide whether it wants to keep up with this tradition.

Interview of a Candidate for Membership on the ACRS

The members are scheduled to interview a candidate with expertise in the Digital I&C area during the November ACRS meeting. The ACRS Member Candidate Screening Panel interviewed this candidate on October 24, 2007. Subsequent to the interview, the ACRS Chairman should provide feedback to the Screening Panel through the ACRS Executive Director.

Revised EPRI Guidance on Long-term Storage of LLW at NPPs

NEI is supporting an update of EPRI's 1995 voluntary guidance to its members concerning the long-term storage of LLW at nuclear powerplants. NEI has been coordinating this activity with the NRC Office of Federal and State Materials Environmental Management programs (FSME). Following internal NRC review and comment, NEI would like the staff to issue an Information Notice acknowledging NRC endorsement/acceptance of this voluntary guidance. In parallel to the NEI/EPRI

initiative, FSME also has an effort under way to update its LLW storage guidance to its materials licensees. It is assumed that the timetable for completion of both of these efforts will take place before closure of the Barnwell LLW disposal facility to out-of-compact waste in June 2008.

Consistent with its other LLW activities, and because the ACNW&M will be reviewing the FSME LLW storage guidance, it is being proposed that the ACNW&M comment on the revised EPRI guidance on behalf of both the ACRS and the ACNW&M.

Member Issue

April 2008 ACRS Meeting Dates

Dr. Powers requests that the April 2008 ACRS meeting currently scheduled for April 3-5, 2008 be changed to April 10-12, 2008.

C. Future Meeting Agenda

Appendix IV summarizes the proposed items endorsed by the Committee for the 548th ACRS Meeting, December 6-8, 2007.

The 547th ACRS Meeting was adjourned at 1:00 PM, November 3, 2007.

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards; Meeting Notice

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 November 1–3, 2007, 11545 Rockville Pike, Rockville, Maryland. The date of this meeting was previously published in the **Federal Register** on Wednesday, November 15, 2006 (71 FR 66561).

Thursday, November 1, 2007, Conference Room T–2b3, Two White Flint North, 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.–10:30 a.m.: Extended Power Uprate Application for the Susquehanna Nuclear Power Plant (Open/Closed)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff and the Pennsylvania Power & Light Company regarding the Extended Power Uprate Application for the Susquehanna Nuclear Power Plant, and the associated NRC staff's Safety Evaluation.

Note: A portion of this session may be closed to protect information that is proprietary to General Electric, AREVA, and their contractors pursuant to 5 U.S.C. 552b (c) (4).

10:45 a.m.–11:45 a.m.: Meeting with Commissioner Peter B. Lyons (Open)—The Committee will hold a discussion with Commissioner Lyons on items of mutual interest.

12:45 p.m.–2:45 p.m.: Vogtle Early Site Permit (ESP) Application (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff and Southern Nuclear Operating Company regarding Vogtle ESP application, and the associated NRC staff's Safety Evaluation Report with Open Items.

3 p.m.–4 p.m.: Staff's Implementation of the Lessons Learned from the Review of ESP Applications (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the effectiveness and efficiency of the staff's implementation of the lessons learned from the review of ESP applications.

4:15 p.m.–6:15 p.m.: Assessment of the Robustness of New Nuclear Plants (Room T–10E8) (Closed)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding the assessment of the robustness of new nuclear plants.

Note: This session will be closed to protect information classified as National Security information as well as safeguards information pursuant to 5 U.S.C. 552b (c) (1) and (3).

6:30 p.m.–7:15 p.m.: Preparation of ACRS Reports (Open)—The Committee will discuss proposed ACRS reports.

Friday, November 2, 2007, Conference Room T–2b3, Two White Flint North, 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.–10:30 a.m.: Selected Chapters of the SER Associated with the ESBWR Design Certification (Open/Closed)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff and General Electric regarding selected chapters of the SER with Open Items associated with the ESBWR design certification.

Note: A portion of this session may be closed to protect information that is proprietary to General Electric and their contractors pursuant to 5 U.S.C. 552b (c) (4).

10:45 a.m.–11:30 a.m.: Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open)—The Committee will discuss the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future meetings. Also, it will hear a report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments.

11:30 a.m.–11:45 a.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 p.m.: Draft ACRS Report on the NRC Safety Research Program (Open)—The Committee will discuss the draft ACRS report on the NRC Safety Research Program.

3:15 p.m.–7 p.m.: Preparation of ACRS Reports (Open)—The Committee will discuss proposed ACRS reports.

Saturday, November 3, 2007, Conference Room T–2b3, Two White Flint North, Rockville, Maryland

8:30 a.m.–1:30 p.m.: Preparation of ACRS Reports (Open)—The Committee will continue its discussion of proposed ACRS reports, as well as the draft ACRS report on the NRC Safety Research Program.

1:30 p.m.–2 p.m.: Miscellaneous (Open)—The Committee will discuss matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

Procedures for the conduct of and participation in ACRS meetings were published in the **Federal Register** on September 26, 2007 (72 FR 54695). In accordance with those procedures, oral or written views may be presented by members of the public, including representatives of the nuclear industry. Electronic recordings will be permitted only during the open portions of the meeting. Persons desiring to make oral statements should notify the Cognizant ACRS staff named below five days before the meeting, if possible, so that appropriate arrangements can be made to allow necessary time during the meeting for such statements. 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. Information regarding the time to be set aside for this purpose may be obtained by contacting the Cognizant ACRS staff prior to the meeting. 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.

In accordance with Subsection 10(d) Public Law 92–463, I have determined that it may be necessary to close portions of this meeting noted above to discuss and protect information classified as proprietary to General Electric, AREVA, and their contractors pursuant to 5 U.S.C 552b (c) (4) and National Security, as well as Safeguards information pursuant to 5 U.S.C. 552b (c) (1) and (3).

Further information regarding topics to be discussed, whether the meeting has been canceled or rescheduled, as well as the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by contacting Mr. Giriga S. Shukla, Cognizant ACRS

staff (301–415–8439), between 7:30 a.m. and 4 p.m., (ET). ACRS meeting agenda, meeting transcripts, and letter reports are available through the NRC Public Document Room at *pdr@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 *http://www.nrc.gov/reading-rm/adams.html* or *http://www.nrc.gov/reading-rm/doc-collections/ (ACRS & ACNW Mtg schedules/agendas)*.

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.

The ACRS meeting dates for Calendar Year 2008 are provided below:

ACRS Meeting No.	Meeting dates
—	January 2008 (No Meeting).
549	February 7–9, 2008.
550	March 6–8, 2008.
551	April 3–5, 2008.
552	May 8–10, 2008.
553	June 4–6, 2008 (Wed—Fri).
554	July 9–11, 2008 (Wed—Fri).
—	August (No Meeting).
555	September 4–6, 2008.
556	October 2–4, 2008.
557	November 6–8, 2008.
558	December 4–6, 2008.

Dated: *October 16, 2007.*

Andrew L. Bates,

Advisory Committee Management Officer.

[FR Doc. E7–20773 Filed 10–19–07; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Withdrawal of Regulatory Guides

AGENCY: Nuclear Regulatory Commission.

ACTION: Withdrawal of Regulatory Guides 9.1, 9.2, and 9.3.

FOR FURTHER INFORMATION CONTACT: Marquis P. Orr, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone: 301–415–6373 or e-mail *MPO1@nrc.gov*.

SUPPLEMENTARY INFORMATION:

I. Introduction

The U.S. Nuclear Regulatory Commission (NRC) is withdrawing Regulatory Guide 9.1, "Regulatory Staff Position Statement on Antitrust Matters," published December 1973; Regulatory Guide 9.2, "Information Needed by the NRC Staff in Connection with its Antitrust Review of Construction Permit Applications for Nuclear Power Plants," initially published October 1974, and revised June 1976; and Regulatory Guide 9.3, "Information Needed by the AEC Regulatory Staff in Connection with its Antitrust Review of Operating License Applications for Nuclear Power Plants," published October 1974. The NRC is withdrawing these three regulatory guides because they are no longer required.

These three regulatory guides address the antitrust review conducted by the staff during the evaluation of new plant construction and operating license applications. The review was required by Section 105.c of the Atomic Energy Act of 1954, as amended. Section 625 of the Energy Policy Act of 2005 (Pub. L. 109–058) removed the NRC's authority to perform these antitrust reviews for applications submitted after the date of enactment of the law. The Energy Policy Act of 2005 was passed by the U.S. Congress on July 29, 2005, and signed into law by President George W. Bush on August 8, 2005. Consequently, the staff has determined that Regulatory Guides 9.1, 9.2, and 9.3 are no longer required.

II. Further Information

The withdrawal of Regulatory Guides 9.1, 9.2, and 9.3 does not, in and of itself, alter any prior or existing licensing commitments based on their use. The guidance provided in these regulatory guides is no longer applicable. Regulatory guides may be withdrawn when their guidance is superseded by congressional action or otherwise no longer provides useful information.

Regulatory guides are available for inspection or downloading through the NRC's public Web site under "Regulatory Guides" in the NRC's Electronic Reading Room at *http://www.nrc.gov/reading-rm/doc-collections*. Regulatory guides are also available for inspection at the NRC's Public Document Room (PDR), Room O–1F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852–2738. The PDR's mailing address is U.S. NRC PDR, Washington, DC 20555–0001. The PDR staff can be reached by telephone at 301–415–4737 or 800–397–4209, by fax at 301–415–3548, and by e-mail to *pdr@nrc.gov*.

Regulatory Guides are not copyrighted and NRC approval is not required to reproduce them.

Dated at Rockville, Maryland, this 12th day of October, 2007.

For the Nuclear Regulatory Commission.

Michael R. Johnson,

Deputy Director, Office of Nuclear Regulatory Research.

[FR Doc. E7–20730 Filed 10–19–07; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Withdrawal of Regulatory Guide

AGENCY: Nuclear Regulatory Commission.

ACTION: Withdrawal of Regulatory Guide 9.4.

FOR FURTHER INFORMATION CONTACT: Marquis P. Orr, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone: 301–415–6373 or e-mail *MPO1@nrc.gov*.

SUPPLEMENTARY INFORMATION:

I. Introduction

The U.S. Nuclear Regulatory Commission (NRC) is withdrawing Regulatory Guide 9.4, "Suggested Format for Cash Flow Statements Submitted as Guarantees of Payment of Retrospective Premiums," which was issued for comment in September 1978. Regulatory Guide 9.4 proposes a format for cash flow statements to be submitted by the licensee to demonstrate compliance with title 10 of the *Code of Federal Regulations* (10 CFR), subpart 140.21, "Licensee guarantees of payment of deferred premiums." The method described in Regulatory Guide 9.4 unnecessarily duplicates other financial and insurance verification documents submitted by the licensees to demonstrate compliance with other sections of 10 CFR part 140. Rather than submit separate cash flow and financial assurance statements, licensees may submit proof of sufficient insurance bonding through American Nuclear Insurers or similar insurance groups. This insurance bond meets the requirements of 10 CFR 140.21(a) and eliminates the need for a separate cash flow statement.

October 16, 2007

SCHEDULE AND OUTLINE FOR DISCUSSION
547th ACRS MEETING
NOVEMBER 1-3, 2007

THURSDAY, NOVEMBER 1, 2007, CONFERENCE ROOM T-2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

1) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (WJS/CS/SD)
- 1.1) Opening statement
- 1.2) Items of current interest

2) 8:35 - ~~10:30~~ A.M. 10:37 Extended Power Uprate Application for the Susquehanna Nuclear Power Plant (Open/Closed) (SB/ZA)
- 2.1) Remarks by the Subcommittee Chairman
- 2.2) Briefing by and discussions with representatives of the NRC staff and the Pennsylvania Power & Light Company regarding the Extended Power Uprate Application for the Susquehanna Nuclear Power Plant, and the associated NRC staff's Safety Evaluation.

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

Members of the public may provide their views, as appropriate.

~~10:30 - 10:45~~ A.M. 10:37 – 10:52 ***BREAK***

10:52 – 11:38 **Continued Susquehanna discussion**

3) ~~10:45 - 11:45 A.M.~~ CANCELLED ~~Meeting with Commissioner Peter B. Lyons (Open) (WJS/GSS)~~
- ~~Remarks by the ACRS Chairman~~
- ~~3.2) Discussions with Commissioner Lyons on items of mutual interest.~~

~~11:45~~ - 12:45 P.M. 11:38 - ***LUNCH***

4) 12:45 - 2:45 P.M. Vogtle Early Site Permit (ESP) Application (Open) (DAP/DCF)

4.1) Remarks by the Subcommittee Chairman

4.2) Briefing by and discussions with representatives of the NRC staff and Southern Nuclear Operating Company regarding Vogtle ESP application, and the associated NRC staff's Safety Evaluation Report with Open Items.

Representatives of the nuclear industry and members of the public may provide their views, as appropriate.

2:**45 - ~~3:00~~ P.M. -3:15** ***BREAK***

5) ~~3:00 – 4:00~~ P.M. 3:15 – 4:08 Staff's Implementation of the Lessons Learned from the Review of ESP Applications (Open) (DAP/DCF)

5.1) Remarks by the Subcommittee Chairman

5.2) Briefing by and discussions with representatives of the NRC staff regarding the effectiveness and efficiency of the staff's implementation of the lessons learned from the review of ESP applications.

Representatives of the nuclear industry and members of the public may provide their views, as appropriate.

4:00 - 4:15 P.M. ***BREAK***

6) 4:15 - 6:15 P.M. Assessment of the Robustness of New Nuclear Plants **(Closed) (Room T-10E8)** (MVB/MB)

6.1) Remarks by the Subcommittee chairman

6.2) Briefing by and discussions with representatives of the NRC staff regarding the assessment of the robustness of new nuclear plants.

[Note: This session will be closed to protect information classified as National Security information as well as safeguards information pursuant to 5 U.S.C. 552b (c) (1) and (3).]

6:15 - 6:30 P.M. ***BREAK***

7) 6:30 - 7:15 P.M. Preparation of ACRS Reports (Open)

Discussion of proposed ACRS reports on:

7.1) Extended Power Uprate Application for the Susquehanna Nuclear Power Plant (SB/ZA)

7.2) Vogtle Early Site Permit Application (DAP/DCF)

7.3) Staff's Implementation of Lessons Learned from the Review of ESP Applications (DAP/DCF)

FRIDAY, NOVEMBER 2, 2007, CONFERENCE ROOM T-2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

8) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (WJS/CS/SD)

9) 8:35 - ~~10:30~~ A.M. 9:53 Selected Chapters of the SER Associated with the ESBWR Design Certification (Open/Closed) (MLC/CGH)
- 9.1) Remarks by the Subcommittee Chairman
- 9.2) Briefing by and discussions with representatives of the NRC staff and General Electric regarding selected chapters of the SER With Open Items associated with the ESBWR design certification.

[Note: A portion of this session may be closed to protect information that is proprietary to General Electric and their contractors pursuant to 5 U.S.C. 552b (c) (4).]

Members of the public may provide their views, as appropriate.

~~10:30 - 10:45~~ A.M. 9:53 – 10:45 ***BREAK***

10) 10:45 - 11:30 A.M. Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open) (WJS/FPG/SD)
- 10.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future ACRS meetings.
- 10.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments.

11) 11:30 - 11:45 A.M. Reconciliation of ACRS Comments and Recommendations (Open) (WJS, et al./SD, et al.)
Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

11:45 - 1:00 P.M. ***LUNCH***

12) 1:00 - 3:00 P.M. Draft ACRS Report on the NRC Safety Research Program (Open) (DAP/HPN)
- 12.1) Remarks by the Subcommittee Chairman
- 12.2) Discussion of the draft ACRS report on the NRC Safety Research Program

3:00 - 3:15 P.M. ***BREAK***

13) 3:15 - 7:00 P.M. Preparation of ACRS Reports (Open)
Discussion of proposed ACRS reports on:
13.1) Extended Power Uprate Application for the Susquehanna Nuclear Power Plant (SB/ZA)
13.2) Vogtle Early Site Permit (ESP) Application (DAP/DCF)
13.3) Staff's Implementation of lessons learned from the Review of ESP Applications (DAP/DCF)
13.4) Selected Chapters of the SER Associated with the ESBWR Design Certification (MLC/CGH)

SATURDAY, NOVEMBER 3, 2007, CONFERENCE ROOM T-2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

14) 8:30 - ~~1:30~~ P.M. Preparation of ACRS Reports (Open)
1:00 Continue discussion of proposed ACRS reports listed under Item 13, as well as the draft ACRS report on the NRC Safety Research Program.

~~15) 1:30 - 2:00 P.M. Miscellaneous (Open) (WJS/FPG)~~
~~Discussion of matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.~~

NOTE:

Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.

Thirty-Five (35) hard copies and (1) electronic copy of the presentation materials should be provided to the ACRS.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547th FULL COMMITTEE MEETING

November 1 - 3, 2007

PLEASE PRINT CLEARLY

NRC Attendees

TODAY'S DATE: November 1, 2007

	NAME	NRC ORGANIZATION
1	Bruce Musico	NSIR/DPR
2	Charles Cox	NRO/DSER
3	Mark D. Notich	NRO/DSER/RAP1
4	Joseph Hoch	NRO/DSER/RSAC
5	G. Stirewalt	NRO/DSER/RGS2
6	Rebecca Karas	NRO/DSER
7	Chris Cook	NRO/DSER
8	Jonathan Rund	OGC
9	Laurel Bauer	NRO/DSER
10	Brett Klukan	OGC
11	David Ball	NRO/DSER
12	Yong Li	NRO/DSER
13	Sarah Gonzalez	NRO/DSER
14	Zahira Cruz Perez	NRO/DSER
15	Brad Harvey	NRO/DSER
16	David Matthews	NRO/DNRL
17	Weisun Wang	NRO/DSER
18	Thomas Galletta	NRO/DSER
19	Stephen R. Montague	NRO/DNRL
20	Stephen Schaeffer	NRO/DCIP
21	Jenise Thomspson	NRO/DSER
22	Michelle Hart	NRO/DSER
23	Goutam Bagchi	NRO/DSER
24	Cliff Munson	NRO/DSER
25	Frankie G. Vega	NRO/DSER
26	Stephanie Coffin	NRO/DNRL
27	James George	NRO/DSER
28	Jesse Arildsem	NSIR

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547th FULL COMMITTEE MEETING

November 1 - 3, 2007

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NRC Attendees

TODAY'S DATE: November 1, 2007

	NAME	NRC ORGANIZATION
29	Ata Istar	RES/MEEB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547TH FULL COMMITTEE MEETING

November 1-3, 2007

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TODAY'S DATE: November 1, 2007

	NAME	NRC ORGANIZATION
1	Bruce Musico	NSIR/DPR
2	Charles Cox	NRO/DSER
3	MARK D. NOTICH	NRO/DSER/RAP1
4	JOSEPH HOCH	NRO/DSER/RSAC
5	G. STEREWALT	NRO/DSER/RGS2
6	Deborah Karas	NRO/DSER/RGS1
7	Chris Cook	NRO/DSER/OTHER
8	Jonathan Rund	OGC
9	Laurel Bauer	NRO/DSER/RGS2
10	Brett Klukan	OGC
11	DAVID P. BALL	NRO/DSER/RSAC
12	Tong Li	NRO/DSER/RGS2
13	Sarah Gonzalez	NRO/DSER/RGS1
14	Jim DAVIS	SNC
15	Chuck Pierce	SNC
16	Zahira Cruz Perez	NRO/DSER/RGS2
17	Brad Harvey	NRO/DSER/RSAC
18	DAVID MATTHEWS	NRO/DNRL
19	WEIJUN WANG	NRO/DSER/RGS1
20	Thomas Galletta	NRO/DSER/RSAC
21	Stephen R Monarque	NRO/DNRL/NMIP
22	STEVEN Schaffer	NRO/DCIP/CHPB
23	Jenise Thompson	NRO/DSER/RGS2
24	Michelle Hart	NRO/DSER/RSAC
25	Goutam Bagchi	NRO/DSER
26	Cliff Munson	NRO/DSER
27	Frankie G. Vega	NRO/DSER
28	Stephanie Coffin	NRO/DNRL
29	James GEORGE	NRO/DSER/RGS1
30.	Jesse Arildsen	NSIR/DSP
31.	ATA ISTAR	RES/MEEB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547TH FULL COMMITTEE MEETING

November 1-3, 2007

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TODAY'S DATE: November 2, 2007

NAME	NRC ORGANIZATION
[illegible]	US NRC/NRC
Brad Harvey	NRO/DSER/RSAC
Yong Li	NRO
James George	NRO/DSER/RGS1
ERIC OESTERLE	NRO/DNRL/NGE1
DON DUBE	NRO/DSRA
Ilka Berrios	NRO/DNRL/NGE1
ED ROACH	NRO/DCIP/CHPB
Sara Bernal	NRO/DCIP/CHPB
GEORGE THOMAS	NRU/DSRA/SRSB
MANNY COMAR	NRO/DNRL/NGE2
RICHARD MCINTYRE	NRO/DCIP/CQVB
Seshagiri Rao Tammara	NRO/DSER/RSAC
Charles Cox	NRO/DSER/RSAC
George B. Georgiev	NRO/DE/CIB2
John A. Nakoski	NRO/DCIP/CQVB
Thomas A. Galletta	NRO/DSER/RSAC
Blake Rice	NRO/DCIP/CQVB
H. Li	NRO/DE/ICE2
Chang Li	NRO/DSRA/SBLPB
Sam Rhow	NRO/DE/ICE2
Ron Gruss	NRO/DE/CIB2
Jay Lee	NRO/DSER/RSAC
Rebecca Karas	NRO/DSER/RGS1
Lambros Lois	NRO/DSRA/SRSB
Joe Donoghue	NRO/DSRA/SRSB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547TH FULL COMMITTEE MEETING

November 1-3, 2007

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TODAY'S DATE: November 2, 2007

NAME	NRC ORGANIZATION
Tim Frye	NRO/DCIP/CHPB
Andrea Johnson	NRO/DNRL/NGEI
KEN SEE	NRO/DSER/RHEB
Amy Cubbage	NRO/DNRL/NGEI

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547TH FULL COMMITTEE MEETING

November 1-3, 2007

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TODAY'S DATE: November 1, 2007

	NAME	AFFILIATION
1	Leslie Kass	NEI
2	Russ Bell	NEI
3	Jim Davis	Southern Co.
4	Chuck Pierce	Southern Co.
5	Tom McCallum	Southern Co.
6	Dan Moore	Southern Co.
7	Jeff Kimball	Defense Nuclear Facilities Safety Bd.
8	TOM MCCallum	Southern Co.
9	Bob Prunty	Southern Co. (Bechtel)
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11	MILTON CONCEPCION	NRO/DCIP/CAUP
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547TH FULL COMMITTEE MEETING

November 1-3, 2007

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TODAY'S DATE: November 2, 2007

NAME	AFFILIATION
J. Alan Beard	GE Hitachi
Rick Wachowiak	GEH
JERRY DEALER	GEH
BRIAN FREW	GEH
JAMES KINSEY	GE-HITACHI
Jennifer Bowie	GEH
Dennis Galvin	NRC

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547th FULL COMMITTEE MEETING

November 1 - 3, 2007

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NRC Attendees - TODAY'S DATE: November 2, 2007

	NAME	NRC ORGANIZATION
1	JC Dehmel	NRO
2	Brad Harvey	NRO/DSER
3	Yong Li	NRO
4	James George	NRO/DSER
5	Eric Oesterle	NRO/DSER
6	Don Dube	NRO/DSRA
7	Ilka Berrios	NRO/DNRL
8	Ed Roach	NRO/DCIP
9	Sara Bernal	NRO/DCIP
10	George Thomas	NRO/DSRA
11	Manny Comar	NRO/DNRL
12	Richard McIntire	NRO/DCIP
13	Seshagin Raotammano	NRO/DSER
14	Charles Cox	NRO/DSER
15	George B. Georgiev	NRO/DE
16	John A. Nakoski	NRO/DCIP
17	Thomas A. Galletta	NRO/DEER
18	Blake Rice	NRO/DCIP
19	H. Li	NRO/DSRA
20	Chang Li	NRO/DSRA
21	Sang Rhow	NRO/DE
22	Kim Gross	NRO/DE
23	Jang Lee	NRO/DSER
24	Rebecca Karas	NRO/DSER
25	Lamros Lois	NRR/DSA
26	Joe Donoghue	NRO/DSRA
27	Tim Frye	NRO
28	Andrea Johnson	NRO/DNRL
29	Ken See	NRO/DSER
30	Amy Cubbage	NRO/DNRL

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547th FULL COMMITTEE MEETING

November 1 - 3, 2007

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Visitors

TODAY'S DATE: November 1, 2007

	NAME	ORGANIZATION
1	Jim Davis	Southern Nuclear
2	Chuck Pierce	Southern Nuclear
3	Leslie Kass	NEI
4	Russ Bell	NEI
5	Tom McCallum	Southern Nuclear
6	Don Moore	Southern Nuclear
7	Jeff Kimball	Defense Nuclear Facilities Safety Bd.
8	Bob Prunty	Southern Nuclear
9	Milton Concepcion	NRO/DCIP
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547th FULL COMMITTEE MEETING

November 1 - 3, 2007

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Visitors

TODAY'S DATE: November 2, 2007

	NAME	ORGANIZATION
1	J. Alan Beard	GE Hitachi
2	Rick Wachowiae	GEH
3	Jerry Deaver	GEH
4	Brian Frew	GEH
5	James Kinsey	GE-Hitachi
6	Jennifer Bowie	GEH
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November 14, 2007

SCHEDULE AND OUTLINE FOR DISCUSSION
548th ACRS MEETING
DECEMBER 6-8, 2007

THURSDAY, DECEMBER 6, 2007, CONFERENCE ROOM T-2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

1) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (WJS/CS/SD)
   1.1) Opening statement
   1.2) Items of current interest

2) 8:35 - 10:30 A.M. Draft Final NUREG-1829, "Estimating Loss-of-Coolant Accident (LOCA) Frequencies Through the Elicitation Process," and Draft NUREG-XXXX, "Seismic Considerations for the Transition Break Size" (Open) (GEA/GSS)
   2.1) Remarks by the Subcommittee Chairman
   2.2) Briefing by and discussions with representatives of the NRC staff regarding draft NUREG reports on estimating LOCA frequencies through the expert elicitation process and on seismic considerations for the Transition Break Size.

   Representatives of the nuclear industry and members of the public may provide their views, as appropriate.

10:30 - 10:45 A.M. ***BREAK***

3) 10:45 - 12:15 P.M. AREVA Enhanced Option III Long Term Stability Solution (Topical Report ANP-10262) (Open/Closed) (SAK/ZA)
   3.1) Remarks by the Subcommittee Chairman
   3.2) Briefing by and discussions with representatives of the NRC staff and AREVA regarding AREVA Topical Report ANP-10262 on Enhanced Option III Long Term Stability Solution

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

   Members of the public may provide their views, as appropriate.

12:15 - 1:15 P.M. ***LUNCH***

4) 1:15 - 3:15 P.M. State-of-the-Art Reactor Consequence Analysis (SOARCA) (Open/Closed) (WJS/HPN)

4.1) Remarks by the Subcommittee Chairman

4.2) Briefing by and discussions with representatives of the NRC staff regarding State-of-the-Art Reactor Consequence Analysis.

[Note: A portion of this session may be closed to discuss and protect information classified as National Security information as well as Safeguards information pursuant to 5 U.S.C. 552b (c) (1) and (3).]

Representatives of the nuclear industry and members of the public may provide their views, as appropriate.

3:15 - 3:30 P.M. ***BREAK***

5) 3:30 - 5:30 P.M. Draft ACRS Report on the NRC Safety Research Program (Open) (DAP/HPN)

5.1) Remarks by the Subcommittee Chairman

5.2) Discussion of the draft ACRS report on the NRC Safety Research Program.

5:30 - 5:45 P.M. ***BREAK***

6) 5:45 - 7:00 P.M. Preparation of ACRS Reports (Open)
Discussion of proposed ACRS reports on:

6.1) Draft Final NUREG-1829 on LOCA Frequencies and Draft NUREG-XXXX on Seismic Considerations for the Transition Break Size (GEA/GSS)

6.2) AREVA Topical Report ANP-10262 on Enhanced Option III Long Term Stability Solution (SAK/ZA)

6.3) State-of-the-Art Reactor Consequence Analysis (WJS/HPN)

FRIDAY, DECEMBER 7, 2007, CONFERENCE ROOM T-2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

7) 8:30 - 8:35 A.M. Opening Remarks by the ACRS Chairman (Open) (WJS/CS/SD)

8) 8:35 - 11:15 A.M. Extended Power Uprate Application for the Susquehanna Nuclear Power Plant (Open/Closed) (SB/ZA)
(10:00-10:15 A.M. BREAK)

8.1) Remarks by the Subcommittee Chairman

8.2) Briefing by and discussions with representatives of the NRC staff and the Pennsylvania Power & Light Company regarding the Extended Power Uprate Application for the Susquehanna Nuclear Power Plant and the associated NRC staff's Safety Evaluation.

[Note: A portion of this session may be closed to discuss and protect information that is proprietary to General Electric and their contractors pursuant to 5 U.S.C. 552b (c) (4).]

Members of the public may provide their views, as appropriate.

11:15 - 11:30 A.M. *****BREAK*****

9) 11:30 - 12:00 P.M. Subcommittee Report (Open) (MLC/CGH)
Report by and discussion with the Chairman of the ACRS Subcommittee on ESBWR regarding items discussed during the meeting on November 15, 2007.

12:00 - 1:30 P.M. *****LUNCH*****

10) 1:30 - 2:30 P.M. Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open) (WJS/FPG/SD)
- 10.1) Discussion of the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future ACRS meetings.
- 10.2) Report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments.

11) 2:30 - 2:45 P.M. Reconciliation of ACRS Comments and Recommendations (Open) (WJS, et al./SD, et al.)
Discussion of the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

12) 2:45 - 3:15 P.M. Election of ACRS Officers for CY 2008 (Open) (FPG/SD)
Election of the Chairman and Vice-Chairman for the ACRS and Member-at-Large for the Planning and Procedures Subcommittee for CY 2008.

3:15 - 3:30 P.M. *****BREAK*****

13) 3:30 - 7:00 P.M. Preparation of ACRS Reports (Open)
Discussion of proposed ACRS reports on:
- 13.1) Draft Final NUREG-1829 on LOCA Frequencies and Draft NUREG-XXXX on Seismic Considerations for the Transition Break Size (GEA/GSS)
- 13.2) AREVA Topical Report ANP-10262 on Enhanced Option III Long Term Stability Solution (SAK/ZA)
- 13.3) State-of-the-Art Reactor Consequence Analysis (SOARCA) (WJS/HPN)

13.4) Extended Power Uprate Application for the Susquehanna Nuclear Power Plant (SB/ZA)

SATURDAY, DECEMBER 8, 2007, CONFERENCE ROOM T-2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

14) 8:30 - 1:00 P.M. Preparation of ACRS Reports (Open)
(10:30-10:45 A.M. BREAK) Continue discussion of proposed ACRS reports listed under Item 13, as well as the draft ACRS report on the NRC Safety Research Program.

15) 1:00 - 1:30 P.M. Miscellaneous (Open) (WJS/FPG)
Discussion of matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

NOTE:

Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.

One (1) electronic copy and thirty-five (35) hard copies of the presentation materials should be provided to the ACRS.

LIST OF DOCUMENTS PROVIDED TO THE COMMITTEE
547th ACRS MEETING
November 1-3, 2007

MEETING HANDOUTS

AGENDA ITEM #	DOCUMENTS/HANDOUTS LISTED IN ORDER
1.	Opening Remarks by the ACRS Chairman
2.	Extended Power Uprate Application for the Susquehanna Nuclear Power Plant 1. Susquehann Steam Electric Station – Slides from PPL 2. ECCS Performance (LOCA) Susquehanna EPU – Slides from NRR/Diane Jackson and Peter Lien in DSS 3. CPPU Containment Analysis – Slides from PPL, John Bartos
4.	Votgle Early Site Permit (ESP) Application 4. Southern Nuclear Vogtle ESP Application Presentation – Slides from Southern Nuclear 5. Safety Review of the Vogtle Early Site Permit Application – Slides from NRO/DNRL, Christian Araguas
5.	Staff's Implementation of the Lessons Learned from the Review of ESP Applications 6. Review of the Implementation of Lessons Learned from Early Site Permits – NRO/DNRL, Christian Araguas
6.	Assessment of the Robustness of New Nuclear Plants (Closed)\
7.	Preperation of ACRS Report
8.	Opening Remarks by Chairman, Friday, November 2, 2007
9.	Selected Chapters of the SER Associated with the ESBWR Design Certification 7. Review of Selected Chapters of ESBWR Safety Evaluation Report with Open Items – Schedule of the Session 8. ESBWR – Overview – Slides from Hitachi Nuclear Energy 9. ESBWR Design Certification and Review, Chapters 2, 5, 8, 11, 12 and 17 – Slides from NRO, Amy Cubbage
10.	Future ACRS Activities/Report of the Planning and Procedures Subcommittee 10. Items of Interest
11.	Reconciliation of ACRS Comments and Recommendations 11. Reconciliation of ACRS Comments and Recommendations

[Note: Some documents listed herein may have been provided or prepared for the Committee use only. These documents must be reviewed prior to release to the public.]

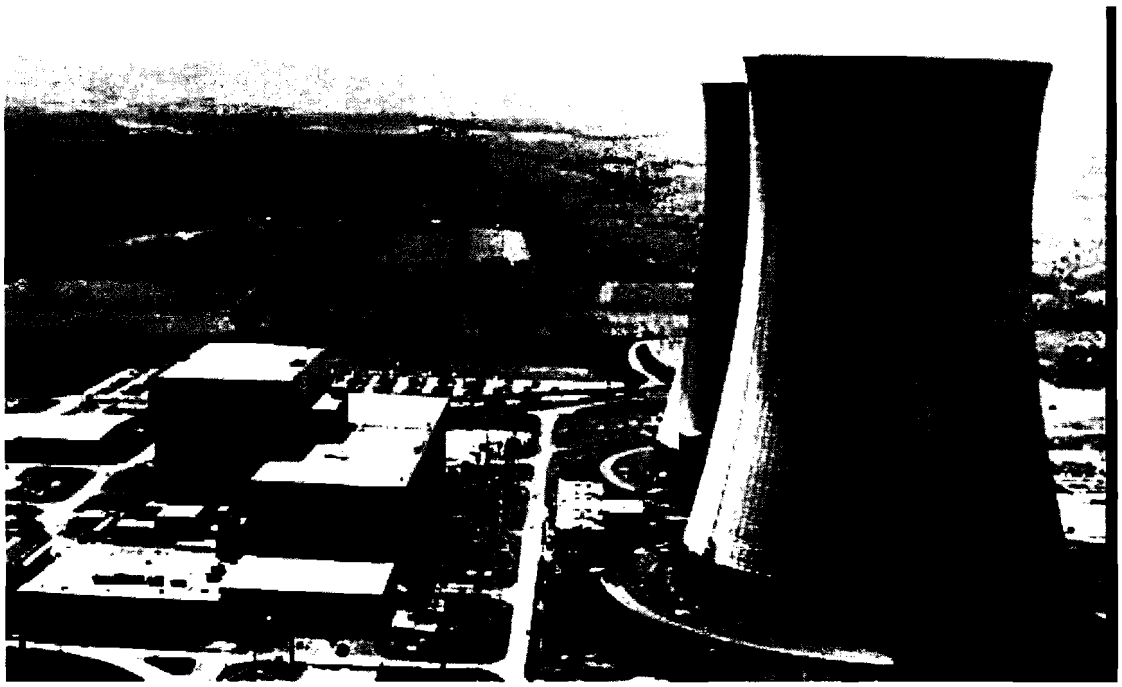
**Copies of most of the handouts can be obtained through the transcript copy found in the Agency Document Management System (ADAMS) or a complete set can be requested by calling the ACRS office of the NRC.

[Note: Some documents listed herein may have been provided or prepared for the Committee use only. These documents must be reviewed prior to release to the public.]

Susquehanna Steam Electric Station

Advisory Committee on Reactor Safeguards

November 1, 2007

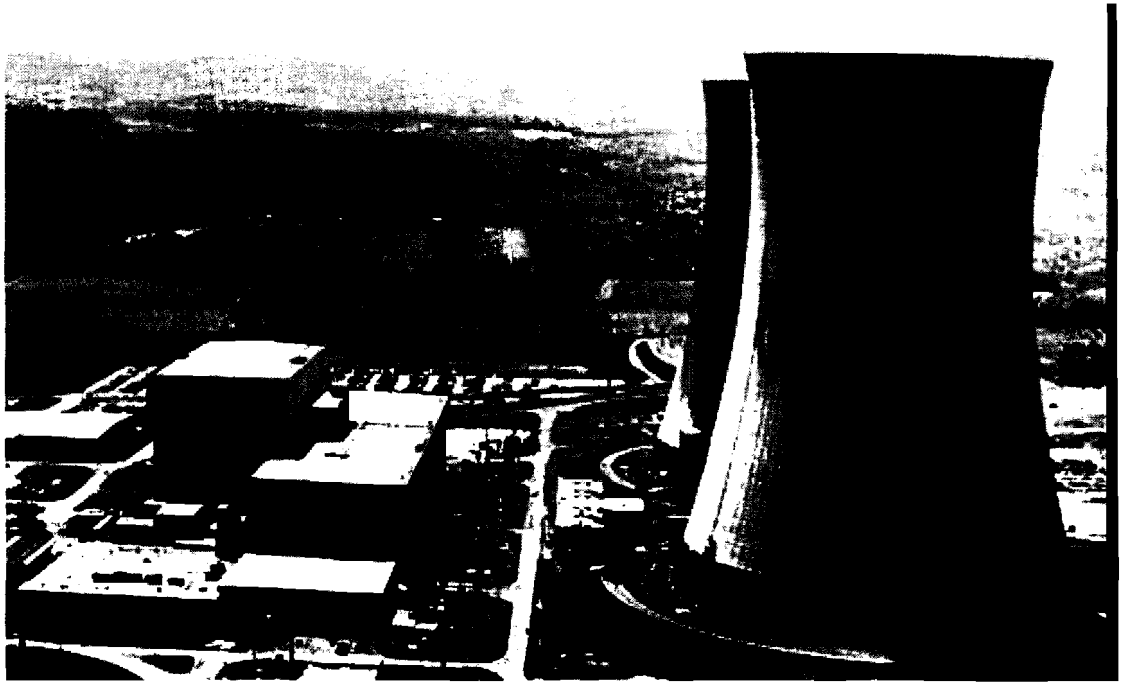


Non-Proprietary Version

Susquehanna Steam Electric Station

Advisory Committee on Reactor Safeguards

November 1, 2007



Non-Proprietary Version

CPPU Overview

Mr. Richard Pagodin
General Manager – Nuclear Engineering

Susquehanna Plant Overview

- Two BWR-4 Units
  - 3489 MWth / 1200 MWe
  - Max Core Flow of 108 Mlbm/Hr
- Mark II Primary Containment
- Commercial Operation
  - Unit 1 – June 1983 ; Unit 2 – February 1985
- Previous Thermal Power Uprates
  - Approx. 4.5% Stretch (w/Increased Core Flow to 108 Mlbm/hr December 1993)
  - 1.4% Measurement Uncertainty Recapture (MUR) June 2001

CPPU Key Parameter Changes

Parameter		CLTP	CPPU
Core Thermal Power	(Mwth)	3489 (Constant)	3952 (Variable)
Feedwater Flow	(Mlbm/hr)	14.4 (Constant)	16.5 (Variable)
Main Steam Flow	(Mlbm/hr)	14.4 (Constant)	16.5 (Variable)
Reactor Recirc Flow	(gpm)	47,298	48,189
Final Feedwater Temp.	(deg-F)	391.6	399.7
Generator Output	(Mwe)	1200 (Variable)	1300 (Constant)

CPPU Major Engineering Changes

- Install Vibration & Acoustic Monitoring
- Implement Enriched SLC Boron
- Replace Condensate Pumps
- Replace High Pressure Turbines
- Replace Steam Dryers
- Replace Reactor Feed Pump Turbines
- Install Condensate Demineralizers & Condensate Filters

CPPU Implementation Schedule

CPPU planned implementation:

- U1 – 2008 : First 7% of CLTP Uprate
- U2 – 2009 : Full 13% of CLTP Uprate
- U1 – 2010 : Full 13% of CLTP Uprate

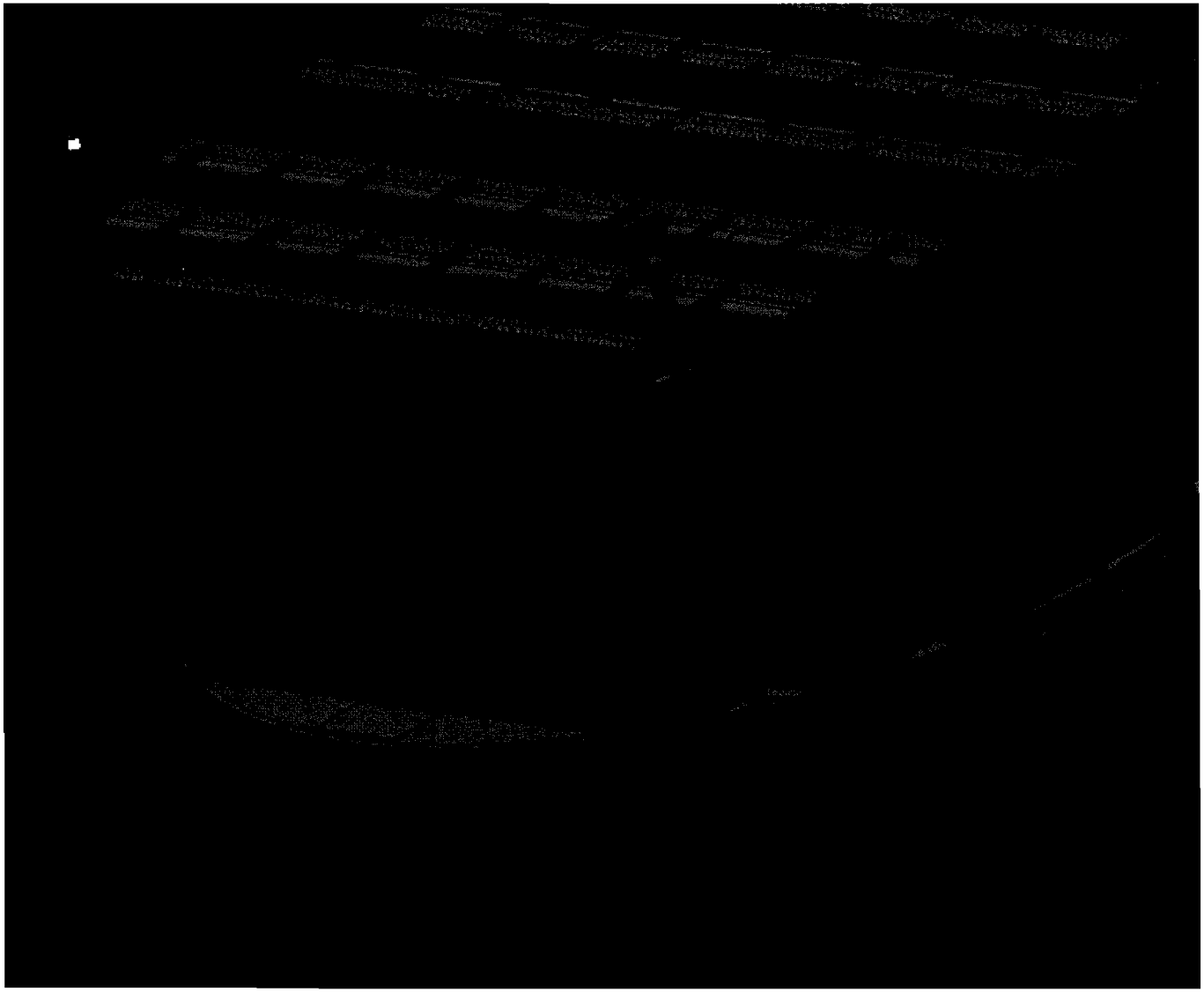
CPPU Conclusions

- All CPPU safety aspects were evaluated
- Evaluations used NRC approved and industry accepted methods
- No new design functions were identified for safety related systems
- No significant safety system challenges resulted from CPPU

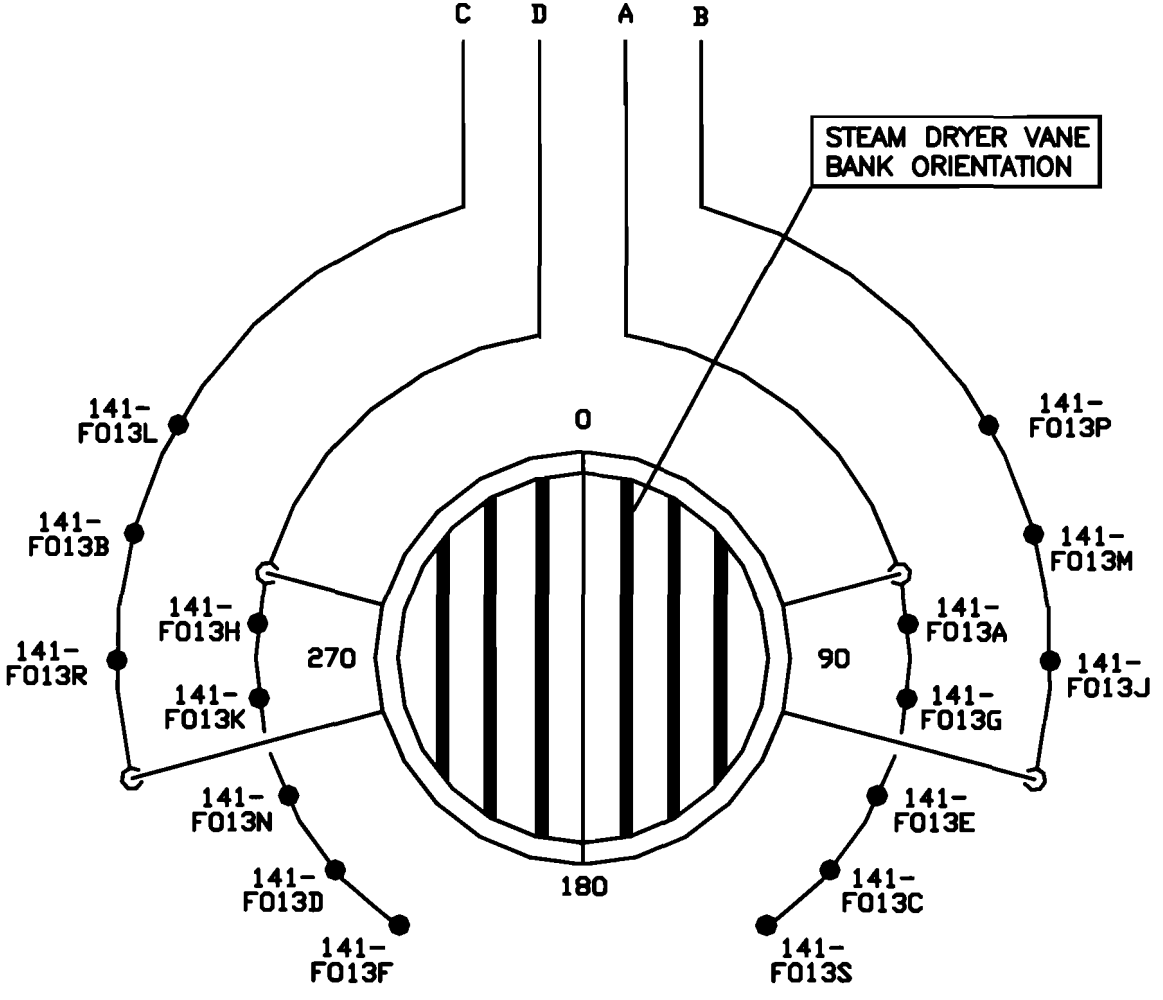
Steam Dryer

John Bartos
CPPU Lead Engineer

Current Susquehanna Dryer



Steam Dryer

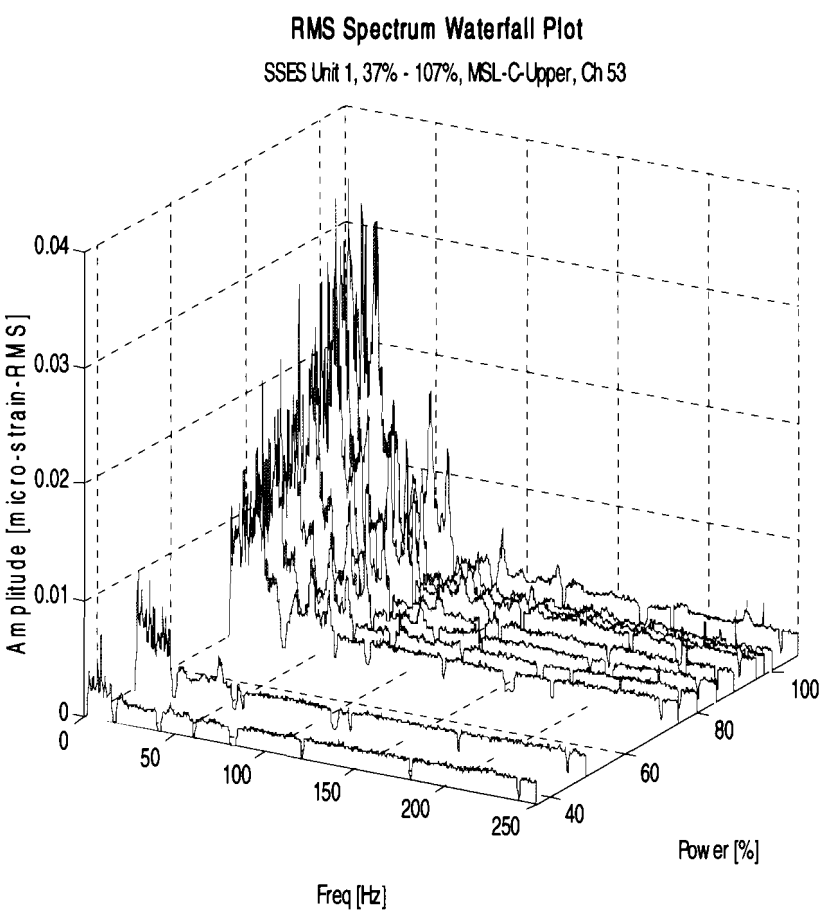


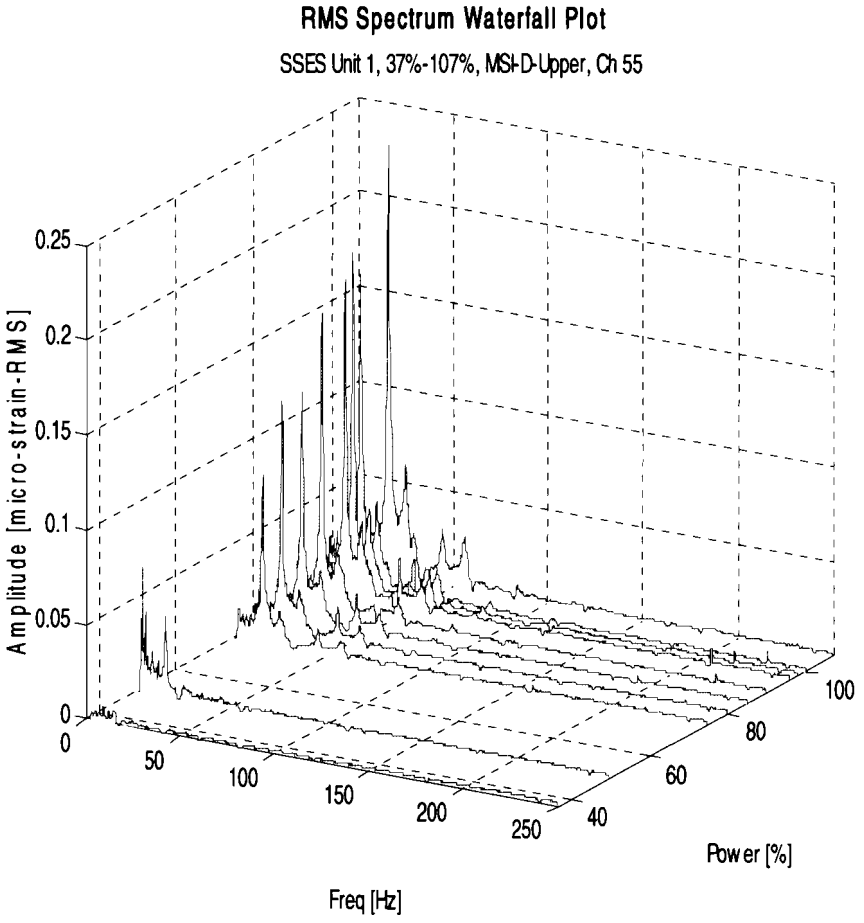
SSES Steam Line Configuration Inside Containment

Current Steam Dryer Analysis

- **Assessed plant susceptibility to a main steam line acoustic resonance:**
  - **Strouhal calculations**
  - **Scale model testing**
    - **CDI 1:6 steam line scale model test**
    - **GE 1:17 scale model test**
  - **MSL strain gage data analysis including MSIV slow closure testing**
- **Results**
  - **No main steam line acoustic resonances are predicted.**
  - **Dynamic pressures are predicted to increase as the square of the steam flow increase.**
  - **Steam line dead legs are predicted to resonate at 15 HZ.**

Current Steam Dryer Analysis





Strain Gage Readings

Current Steam Dryer Analysis

- Analysis Methodology
  - Benchmarked existing dryer analysis tool results against 1985 instrumented steam dryer data.
  - Developed a strain/stress adjustment factor (Stress Under Prediction Factor – SUPF) from the benchmarking effort.
  - Developed a 107% CLTP load definition from MSIV slow closure testing data.
  - Calculated stresses with existing tools and applied the SUPF.
  - Scaled to full CPPU power levels.
  - Startup testing will confirm analysis

Current Steam Dryer Analysis

- **Benchmarking Analysis**
  - **Obtained in-plant strain gage data at OLTP steam flows.**
  - **Applied Acoustic Circuit Model (ACM) to generate the load definition on the steam dryer for OLTP.**
  - **Input ACM load definition into the GE finite element model of the current Susquehanna SES steam dryer.**
  - **Compared strains from GE finite element model and ACM pressures to strains and pressures obtained from 1985 instrumented steam dryer**

PROPRIETARY DATA FOLLOWS

(excluded from this Non-Proprietary version)

Current Steam Dryer Analysis

[[

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Current Steam Dryer Analysis

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Current Steam Dryer Analysis

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Replacement Steam Dryer Analysis

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Replacement Steam Dryer Analysis

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Stress Under Prediction Factor Considerations

- The SUPF is based on a high stress location of the existing dryer.
- Includes consideration for a local panel resonance resulting from recirculation pump vane passing vibration.
- The replacement dryer design increases:
  - The hood structural natural frequency above the prominent pressure loading frequencies and
  - The local panel natural frequency above the recirculation vane passing frequencies.
- Power ascension stress limits and limit curves were developed without the use of the SUPF and will ensure structural integrity during operation.
- Adequacy of the SUPF will be validated by test data.

Replacement Steam Dryer Analysis

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Replacement Steam Dryer Analysis

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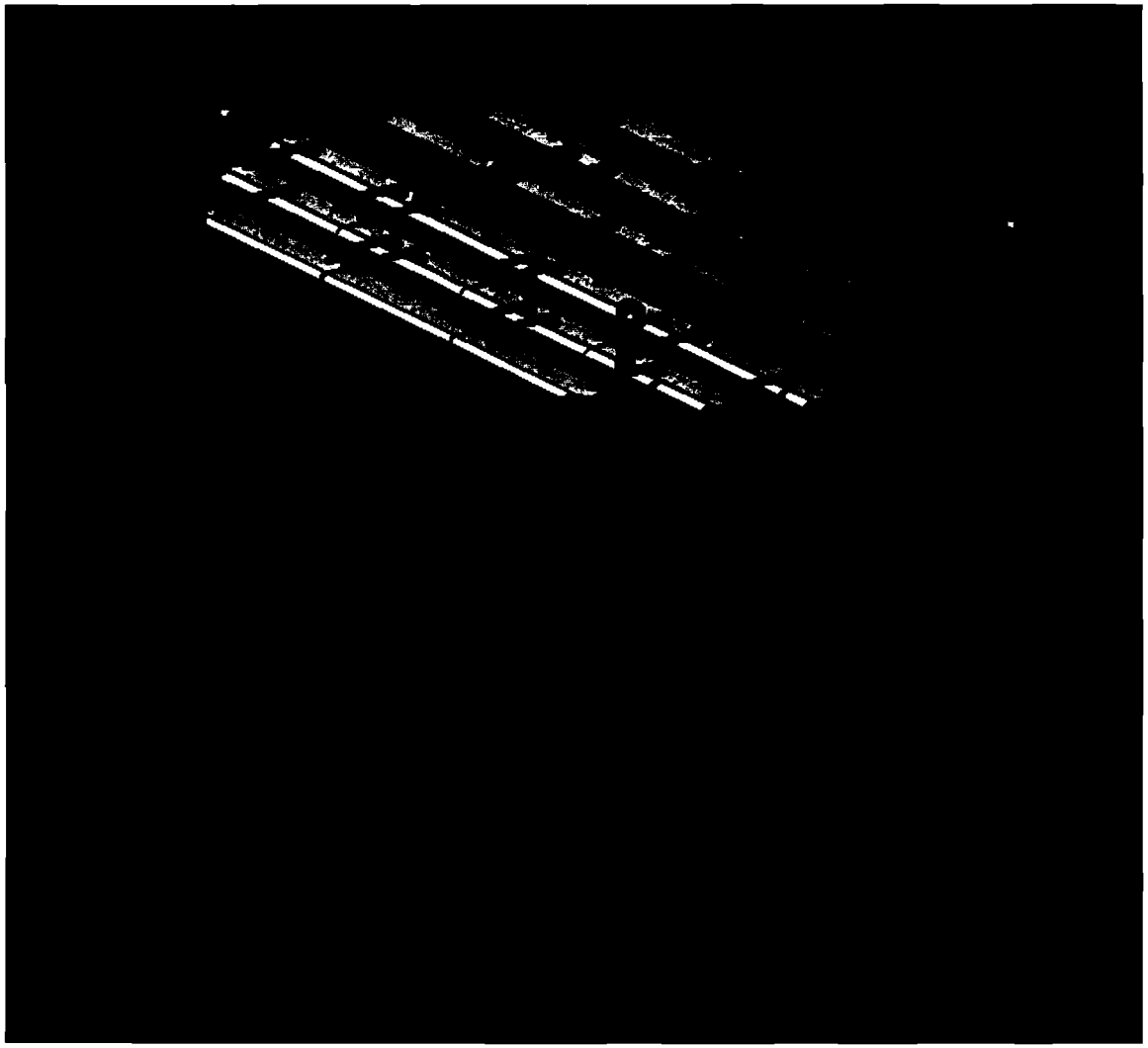
Replacement Steam Dryer



Steam Dryer Instrumentation Plan Program Goals

- Validate the structural adequacy of the replacement steam dryer design under CPPU conditions
- Validate and refine load definition and structural analysis models used for the full CPPU analysis
- Benchmark MSIV slow closure test which simulated 107% CLTP
- Perform MSIV slow closure testing to simulate full CPPU steam flow
- Refine the main steam line strain gage limit curves
- Obtain input data for reanalysis of the replacement steam dryer

Steam Dryer Sensor Summary

[[

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Basis for Sensor Locations

[[

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CPPU New Dryer Design Summary

- Based on specific Susquehanna steam dryer data
- New steam dryer design
  - Improved structural design
  - Designed and fabricated under 10CFR50, Appendix B
  - Fabrication utilizes stress reduction techniques
- Approach will be validated
  - Start-up testing
    - Measure actual dryer stresses and loads
    - Validate analysis tools
  - Steam dryer stress analysis will be revised incorporating data from steam dryer instrumentation

CPPU Containment Analysis

Mr. John Bartos
CPPU Lead Engineer

CPPU Containment Analysis

RHR & Core Spray Pump NPSHa

- Containment Over Pressure Not Required
- NPSHa Based On
  - Suppression Pool Design Temperature (220 deg-F)
  - Strainer Fouling
- RHR & Core Spray Pump NPSHr is Minimal

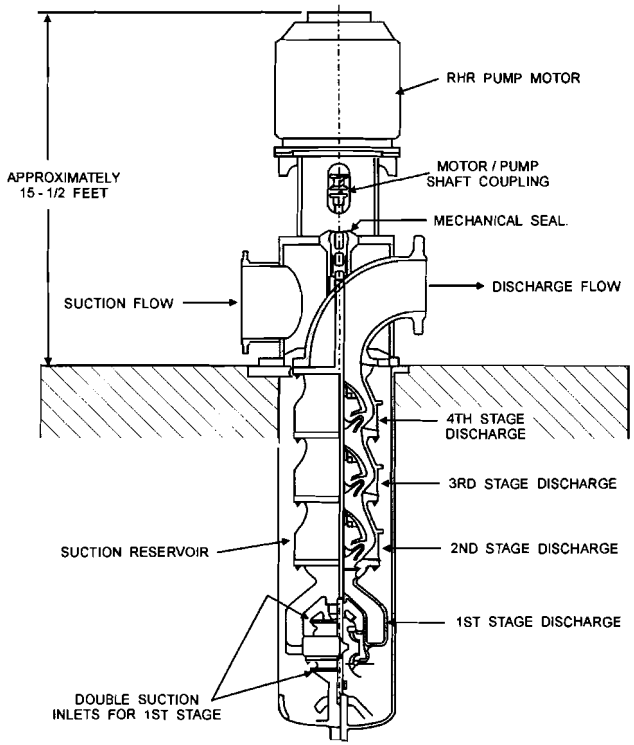
CPPU Containment Analysis

RHR & Core Spray Pump NPSHa

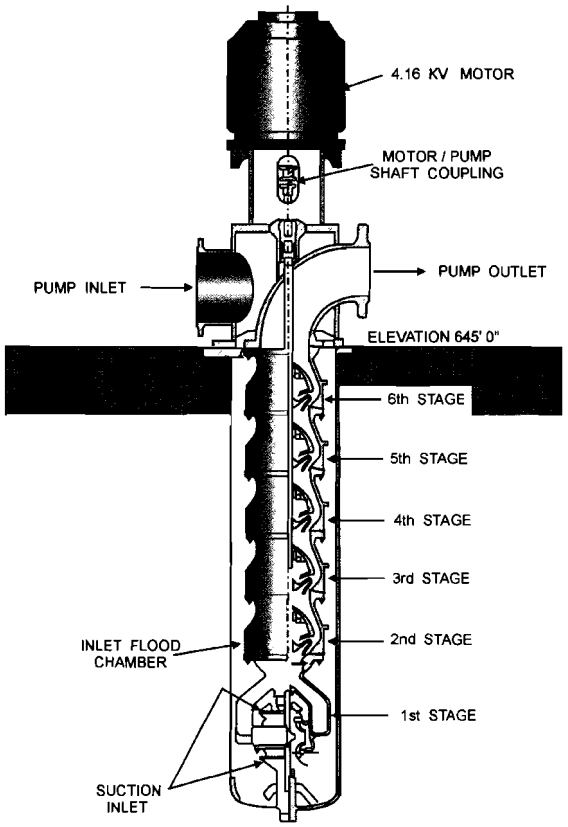
- **RHR:** NPSHr = 5' NPSHa = 8.17'
- **Core Spray:** NPSHr = 4' NPSHa = 5.75'
- **DBA LOCA Is The Most Limiting NPSHa Case For All Events (ATWS, Appendix R)**

CPPU Containment Analysis

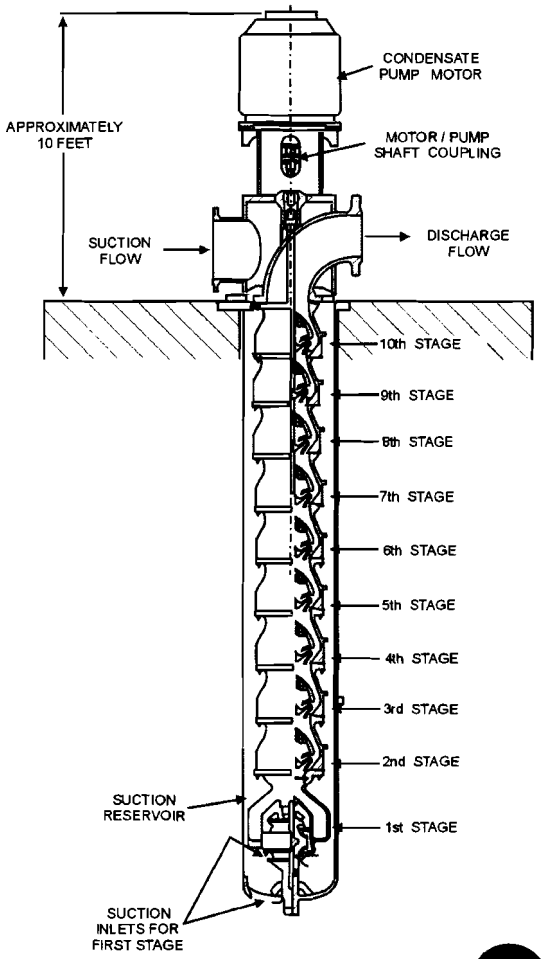
RHR
10,000 GPM / 600' TDH
1180 RPM
NPSHr = 5'



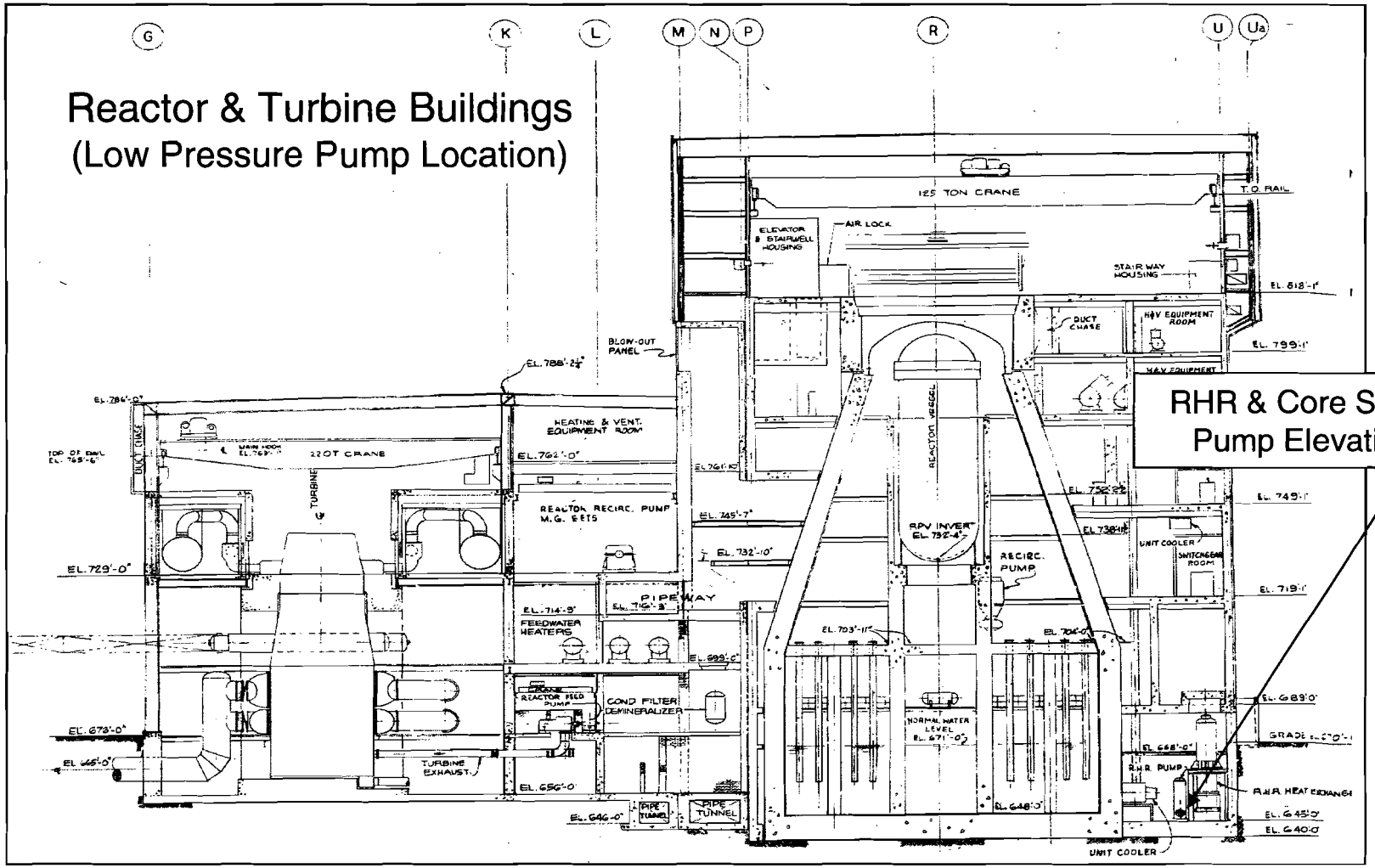
Core Spray
3,175 GPM / 668' TDH
1780 RPM
NPSHr = 4'



Condensate
8,000 GPM / 1400' TDH
1190 RPM
NPSHr = 10'



Containment Over-Pressure



Power Ascension Test Plan

Mr. Michael H. Crowthers

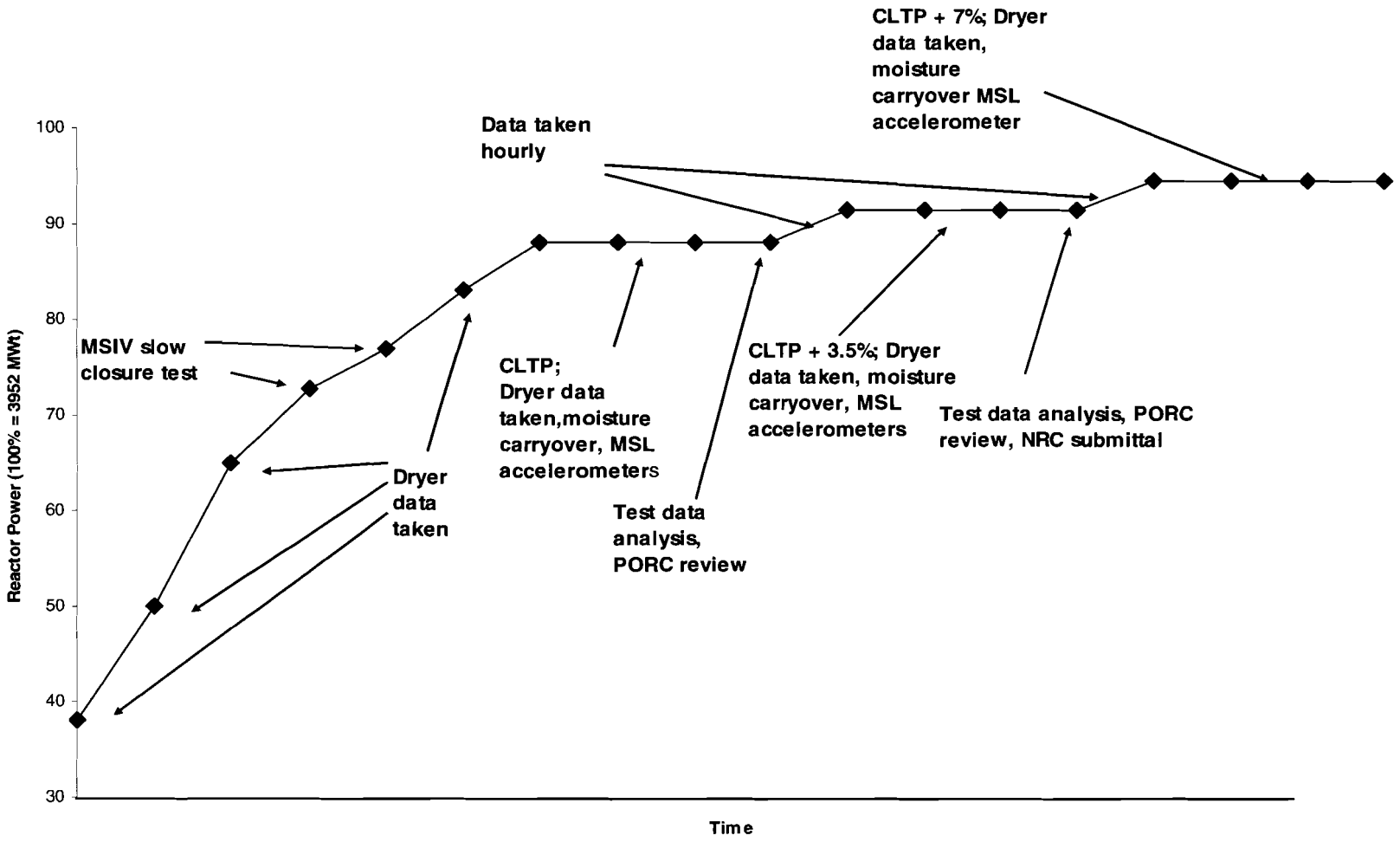
Supervisor Regulatory Affairs

Power Ascension Test Plan

Three Main Elements

- Slow and deliberate power ascension
- Start-up monitoring, analysis, and trending program
- Long Term dryer inspections

U1 CPPU Test Plan



Power Ascension Test Plan

Steam Dryer Monitoring and Analysis

- Unit 1 after 107% CLTP
  - Benchmark load definition and structural analysis
  - Benchmark CPPU scaling factor
  - Limit curves will be benchmarked on Unit 1 measurements at 107% CLTP
  - Benchmarked MSL power ascension limit curves will be used for ascension to 113% CLTP

Power Ascension Test Plan

Post CPPU Monitoring and Inspection Program

- Moisture Carryover and Plant Parameters
  - Per station operating procedures
- Strain Gage/Accelerometer Monitoring
  - Dryer, MSL data collection periodically during remainder of operating cycle as long as instrumentation is available
- Steam Dryer Monitoring and Inspection
  - Plant parameter monitoring during operation
  - Dryer inspections during refueling outages per BWRVIP-139
- Inspections and Walk Downs

Power Ascension Test Plan Conclusions

- **Tests based on a comprehensive review of SRP, LTR, OLTP and "Stretch" Uprate Startup Testing, Operating Experience and Analyses**

- **Testing Plan:**
  - **Scope is complete**
  - **Provides for Test Plateaus with appropriate provisions for:**
    - **Data collection and analysis**
    - **Plant Management Reviews**
    - **NRC Staff Reviews (Dryer)**
    - **Acceptance criteria and predefined actions to address test anomalies**

ECCS Performance (LOCA)
Susquehanna EPU

Diane Jackson – Peter Lien
Reactor Systems Branch
Division of Safety Systems
Office of Nuclear Reactor Regulation

November 1, 2007

6-1

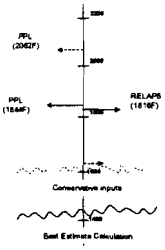
ECCS Performance (LOCA)

- Reconciliation of Appendix K and Best Estimate PCT Results (EXEM-BWR 2000 vs RELAP 5 LOCA PCT Calculation)
- Sensitivity study on RELAP5 hot channel modeling
- Neutronic Methods topics to be discussed during 14 November subcommittee meeting

6-2

Appendix K vs Best Estimate PCT Calculation

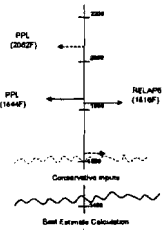
- ΔPCT between App. K and BE (realistic) calculations is typically between 300 to 400 F for LBLOCA. Temperature difference is due to method differences and plant parameter input differences.
- Staff's RELAP5 calculation uses **conservative inputs from licensee** – same initial condition (power, flow, power peaking) and boundary condition (ECCS).
- **Radiation heat transfer** modeling is one major difference among the method differences. Disabling radiation heat transfer in PPL LBLOCA resulted in 220 F PCT increase.



6-3

Appendix K vs Best Estimate PCT Calculation

- With same conservative input and radiation heat transfer, ΔPCT is around 250 F, which accounts for Appendix K and BE methods differences.
- Based on the ΔPCT analysis, staff finds the confirmatory PCT calculation supports licensee's calculation.

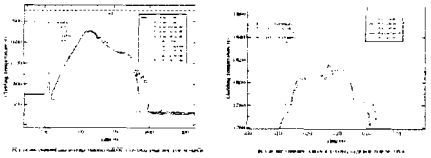


Test case	PPL (radiation ht)	RELAP5 (no radiation ht)	PPL (no radiation ht)	Difference
LBLOCA (1.0 DEG, SF-LPCI)	1844 F	1816 F	2062 F	246 F

6-4

Number of Assemblies in Hot Channel Sensitivity Study

Test case	Number of hot assemblies	Power group	Percentage of hot assemblies	PCT
1 (original)	4	Top 0.1 %	0.8 %	1818 F
2	61	Top 3.0 %	10.6 %	1822 F
3	129	Top 6.0 %	16.9 %	1843 F
4	264	Top 9.4 %	34.6 %	1812 F
5	382	Top 14.0 %	50.0 %	1810 F



Sensitivity study shows minimum impact on modeling hot channel with 4 assemblies

6-5

Component Evaluation for Susquehanna Units 1 and 2 Proposed EPU Amendment

Rich Guzman
Division of Operating Reactor Licensing

Kamal Manoly, Chief
Thomas Scarbrough – Cheng-Ih (John) Wu
Mechanical & Civil Engineering Branch
Division of Engineering
Office of Nuclear Reactor Regulation

November 1, 2007

5-1

Conclusions

- Susquehanna components will continue to meet GDC following EPU implementation
- Reasonable assurance that new Susquehanna steam dryers are within structural limits for CLTP and extrapolated EPU conditions
- EPU amendment acceptable with respect to component evaluation
- License conditions establish provisions for monitoring and evaluating plant data, and taking prompt action during EPU operation if necessary

5-2

License Conditions

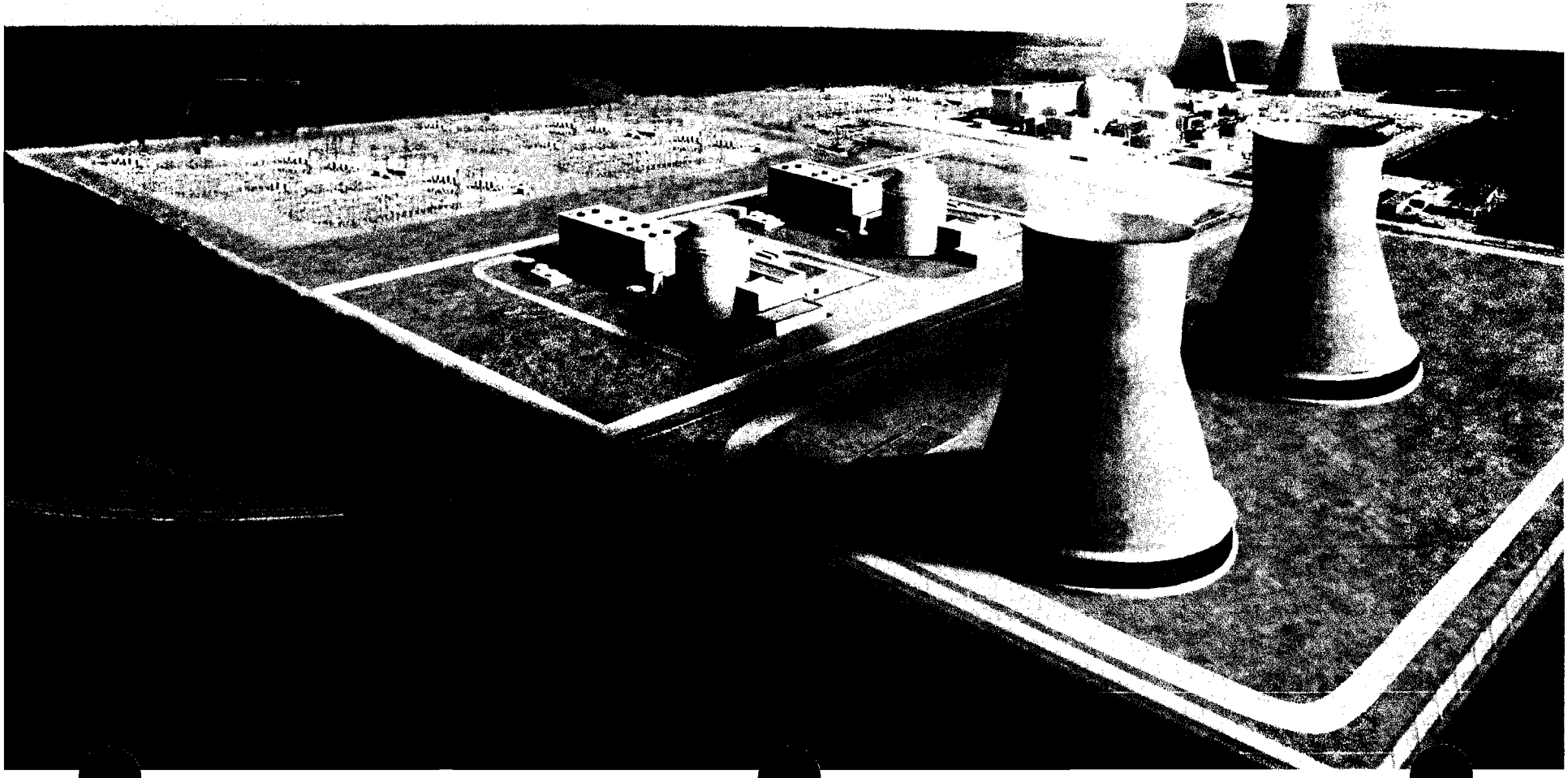
License conditions will:

- Confirm Stress Under Prediction Factor
- Provide slow and deliberate power ascension with hold points and data evaluation
- Formalize plans for steam dryer and plant instrumentation and other activities
- Specify EPU startup procedure contents
- Provide for licensee/NRC interaction to address plant data, evaluations, walkdowns, inspections, and procedures

5-3

Southern Nuclear

Vogtle ESP Application
Presentation to the ACRS Committee
November 1, 2007



Introduction

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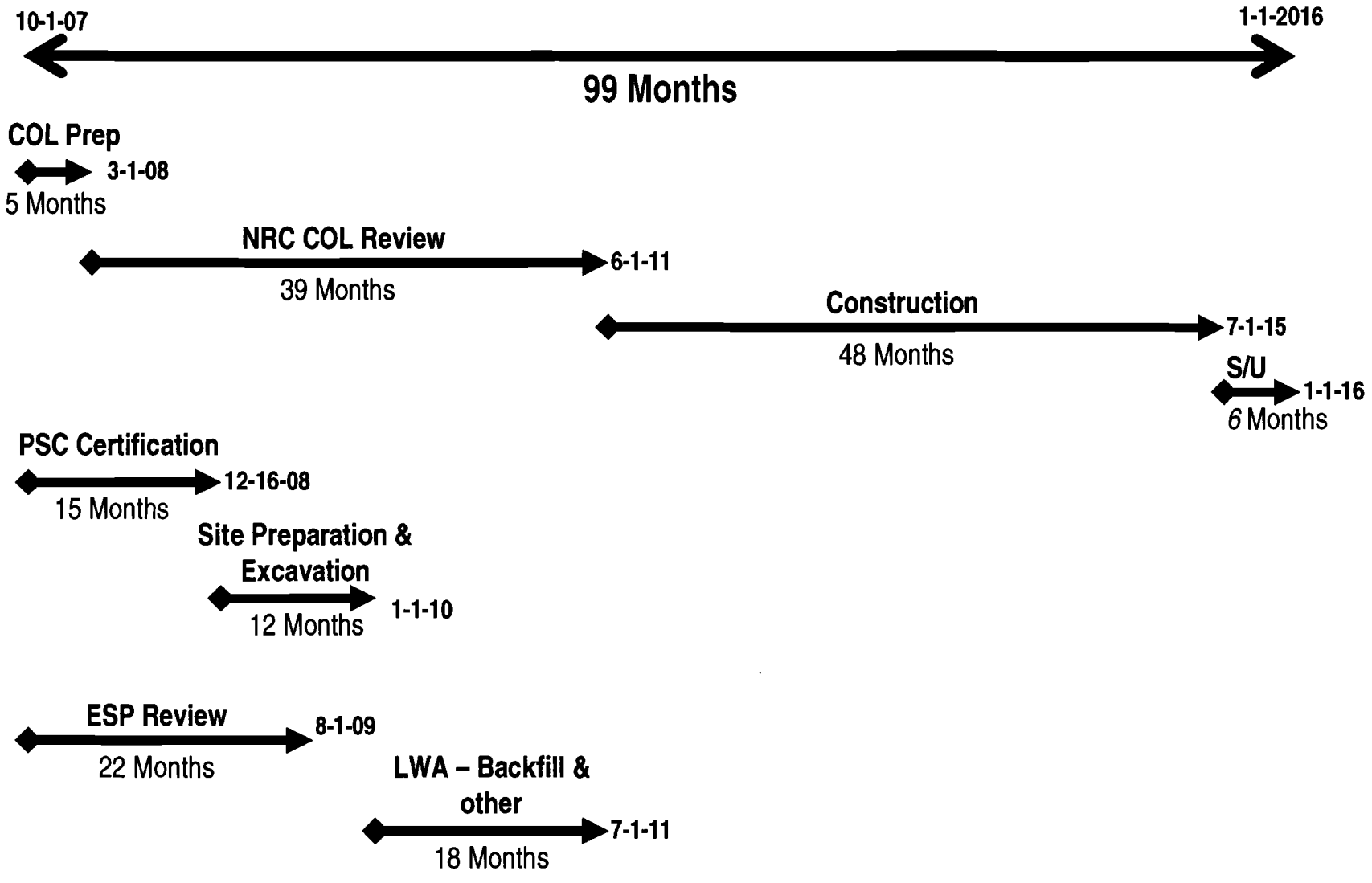
Chuck Pierce
Vogtle Deployment
Licensing Manager

Vogtle 3&4 Schedule



Early Site Permit - Overview

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Jim Davis
ESP Project Engineer

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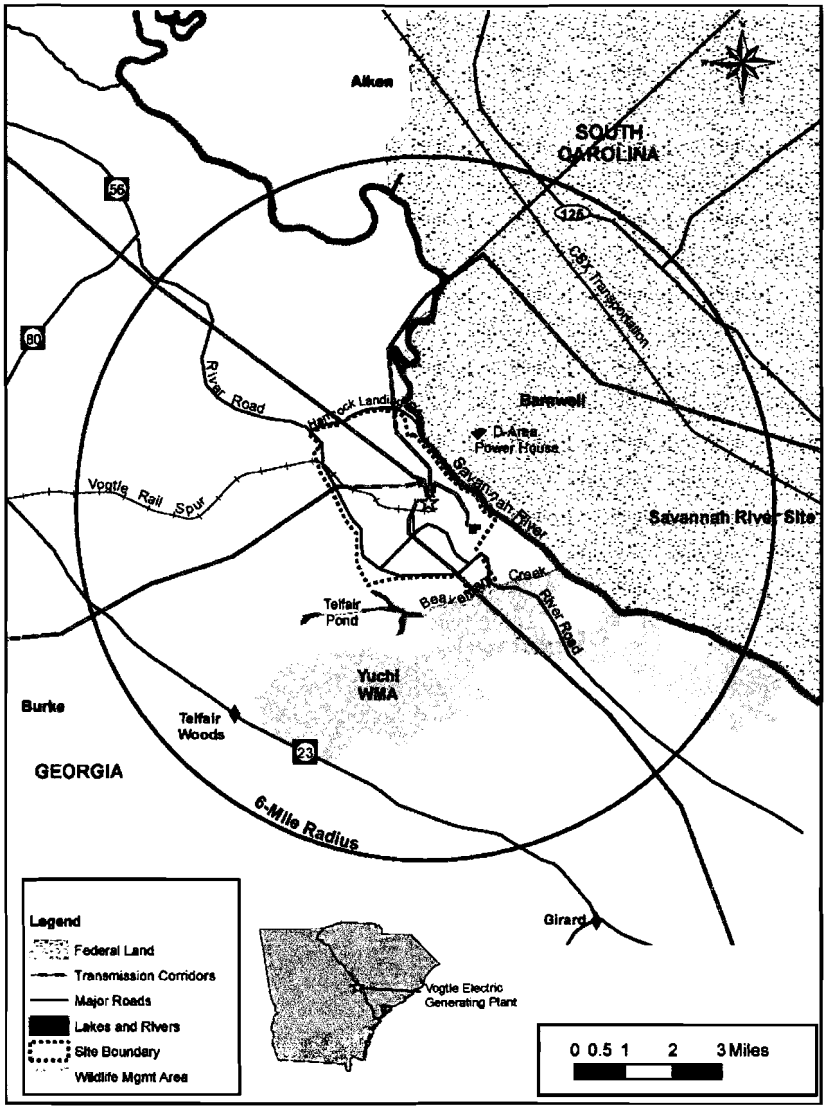
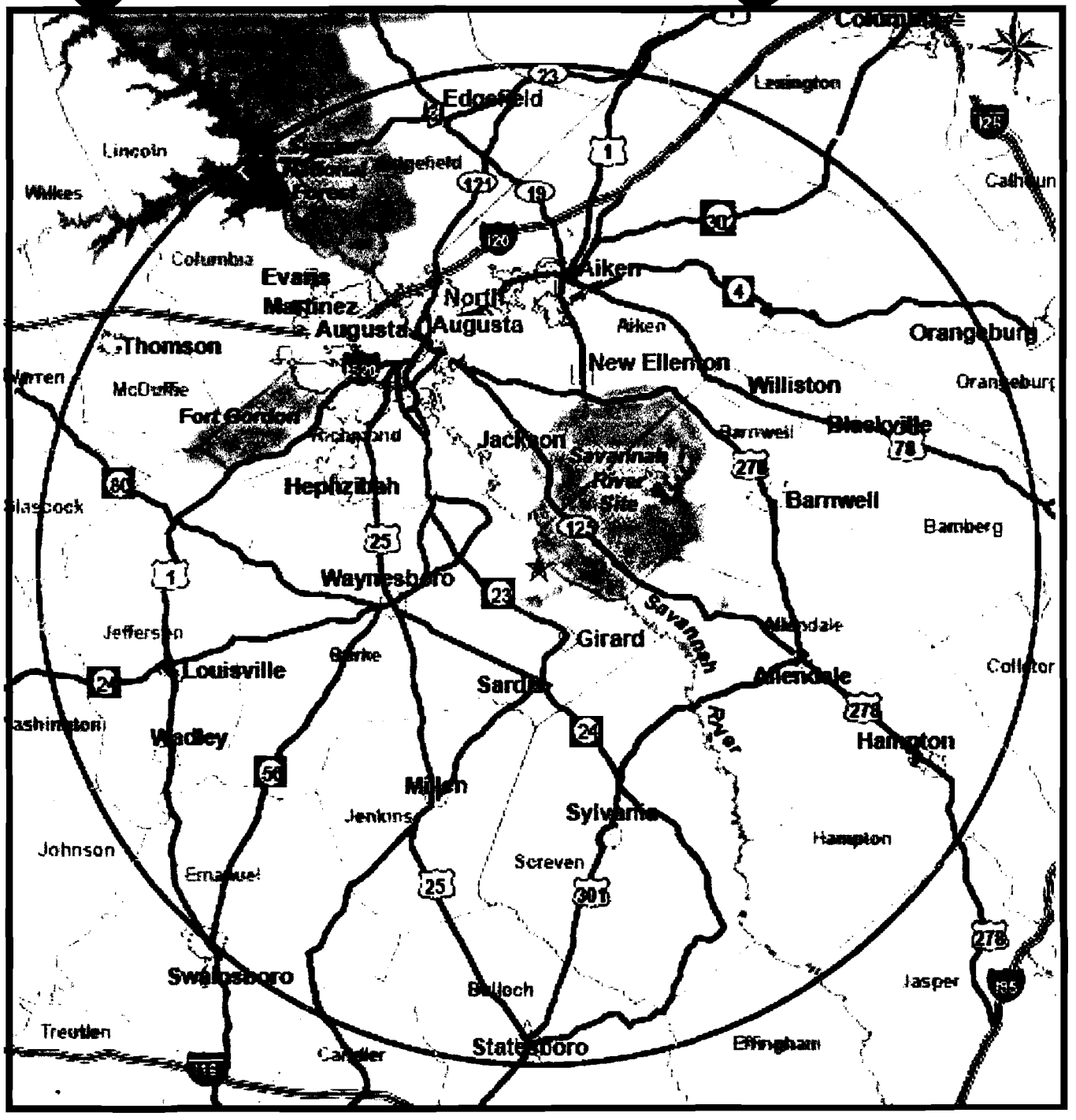
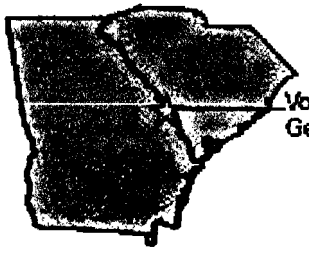
Location

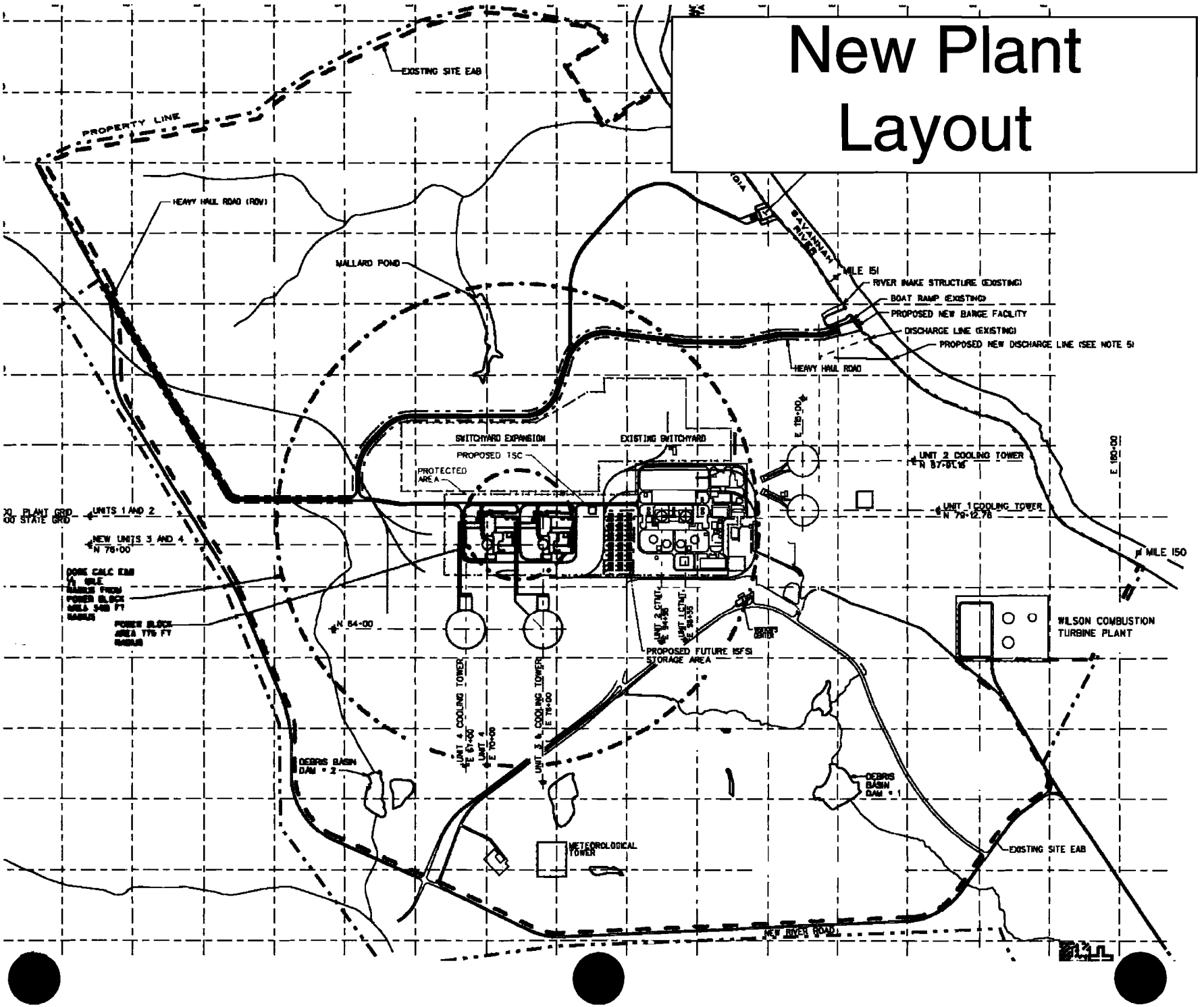
The 3,169-acre VEGP site is located on a Coastal Plain bluff on the southwest side of the Savannah River in eastern Burke County Georgia. The site is directly across the river from the Department of Energy's Savannah River Site (Barnwell County, South Carolina). It is about 150 river miles from the mouth of the Savannah River and approximately and 26 miles southeast of Augusta, Georgia.




Edgefield
Lincoln
Wilkes
Columbia
Evans
Martinez
Augusta
North Augusta
Aiken
Thomson
McDuffie
Fort Gordon
Richmond
Jackson
Savannah River Site
New Ellenton
Williston
Barnwell
Blackville
Orangeburg
Lexington
Calhoun
Bamberg
Hephzibah
Waynesboro
Girard
Sardis
Louisville
Jefferson
Burke
Wadley
Millen
Jenkins
Sylvania
Screven
Johnson
Emanuel
Swainsboro
Bulloch
Statesboro
Treutlen
Candler
Effingham
Allendale
Hampton
Jasper
Colleton
Savannah River
Legend
Major Roads
50-Mile Radius
County Boundary
Urban Areas
Lakes and Rivers
Federal Land


Vogtle Electric Generating Plant

New Plant Layout



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Application Development

Guidance

- 10 CFR Part 52, Subpart A
- RS-002, Processing Applications for Early Site Permits
- AP1000 Site Interface Requirements

Data Sources

- Unit 1&2 and SRS data
- Site Specific Studies and Tests
- Conceptual Design and Analysis

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VEGP ESP Level of Detail

Example	Other ESPs	VEGP ESP
Reactor Type Power Output	Options Listed	Two AP1000's at 1117 MWe Each
Plant Layout Cooling Water Design Intake Design	General Information Provided	Detailed Design and Layouts Provided
Water Consumption And Discharge Flow	Envelope Approach	Plant-Specific Numbers Provided
Normal Effluents and Accident Doses	Envelope Approach	Plant-Specific Numbers Provided
Emergency Plan	Major Features	Complete & Integrated Plan

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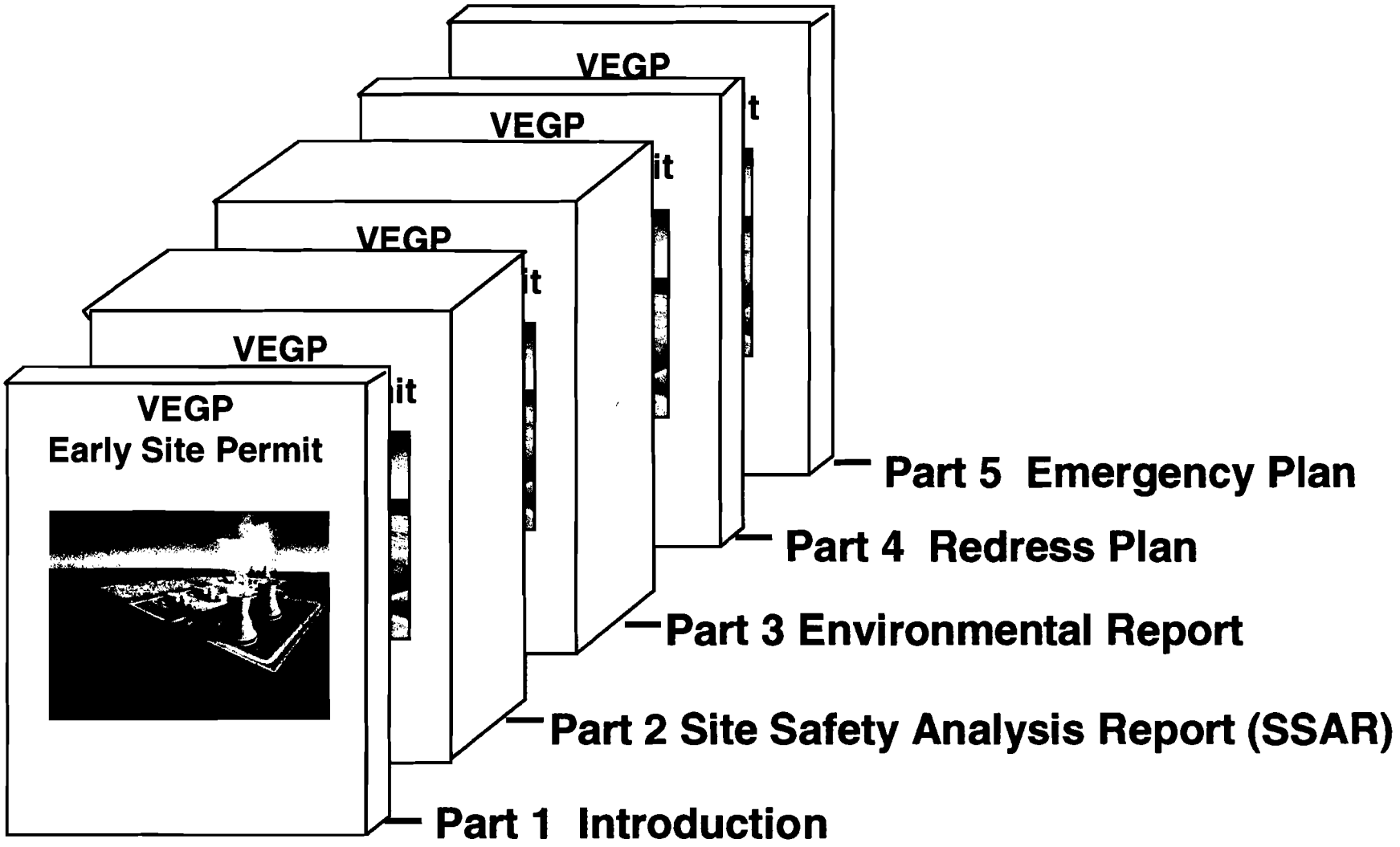
ESP Overview



Application Submittal - LWA

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- Revision 0, August 2006
  - Initial Submittal contained LWA-1 request
    - Construction preparation activities
    - Including excavation of power block
- Revision 2, Supplement 1, August 2007
  - Included LWA-2 request to include backfill and all associated work on Nuclear Island basemat necessary to support first concrete placement at receipt of COL

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Part 2 Site Safety Analysis Report

Chapter numbering follows FSAR format:

- Chapter 1 Introduction and General Description
- Chapter 2 Site Characteristics
- Chapter 3 Aircraft hazards
- Chapter 11 Liquid & Gaseous Releases
- Chapter 13 Emergency Planning & Security
- Chapter 15 Accident Analyses
- Chapter 17 Quality Assurance

NRC Site Technical Visits

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Subject	Date
◆ Pre-Application Subsurface Investigation	10/2005
◆ Quality Assurance (corporate)	08/2006
◆ Emergency Planning	10/2006
◆ Hazards and Security	11/2006
◆ Meteorology	12/2006
◆ Hydrology and Geology	01/2007

ESP Requests for Additional Information (RAIs)

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Section	Subject	RAIs
2.1	Geography and Demography	12
2.2	Potential Hazards	18
2.3	Meteorology	16
2.4	Hydrology	10
2.5	Geology and Seismic	64
3.5.1.6	Aircraft Hazards	1
11	Liquid and Gaseous Releases	16
13	Emergency Planning	48
15	Accident Analysis	1
17	Quality Assurance	3
	Total RAIs	**189**

ESP SER Open Items

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Section	Subject	OIs
2.3	Meteorology	1
2.4	Hydrology	4
2.5	Geology and Seismic	22
13	Emergency Planning	13
	Total	**40**

Responses provided	40
Additional data scheduled	13

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Significant Issue - SER Open Items

Hydrology

2.4-1 Resolve issue on source of safety-related water use and the proposed permit condition.

Seismic

2.5-1 Resolve issue concerning need to update EPRI Dames and Moore Team M_{max} values.

2.5-3 Resolve issue concerning need to update ETSZ M_{max} values.

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Chapter 2 Site Characteristics

Topics:

- 2.1 Geography and Demography
- 2.2 Potential Hazards
- 2.3 Meteorology
- 2.4 Hydrology
- 2.5 Geology and Seismic

SSAR 2.1 Geography and Demography

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Topics:

- Site boundaries for release limits
- Exclusion Area Boundary control
- Population distribution

No outstanding open items (OIs) or request for additional information (RAIs) associated with SER.

SSAR 2.2 Potential Hazards

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Topics:

- Industrial & mining facilities (gas lines)
- Transportation routes (airports, roads, rails, water)
- Military facilities
- VEGP 1&2
- Plant Wilson

No outstanding open items (OIs) or request for additional information (RAIs) associated with SER.

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SSAR 2.3 Meteorology

Topics:

- Regional and local weather
- Presents 5 years of onsite data
- Site-specific diffusion estimates

One OI – response provided requested information

SSAR 2.4 Hydrologic Engineering

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Topics:

- Potential for floods, dam failures, storm surges, ice effects, etc.
- Low water events
- Groundwater impacts
- Accidental releases of liquids

Responded to four open items and are developing a new model to address post construction impacts to groundwater.

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SSAR 2.5 Geology and Seismic

Tom McCallum
Site Development
Project Engineer

SSAR 2.5 Geology and Seismic

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Topics:

- 2.5.1 Site and Regional Geology
- 2.5.2 Seismic Evaluation
- 2.5.3 Surface Faulting
- 2.5.4 Stability of Subsurface Materials
- 2.5.5 Stability of Slopes
- 2.5.6 Embankments and Dams
- 2.5A Soil Boring Report
- 2.5B Seismic Reflection Survey

Responded to 22 open items and are completing additional testing and data gathering to support resolution of 13 OIs.

Seismic Program Organization

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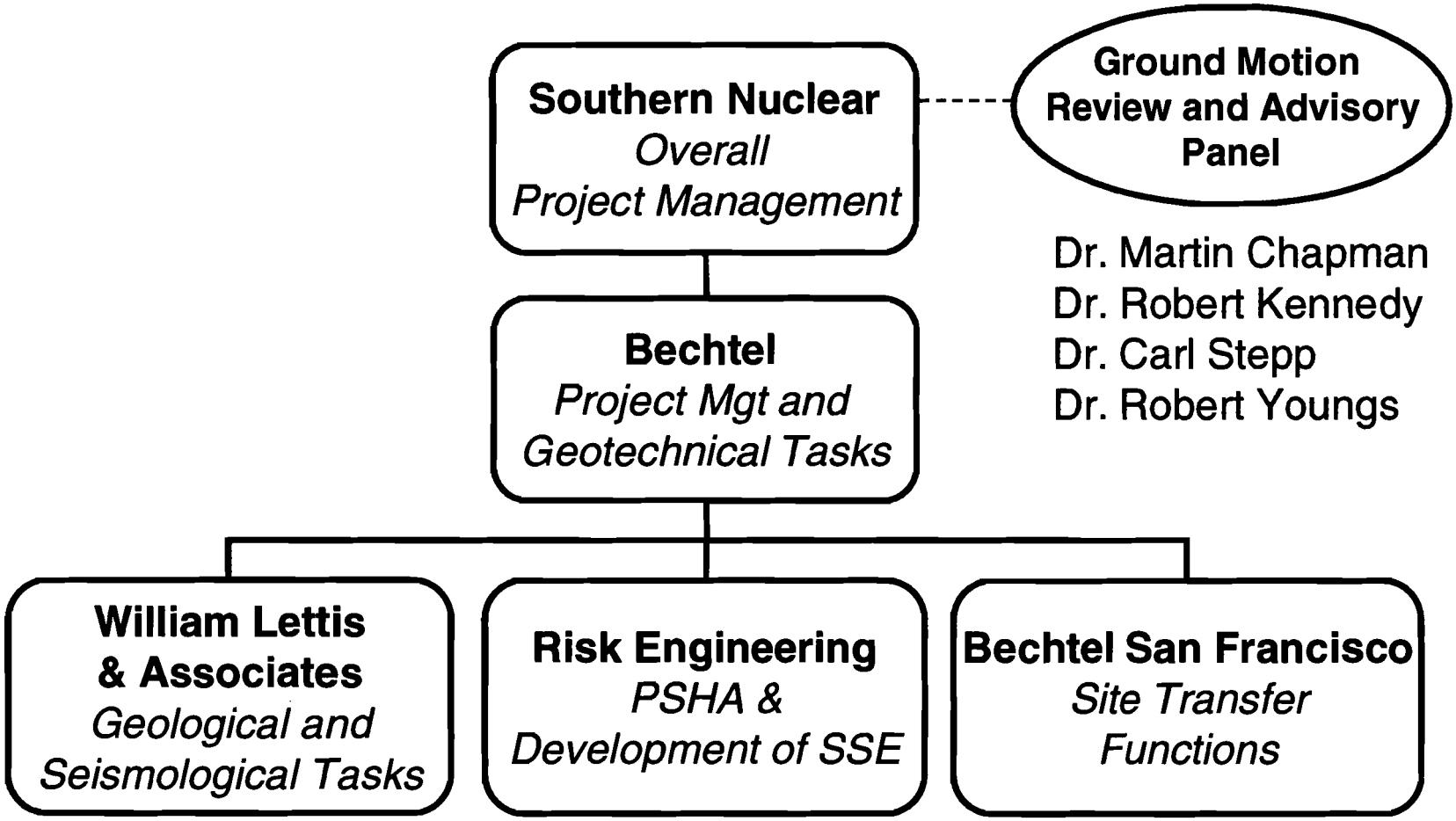

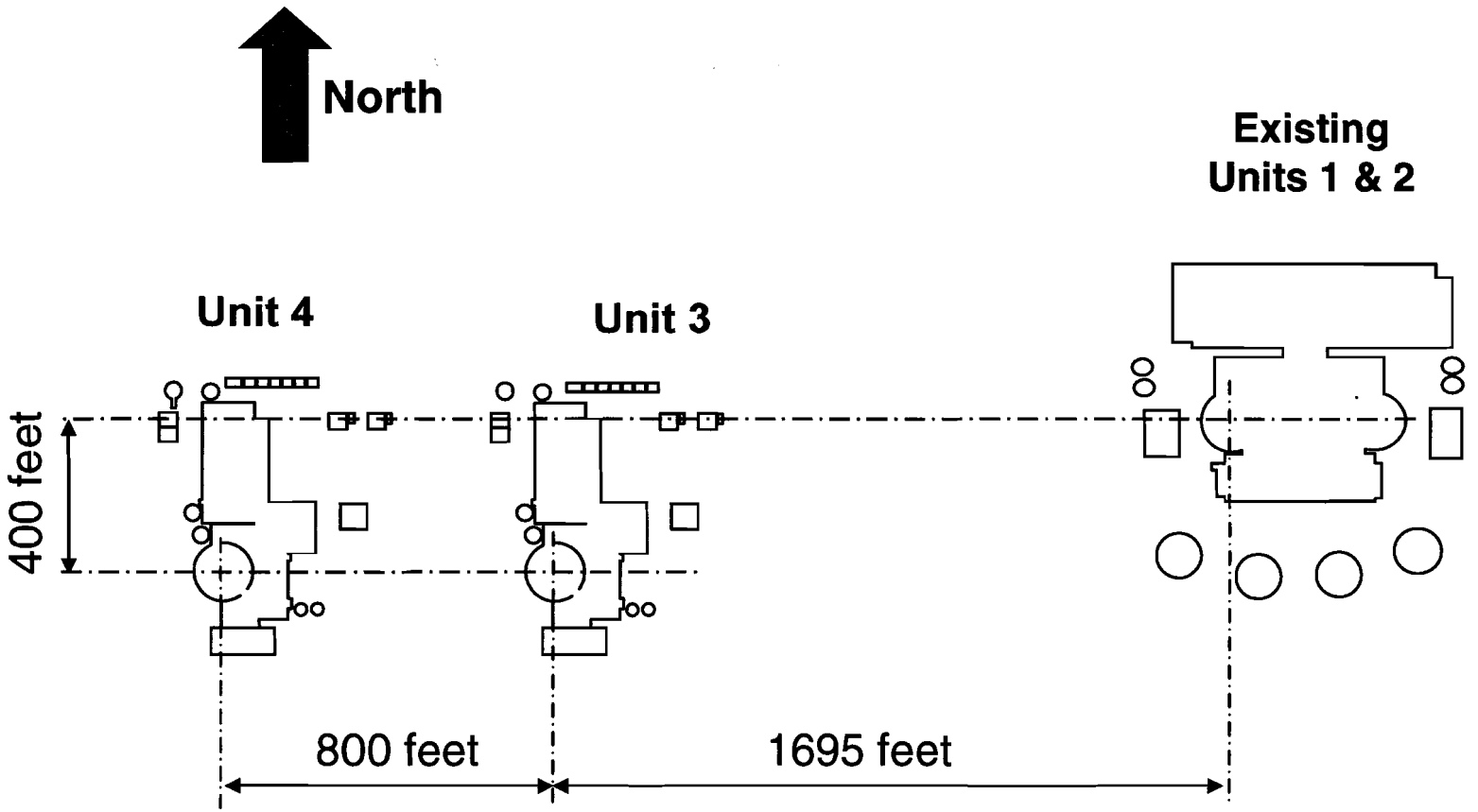
North
Existing
Units 1 & 2
Unit 4
Unit 3
400 feet
800 feet
1695 feet
Site Grade - Elevation 220 MSL

Site Layout

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Evaluation of Tectonic Features

- Literature review
- Contact local researchers
- Air photo interpretation
- Aerial reconnaissance
- Field reconnaissance
- Review of seismicity
- Seismic reflection profiles at Vogtle
- Geomorphic analysis of river terraces

Summary

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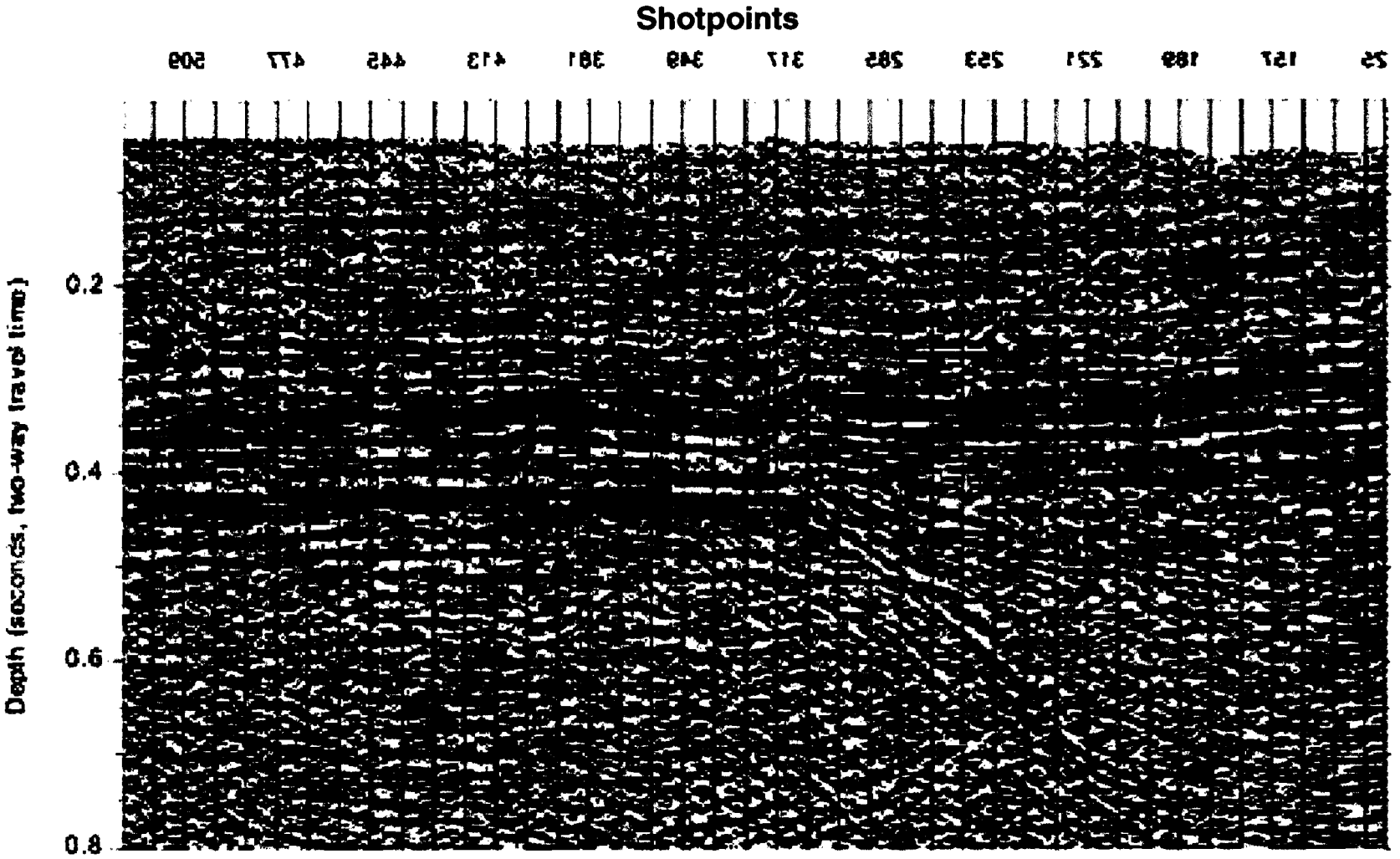
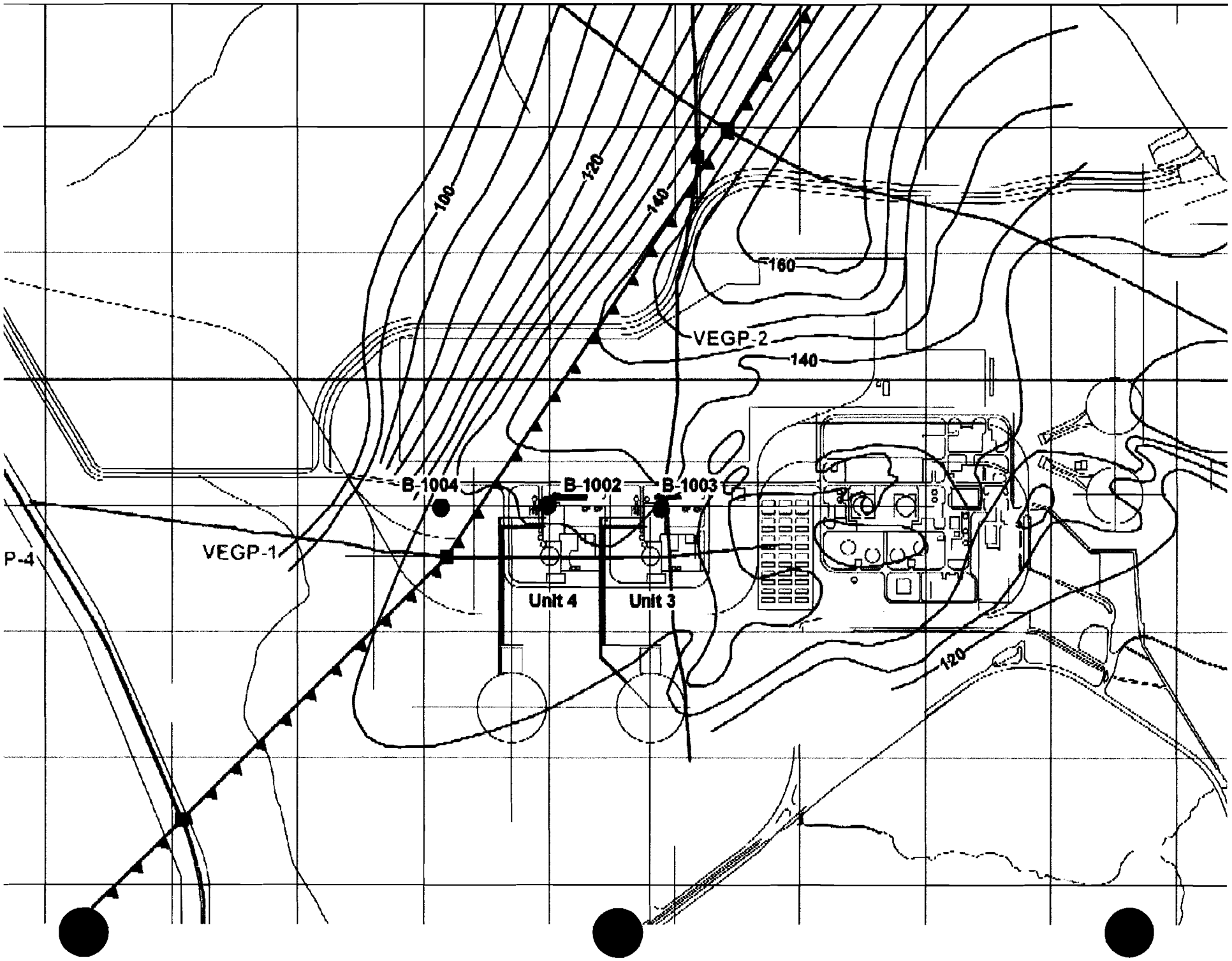
- None of the tectonic features within the Site Vicinity (25 miles) or Site Area (5 miles) are capable tectonic sources

- Non-tectonic deformation and related features can be mitigated by removal of strata overlying Blue Bluff Marl



Pen Branch Fault Image from Reflection Line 4

Looking Northeast


100
120
140
160
VEGP-2
140
B-1004
B-1002
B-1003
VEGP-1
P-4
Unit 4
Unit 3
120

Seismic Ground Motion

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- PSHA Updated per RG 1.165
- Assessed effects of additional seismicity, 1985 through mid-2005
- Updated EPRI-SOG seismic sources to account for new source information
- Used updated EPRI-SOG ground motion models (EPRI 2004)

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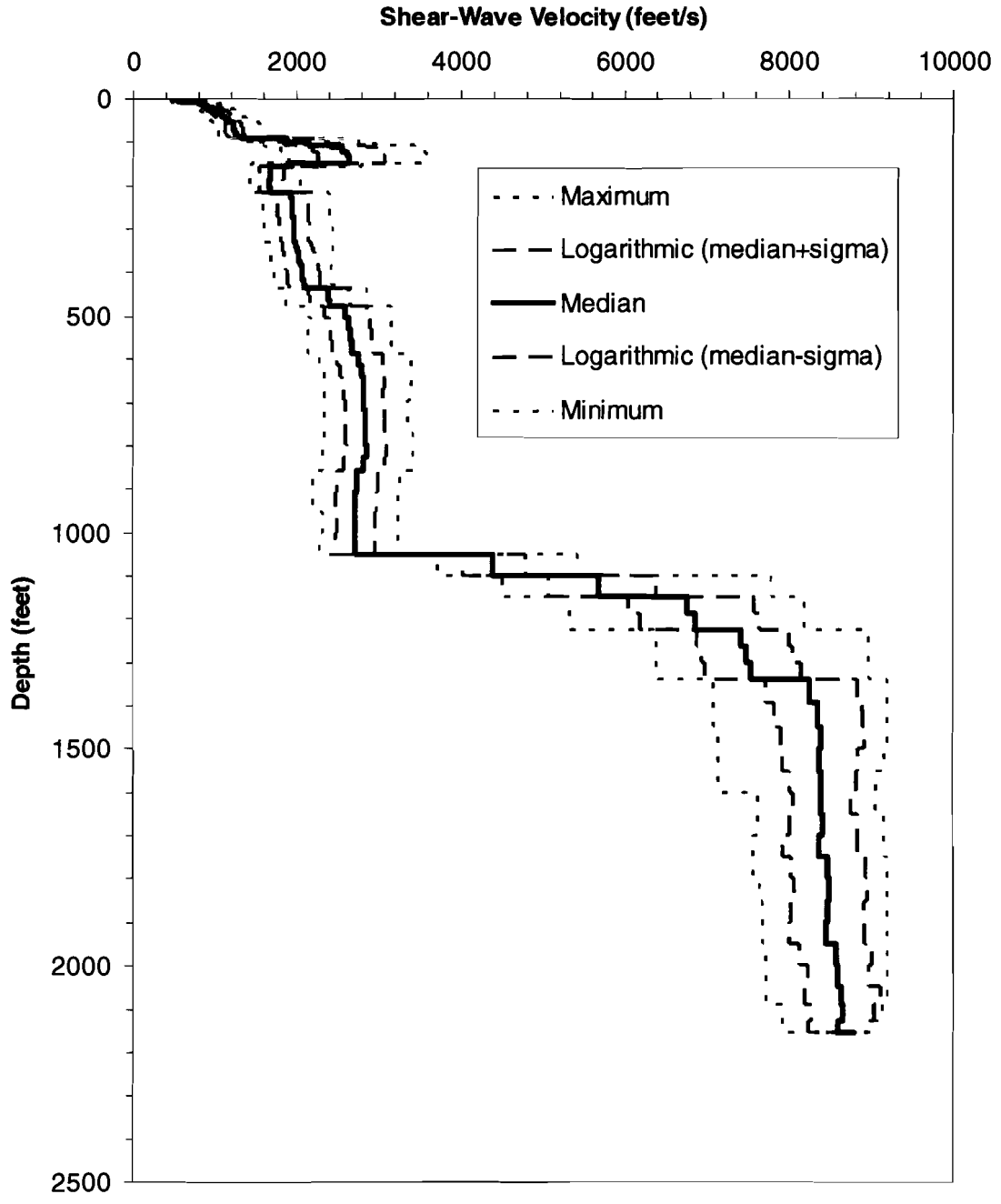
Calculation of Soil Hazard

- Developed soil profile with properties
- Determined soil amplitudes for multiple rock input amplitudes (frequencies from 100 Hz to 0.1 Hz) (1D SHAKE analysis) using M and R from deaggregation (high- and low-frequency spectra)
- Combined rock hazard with site amplification (including uncertainties in input motion and soil properties) to obtain soil UHS for multiple mean annual frequencies of exceedance (NUREG/CR-6728 Approach 2A)



Soil-Rock Shear Wave Velocity Calculated from the 60 Shear-Wave Velocity Profiles

From SAR Figure 2.5.2-34

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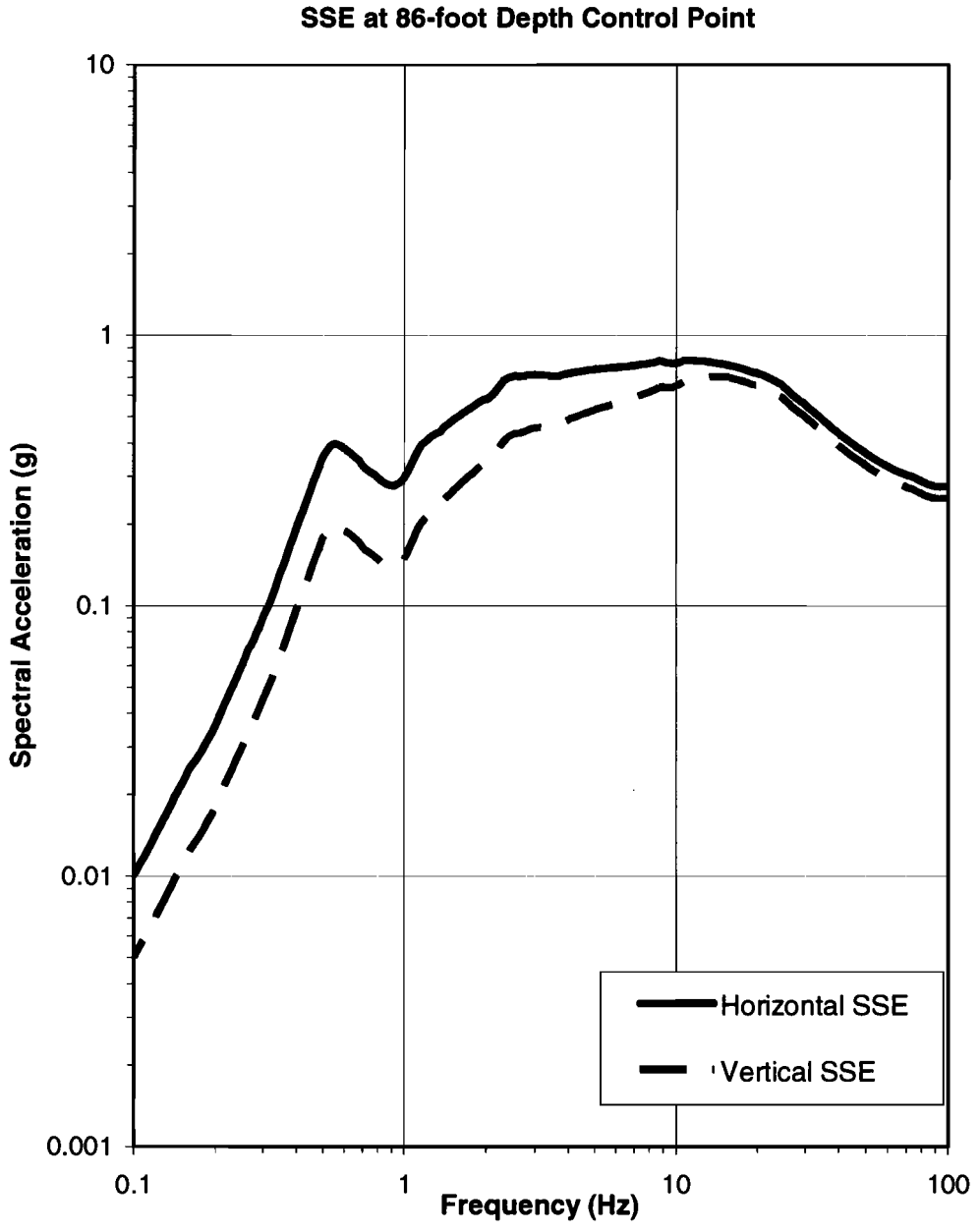
Development of Vogtle SSE

- SSE developed following performance-based procedures (ASCE 43-05)
- Define SSE (GMRS) @ ground surface at hypothetical outcrop of highest competent in-situ material (top of Blue Bluff Marl at ~86'depth)
- Vertical SSE = V/H x Horiz. SSE



Vogtle ESP SSE (GMRS) at top of Blue Bluff Marl (86-foot Depth)

From SAR Figure 2.5.2-44

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Subsurface Profile

- **Upper sands (Barnwell Group):**
  - Very loose to very dense sands
  - Average thickness of about 90 ft
  - Ground water elevation is 165 ft (55-60 ft below grade)
- **Blue Bluff Marl - (Lisbon Formation):**
  - Very hard, slightly sandy, cemented, calcareous silt/clay
  - Average thickness of 76 ft
- **Lower sands (coastal plain deposits):**
  - Dense sands
  - Thickness of 900 ft
- **Dunbarton Basin bedrock:**
  - Triassic sandstone
  - 1,049 ft below grade at B-1003

Construction Excavation

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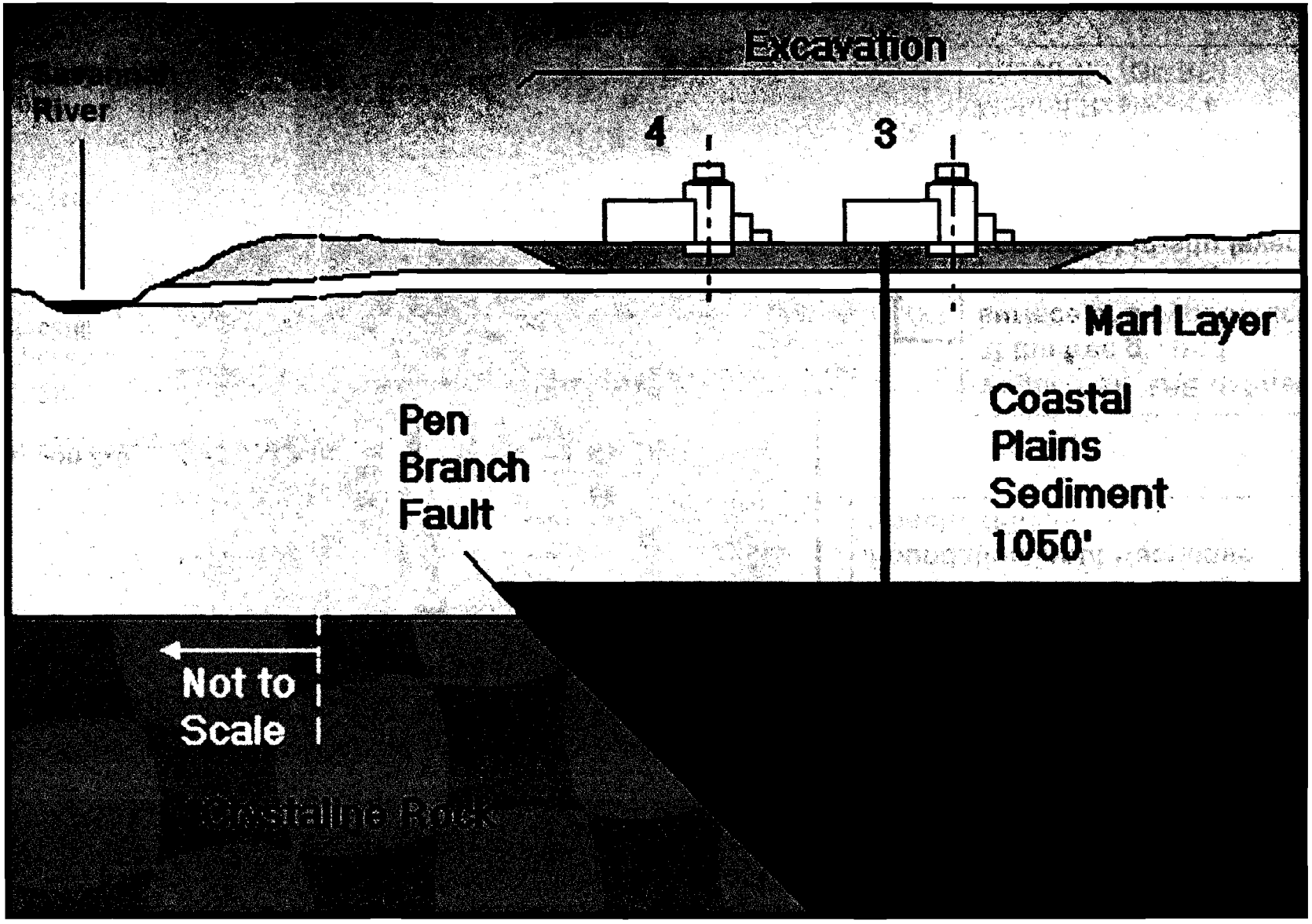
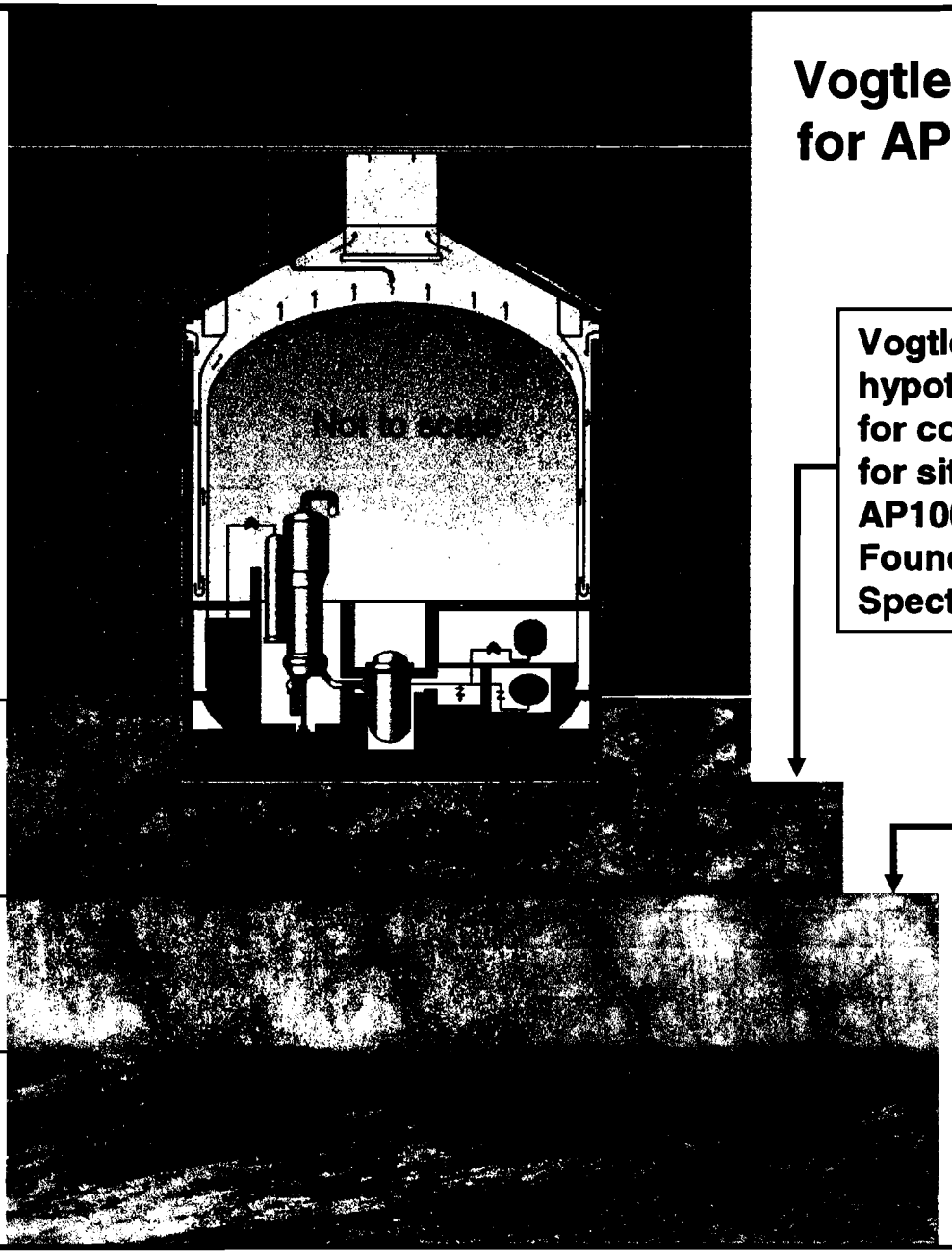
The Upper Sands - Barnwell Group

- Have highly variable density along the depth and from borehole to borehole
- A shell-rich, very porous material was encountered at the bottom of the Barnwell Group/top of Blue Bluff Marl that caused drilling fluid losses
- These soils were completely removed and replaced with compacted granular fill for construction of existing units.
- For these reasons, these soils will be removed



Site Soil/Rock Profile with Backfill

Vogtle Site-Specific Model for AP1000 Nuclear Island



Vogtle input motion SSE at hypothetical outcrop at 40' depth for control point seismic input for site-specific SSI analysis of AP1000 nuclear island. This is a Foundation Input Response Spectra (FIRS)

Vogtle ESP SSE defined at the free ground surface of a hypothetical outcrop of the highest competent in-situ layer (top of Blue Bluff Marl at depth of 86'). This is the Site-Specific Ground Motion Response Spectrum (GMRS)

Early Site Permit - Overview

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Jim Davis
ESP Project Engineer

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SSAR 3 Design

Topics:

- 3.5.1.6 - Aircraft Hazards

No outstanding open items (OIs) or request for additional information (RAIs) associated with SER.

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SSAR 11 Liquid & Gaseous Releases

Topics: To be added

- **11.2.3 Liquid Radioactive Releases**
- **11.3.3 Gaseous Radioactive Releases**

No outstanding open items (OIs) or request for additional information (RAIs) associated with SER.

SSAR 13 Programs & Part 5 EP

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Topics:

- Emergency Planning (refers to Part 5)
- Industrial Security

Responded to 13 EP open items providing information requested.

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Emergency Plan Approach

- Complete and Integrated Emergency Plan
- Modified existing emergency plan to include new units
- EP ITAAC
- Performed new evacuation time estimate study
- Used existing EPZ's
- Incorporated common TSC for all units
- Used existing EOF

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SSAR 15 Accident Analysis

Topics:

- Requires review of AP1000 accidents with site specific parameters for offsite dose evaluations

No outstanding open items (OIs) or request for additional information (RAIs) associated with SER.

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SSAR 17 Quality Assurance

Topics:

- Must describe the QA controls applied to the ESP process

No outstanding open items (OIs) or request for additional information (RAIs) associated with SER.

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Protecting People and the Environment

Presentation to the ACRS Full Committee

Safety Review of the
Vogtle Early Site Permit Application

Presented by

Christian Araguas, Project Manager

NRO/DNRL/NWE1

November 1, 2007

Purpose

- Brief the full committee on the status of the staff's safety review of the Vogtle early site permit (ESP) application
- Support the full committee's review of the application and subsequent interim letter from the ACRS to the Commission
- Address the full committee's questions

Meeting Agenda

- Schedule Milestones
- Key Review Areas without Open Items
- Key Review Areas with Open Items
- Review of Geology, Seismology and Geo-technical Engineering
- Conclusion
- Discussion / Questions

Completed Milestones

- Received Vogtle ESP Application - 8/15/2006
- Acceptance Review Completed - 9/19/2006
- Inspections / Site Audits:
  - Quality Assurance - 8/2006
  - Emergency Planning - 10/2006
  - Hazards & Security - 11/2006
  - Meteorology - 12/2006
  - Hydrology, Geology, Health Physics - 1/2007
- RAIs issued to the Applicant - 3/15/2007
- SER with Open Items issued - 8/30/2007
- Responses to Open Items Received - 10/15/2007

Remaining Milestones

- ACRS Full Committee Meeting – 11/1/2007
- ACRS Interim Letter Assumed – 11/2007
- Advanced SER with no Open Items due to ACRS – 5/16/2008
- ACRS Full Committee Meeting – 6/2008
- ACRS Final Letter Assumed – 7/2008
- Final SER issuance – 8/6/2008
- Mandatory Hearing – Spring 2009
- Commission Decision Assumed – Summer 2009

Key Review Areas

2.1 Geography and Demography

- Site Location and Description
  - Staff Finding: The staff concludes that with respect to site location and description, the relevant requirements of 10 CFR Part 52 and 10 CFR Part 100, Subpart B have been met.
- Exclusion Area Authority and Control
  - Staff Finding: The staff concludes that the SNC's exclusion area is acceptable and meets the requirements of 10 CFR Part 52 and10 CFR Part 100.
- Population Distribution
  - Staff Finding: The staff concludes that the proposed LPZ and population center distance meet the definitions in 10 CFR 100.3. The staff also concludes that the population data are acceptable and meet the requirements of 10 CFR Part 100

Key Review Areas

2.2 Nearby Industrial, Transportation, and Military Facilities

- Staff Findings: Potential Hazards associated with nearby transportation routes, industrial and military facilities pose no undue risk to facility that might be constructed on the site (10 CFR 100.21(e))

3.5.1.6 Aircraft Hazards

- Staff Finding: Aircraft hazards do not present an undue risk to the safe operation of nuclear units at the proposed site. Therefore with respect to aircraft hazards, the proposed site meets the relevant requirements of 10 CFR Part 52 and 10 CFR Part 100.

Key Review Areas

11 Doses from Routine Liquid and Gaseous Effluent Releases

- Staff Finding: Demonstrated that radiological effluent release limits associated with normal operation from the type of facility proposed to be located at the site can be met for any individual located offsite (10 CFR 100.21(c)(1))

13.6 Physical Security

- Staff Finding: ESP site characteristics would allow an applicant for COL to develop adequate security plans and measures for a reactor(s) that it might construct and operate on the ESP site in accordance with 10 CFR 100.21(f)

Key Review Areas

15 Radiological Consequences of Design Basis Accidents

- Staff finding: AP1000, Rev. 15 DBA radiological analyses were shown to meet 10 CFR 50.34(a)(1) siting dose criteria and site-specific DBA doses were shown to be less than AP1000, Rev. 15 DBA doses, therefore site meets 10 CFR 50.34(a)(1) siting dose criteria for DBAs

17 ESP Quality Assurance Measures

- Staff Finding: Applicant has provided appropriate quality assurance measures equivalent to those in 10 CFR Part 50 Appendix B

Key Review Areas

2.3 Meteorology

- The staff reviewed the regional climatology, local meteorology, onsite meteorological measurements program, short-term atmospheric dispersion estimates for accidental releases, long-term dispersion estimates for routine releases

- The staff verified site characteristics associated with climatic extremes, severe weather, and atmospheric dispersion (extreme wind, tornado, short-term dispersion for accidental releases, and long-term dispersion for routine releases, etc.)

Key Review Areas

- Meteorological Open Items
  - Provide a justification for using a 30-year period of record (1966 to 1995) to define the AP1000 maximum safety design temperatures. The staff believes these temperatures should be based on a 100-year return interval. (Open Item 2.3-1)

Key Review Areas

2.4: Hydrologic Engineering

- Floods (ex. local flooding, flooding in rivers and streams, dam failures, tsunami, etc.)
- Low Water (ex. Low water conditions)
- Ground Water (ex. ground water use, release of radionuclide)

Key Review Areas

- Section 2.4.8: Cooling Water Canals and Reservoirs
  - VEGP Units 3 and 4 do not rely on any external water source for safety-related cooling water
  - **Open Item 2.4-1** relates to initial filling and occasional makeup:
    - Permit Condition 2.4.8-1 precludes VEGP Units 3 and 4 from relying on any external water source from the site for safety-related cooling water other than initial filling and occasional make-up water
    - Alternatively, the applicant may propose a plant parameter such that no safety-related water is required for the proposed plants at the VEGP site other than initial filling and occasional make-up water
- Section 2.4.12: Groundwater
  - **Open Item 2.4-2:** The applicant should provide a more detailed characterization of groundwater pathways describing the current and future local hydrological conditions, including alternate conceptual models, to establish a suitable groundwater elevation for the site; alternatively, the applicant can provide design parameters for buoyancy evaluation of the plant structures

Key Review Areas

- Section 2.4.13: Accidental Releases of Radioactive Liquid Effluents In Ground And Surface Waters
  - **Open Item 2.4-3** An adequate number of combinations of release locations and feasible pathways has not been considered
  - Transport of radioactive liquid effluent can follow multiple possible pathways – the pathway with the most severe release consequence is of interest for site suitability determination
  - Uncertainty due to spatially and temporally varying characteristics, now and in future, can alter groundwater pathways
  - Applicant described a single groundwater pathway to the northwest towards Mallard Pond; staff did not concur with dilution data and release points
  - Alternate conceptual models exist that may lead to migration of radioactive liquid effluent (1) to the west and through Daniels Branch, eventually to the southeast and (2) to the east toward the Savannah River through the Tertiary aquifer because of communication between the Water Table and the Tertiary aquifers

Key Review Areas

13.3 Emergency Planning

- Complete and Integrated Emergency Plan
  - Submitted by SNC as part of ESP application
  - Agency Certifications (E-plans are practicable and they will participate)
  - Complete and integrated plan provides *reasonable assurance* that adequate protective measures can and will be taken in the event of a radiological emergency

Key Review Areas

- Emergency Action Levels (EALs)
  - NEI 99-01 (LWRs) – NRC endorsement ongoing
  - NEI 07-01 (passive, advance LWRs) – NRC endorsement ongoing
  - Vogtle EALs based on NEI 07-01 – awaiting NEI 07-01 review
  - ITAAC will reflect some construction dependent EALs

Key Review Areas

- Open Items
  - 13.3-4: The review and acceptance of the application's EALs for Units 3 and 4
  - 13.3-10: Discuss whether State and local agencies have reviewed the new ETE and provided comments, and discuss the resolution of those comments

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Protecting People and the Environment

Presentation to the ACRS Full Committee

Vogtle Early Site Permit Review Status

Section 2.5
Geology, Seismology and Geotechnical Engineering

November 01, 2007

ACRS Full Committee Presentation
Vogtle ESP Review Section 2.5

Review Team for Section 2.5:

- Sections **2.5.1** & **2.5.3** Technical Reviewers
  - Dr. Gerry Stirewalt, Sr. Geologist
  - Meralis Plaza-Toledo, Geologist
  - Laurel Bauer, Geologist
  - Dr. Russell Wheeler and Dr. Anthony Crone, Geologists (USGS)
- Section **2.5.2** Technical Reviewers
  - Dr. Yong Li, Sr. Geophysicist
  - Dr. Clifford Munson, Sr. Geophysicist
  - Sarah Gonzalez, Geophysicist
  - Dr. Charles Mueller, Geophysicist (USGS)
- Section **2.5.4** & **2.5.5** Technical Reviewers
  - Tomeka Terry, Geotechnical Engineer
  - Zahira Cruz-Perez, Geotechnical Engineer
  - Dr. Weijun Wang, Geotechnical Engineer
  - Dr. Thomas Cheng, Sr. Geotechnical Engineer
  - Dr. Yong Li, Sr. Geophysicist
  - Dr. Carl Costantino, Geotechnical Engineer (Brookhaven N L)

ACRS Subcommittee Meeting Summary

- Met with ACRS Subcommittee on 10/24/2007
- Discussed key issues and open items
- Subcommittee focused on 4 issues
  - Update of Charleston Seismic Source
  - EPRI Regional Seismic Sources
  - Eastern Tennessee Seismic Zone (ETSZ)
  - Lack of geotechnical data

2.5.2 Vibratory Ground Motion

- **UPDATED Charleston Seismic Source Zone**
  - Applicant's update of the 1986 EPRI source model involved significant changes in geometry, and maximum magnitudes (M_{max}), and recurrence interval
  - Average recurrence interval of M_{max} earthquakes decreased significantly, increasing the overall hazard
  - Update based on liquefaction features from historic and prehistoric earthquakes

2.5.2 Vibratory Ground Motion

Illustrations of historic 1886 liquefaction features from the Charleston Area

- **Charleston Paleoliquefaction (Cont'd) (OI 2.5-5)**
  - NRC Staff requested additional paleoliquefaction data to support the applicant's conclusion that large earthquakes most likely do not occur further inland from Charleston
  - Based on recent discussions with the applicant, staff anticipates closure of this open item, assuming necessary documents are provided by the applicant

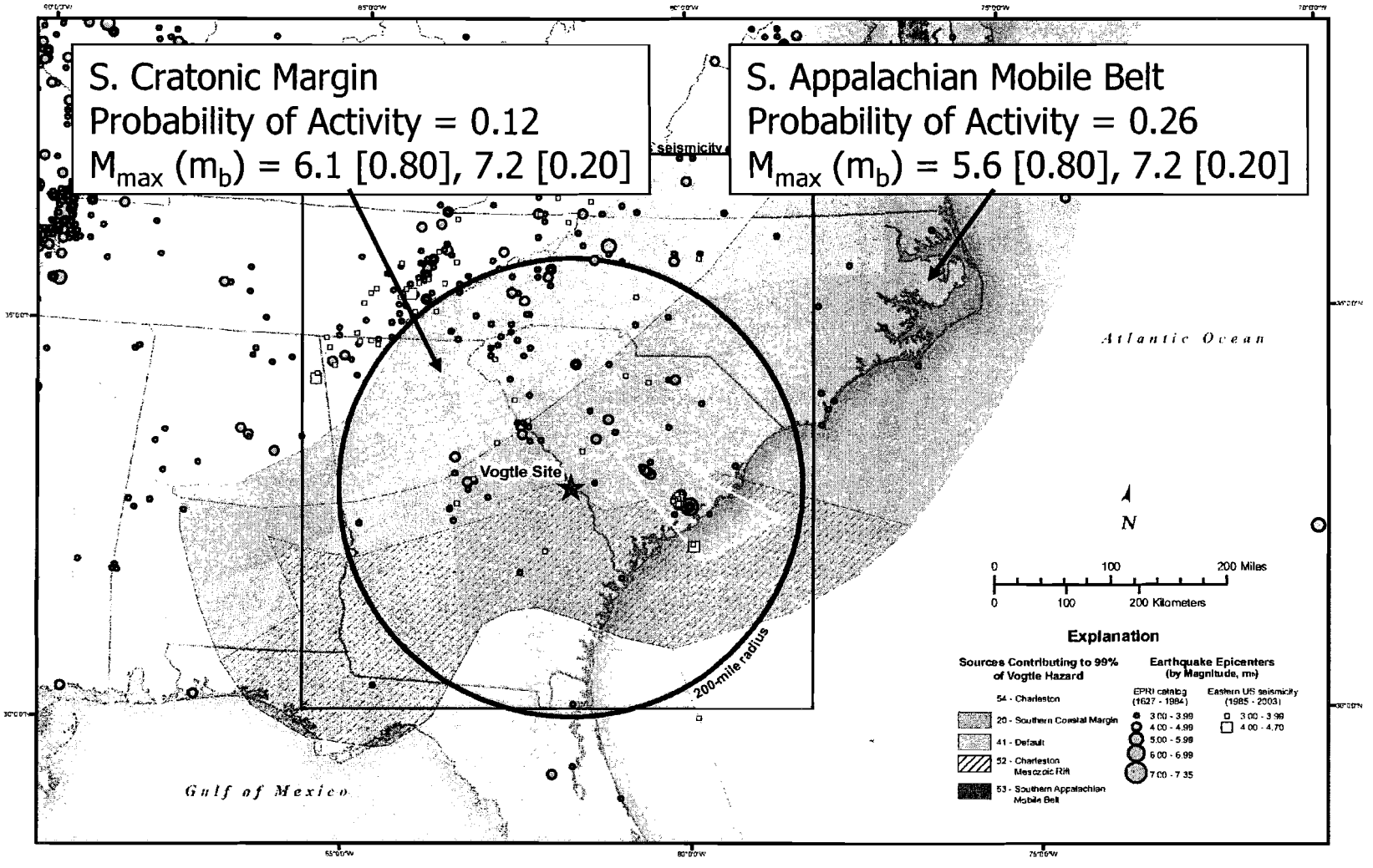
- **NRC Regulatory Guidance**
  - Another important purpose for the site-specific investigations is to determine whether there are new data or interpretations that are not adequately incorporated in the existing PSHA data bases[1].

[1] RG 1.165, Section C Regulatory Position, p. 1.165-4

- **EPRI Seismic Source Update**
- Applicant used a Senior Seismic Hazard Analysis Committee (SSHAC) Level 2 process to perform the Charleston seismic source update
- The applicant did not update the following EPRI seismic source zones
  - Regional seismic source zones that encompass the ESP site (OI 2.5-1)
  - Eastern Tennessee seismic zone (ETSZ) (OI 2.5-3)

- **Regional Seismic Source Zone M_{max} and Probability of Activity (OI 2.5-1)**
  - EPRI seismic source zones were determined by six Earth Science Teams during the 1980s
  - Dames and Moore team assigned low weights for larger M_{max} values and low probabilities of activity to two of their regional source zones

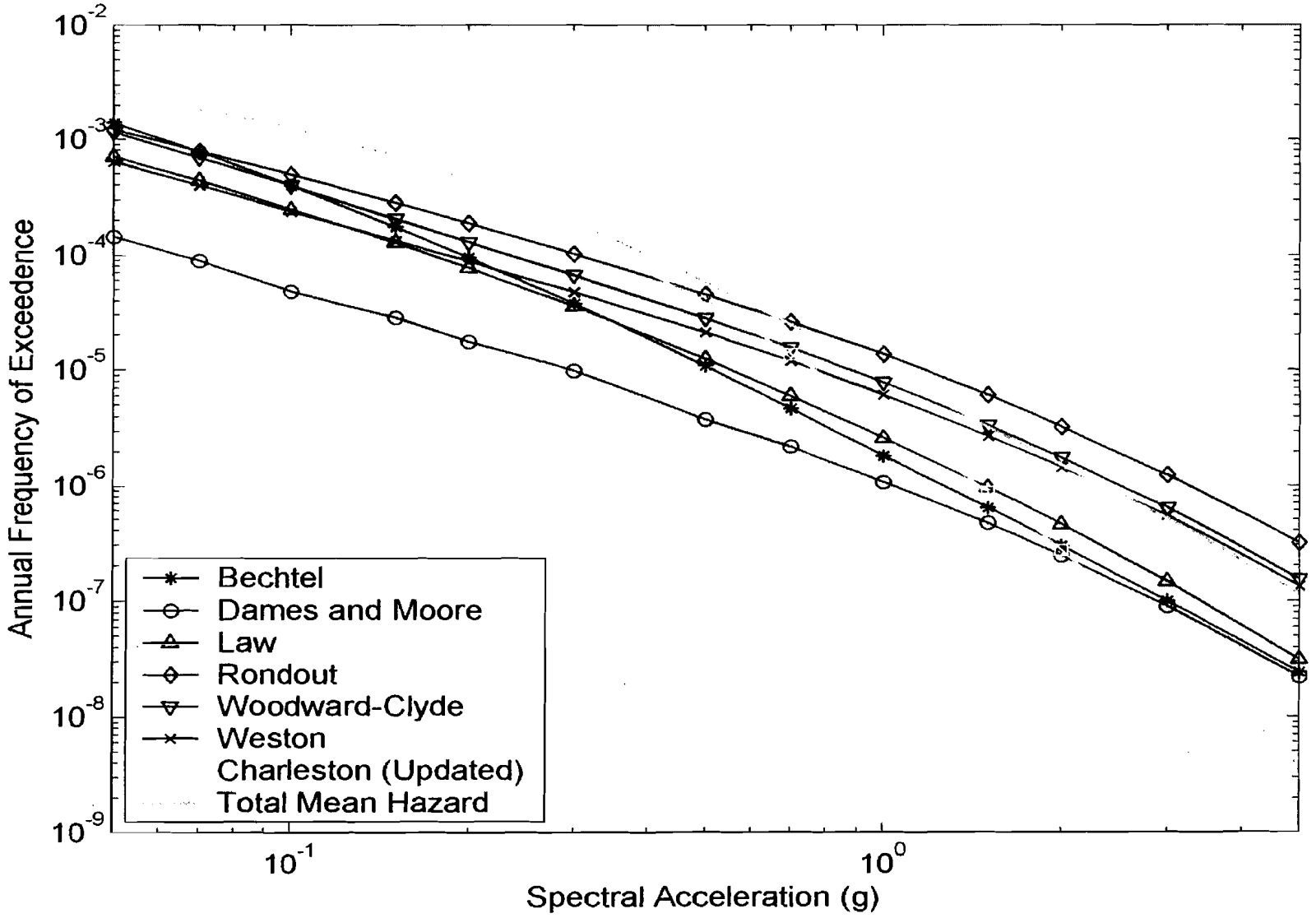
2.5.2 Vibratory Ground Motion



Dames and Moore EPRI Zones

2.5.2 Vibratory Ground Motion

10-Hz Total Mean Hazard Curve



- **Basis for the staff's question is the DOE study conducted for the Savannah River Site (SRS) in the early 1990's**
  - (DOE-STD-1024-92) "*Risk Engineering, Inc. has also found that the EPRI team of Dames and Moore does not fully account for historic seismicity near the Savannah River Site (SRS). One reason for this is the fact that the SRS host source zone was given a low probability of activity. Risk Engineering, Inc. recommended that the Dames and Moore seismic source input not be used to calculate the seismic hazard at SRS*"

2.5.2 Vibratory Ground Motion

- **Eastern Tennessee Seismic Zone M_{max} (OI 2.5-3)**
  - Applicant concluded no new information has been developed since 1986 that would require significant revision to the EPRI seismic source model.
  - Staff believes more recent studies suggest revisions to the EPRI seismic source model may be warranted.
    - Studies suggest larger maximum magnitude earthquakes may be possible
  - Applicant performed limited evaluation and documentation of more recent scientific studies.
  - Staff and applicant are currently discussing the significance of the scientific studies to determine if an update is warranted.

2.5.4 Stability of Subsurface Materials and Foundations

- Applicant performed limited borings and tests to characterize soil properties of the load-bearing layers (Open items 2.5-11 through17)
- Applicant relied on results from VEGP Unit 1 and 2 investigations (1970s) for soil properties, such as internal friction angle, unit weight and undrained shear strength
  - Example: Undrained shear strain for the Blue Bluff Marl (The main load bearing layer)
    - Design value 10000 psf (based on Units 1 and 2 investigation)
    - ESP investigation results are between 150 and 4300 psf
  - In addition to the dynamic properties, actual site profiles greatly affect the site response analysis

2.5.4 Stability of Subsurface Materials and Foundations

- Applicant did not conduct any laboratory tests on soil samples to determine soil dynamic properties (Open Items 2.5-19 and 20)
  - Soil dynamic properties affect GMRS, and therefore, affect liquefaction susceptibility, slope stability and soil structural interaction analyses.
- The applicant conducted more explorations and testing on the subsurface materials after submission of the ESP Application as part of the LWA

Conclusion

- SER defers general regulatory conclusion regarding site safety and suitability to FSER after open items addressed
- SER with Open Items Issued 8/30/07
  - 40 Open Items
  - 2 Permit Conditions
  - 19 COL Action Items
- Open Item Responses Received 10/15/07
- Reviewing Supplemental Information for Approval of LWA-2
- Next Interaction with ACRS 6/2008 on FSER (tentative)

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Protecting People and the Environment

Review of the Implementation of Lessons Learned from Early Site Permits

Presentation to:

Advisory Committee on Safeguards

Full Committee Meeting on Permits

November 1, 2

Agenda

- Background
- Identification of Lessons Learned
- Status of Implementation of Lessons Learn
- Questions / Comments

Background

- Staff Review and Completion of 3 Early Site Permits (ESPs)
- Ongoing Review of 1 ESP
- Previous ACRS Meeting on Lessons Learned

Identification of Lessons Learned

- Common Understanding Between Staff and Applicant
- Applicability of 10 CFR Part 21 "Reporting of Defects and Noncompliance" Requirements for ESP Applicants
- Applicability 10 CFR Part 50 Appendix B "Quality Assurance Criteria for Nuclear Power Plants" Requirements for ESP Applicants
- Development of Guidance to Ensure Reliability of Internet Information
- Development of Improved Guidance on Electronic Submissions Applications

Identification of Lessons Learned

- Incorporation of ESP Definitions into Staff Guidance (Site Characteristics, Combined License (COL) Action Item, Permit Conditions, Plant Parameter Envelope (PPE))
- Development of Guidance on the Review of Performance-Based Methodology for Seismic Hazards
- Review the Development and Study of Climate Change for the Next 20 years
- Update Guidance for the Review of Hydrology
- Development of Guidance on the Treatment of the High Frequency Component of Seismic Ground Motion

Status of Implementation of Lessons Learned

- Common Understanding Between the Staff and Applicant
  - Completed Updates to Standard Review Plan (NUR 0800) "Review of Safety Analysis Reports for Nuclear Powe ," March 2007
  - Issued RG 1.206 "Combined License Applications for Nu Power Plants" on June 20, 2007
  - Issued Part 52 rulemaking on August 28, 2007
  - Developed Office Instruction, NRO-REG-100, "Acceptance Review Process for Design Certifications and Combined Licens Applications" on September 26, 2007
  - Held Interactions with Industry (Design-Centered Working Group Meetings)

Status of Implementation of Lessons Learned

- Applicability of 10 CFR Part 21 "Reporting of Defects and Noncompliance" Requirements for ESP Applicants
  - 10 CFR Part 52 Provides Clarity on Applicability of 10 CFR Part 21 to ESP Applicants
- Applicability 10 CFR Part 50 Appendix B "Quality Assurance Criteria for Nuclear Power Plants" Requirements for ESP Applicants
  - 10 CFR Part 52 Provides Clarity on Applicability of 10 CFR Part 50 Appendix B to ESP Applicants

Status of Implementation of Lessons Learned

- Development of Guidance to Ensure Reliability of Internet Information
  - No Additional Guidance Has Been Developed
  - Currently Applying Previous Review Methods from Nor Grand Gulf and Clinton ESPs

Status of Implementation of Lessons Learned

- Development of Improved Guidance on Electronic Submissions of Applications
  - Combined all guidance documents for electronic submissions to the NRC into one document
    - Original issued on 6/28/07 in the Federal Register for public comment
    - Revision 2 issued on 10/4/07 in the Federal Register for public comment
  - Simplified PDF document submittal checklist created
  - Video Clips developed to assist users in preparing PDFs in compliance with NRC guidelines
    - Download distiller and preflight profile
    - Convert MS-Word document into PDF
    - Convert Wordperfect document to PDF
    - Pre-flight verification and document testing
  - Desk Reference Guide for PDF Document Generation

Status of Implementation of Lessons Learned

- Incorporation of ESP Definitions into Staff Guidance (Site Characteristics, Combined License (COL) Action Item, Permit Conditions, Plant Parameter Envelope (PPE))
  - The staff has created revision 1 to Standard Review Plan – Out... ...ion 1.0, to incorporate these definitions
  - The staff trained its reviewers on these definitions for the review ... Vogtle ESP application
- Development of Guidance on the Review of Performance-B... Methodology for Seismic Hazards
  - Incorporated into Regulatory Guide (RG) 1.208, "A Performance-Base... Approach to Define the Site-Specific Earthquake Ground Motion"

Status of Implementation of Lessons Learned

- Review the Development and Study of Climate Change for the Next 20 years
  - Based on ACRS feedback, the staff has taken a proactive approach regarding potential climate changes.
    - Revised SRP 2.3.1
    - Used new approach for the Vogtle ESP
      - Considered current scientific thoughts, including the 2007 Intergovernmental Panel on Climate Change (IPCC) report
      - Analyzed long-term climate trends surrounding the site
      - Issued an open item relating to an adequate period-of-record for design basis temperatures data
    - Contacted ASCE and ASHRAE regarding climate change
    - Planning attendance at scientific conferences
    - Proposing hurricane research study

Status of Implementation of Lessons Learned

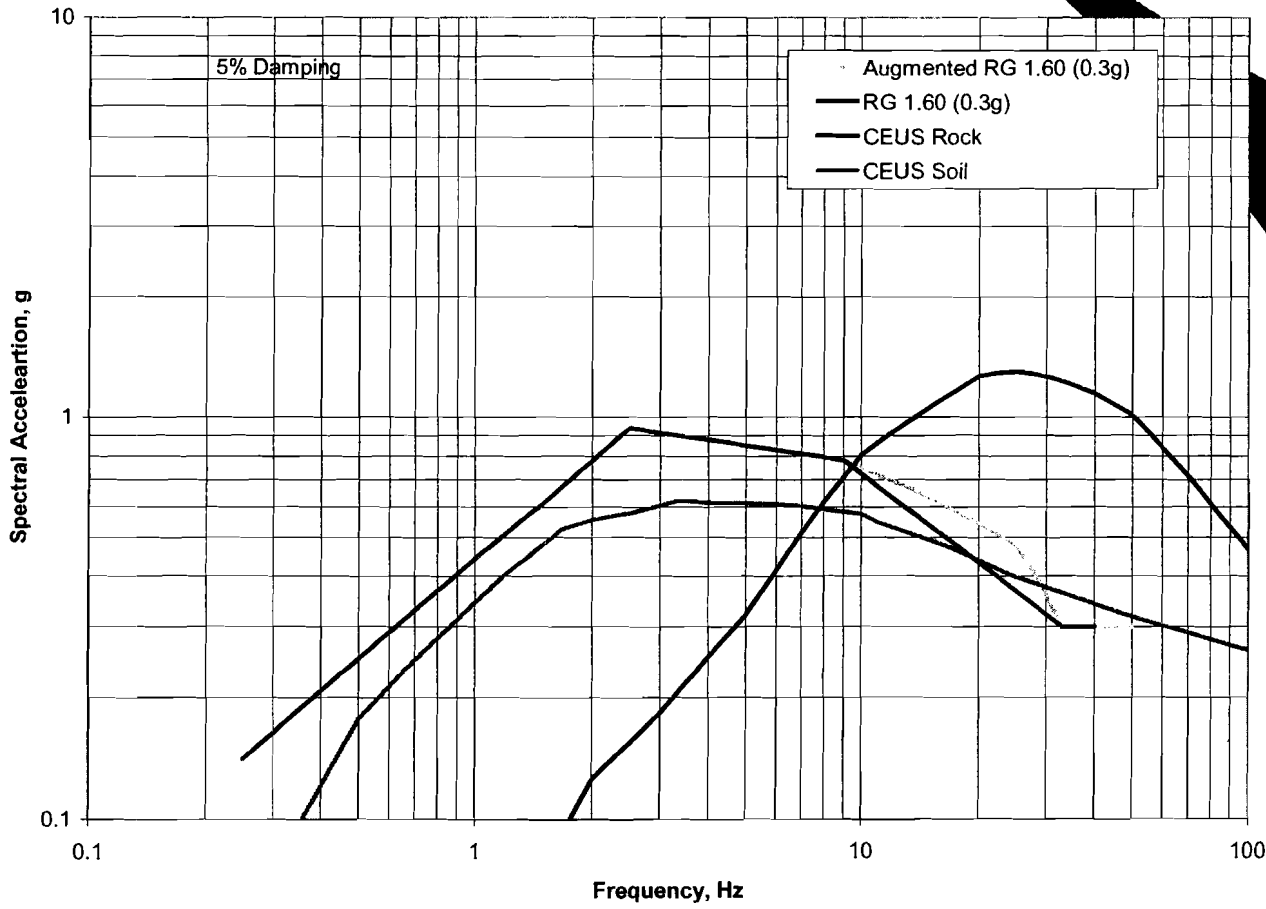
- Update Guidance for the Review of Hydrology
  - Updated SRP Section 2.4
    - Reflects a hierarchical review approach for efficient & timely reviews
    - Tsunami review guidance expanded to other effects – drawdown, erosion etc
      - Close coordination with President's National Tsunami Hazard Reduction Program
      - Participating in International tsunami workshops
      - Participating in IAEA Guidelines on Hydrological and Meteorolo Hazards
    - Ice thickness evaluation approach updated
  - All site characteristic parameters must be incorporated in t SSAR
  - Updating of regulatory guide on flooding is underway

Status of Implementation of Lessons Learned

- Development of Guidance on the Treatment of the High Frequency Component of Seismic Ground Motion
  - Guidance on ground motion spectra
    - RG 1.208 and interim staff guidance
  - Extensive interaction with stakeholders
    - Industry technical studies and white papers
    - Corresponding staff review and position
  - Technical approach
    - Ground motion input using realistic incoherency effects
      - Implementation and validation of coherency function in computer co
    - Potential increase in torsion and rocking effects on structures and i structure response spectra

Status of Implementation of Lessons Learned

Input Ground Design Spectra

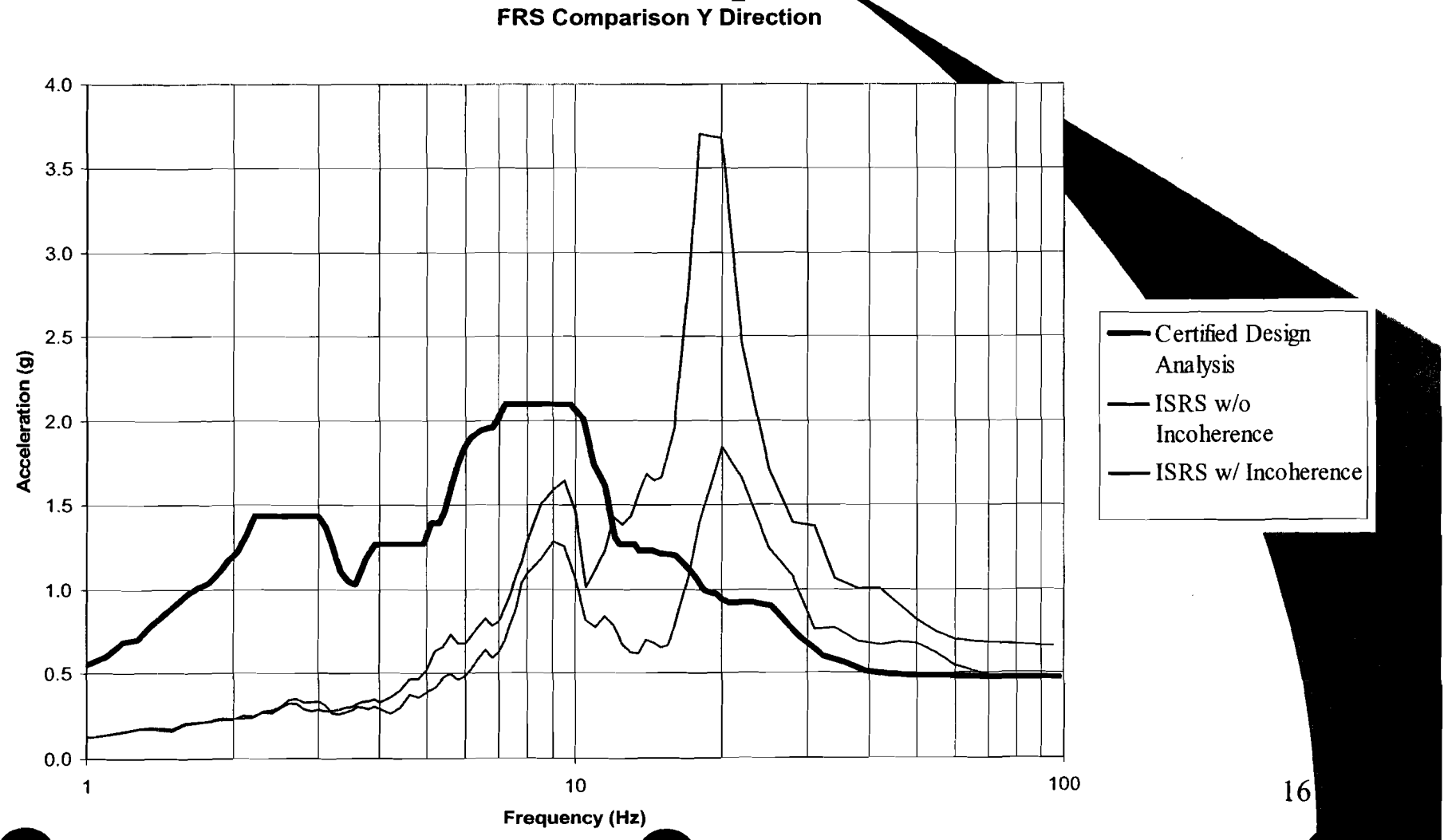


Status of Implementation of Lessons Learned

- Technical approach (Continued)
  - Scope and extent of evaluation to valida[illegible]xisting design for a specific site
  - Effects on sensitive equipment
    - Screening and evaluation
- Updated SRP Sections 3.7.1 and 3.7.2 and di[illegible] interim staff guidance provide a path forward

Status of Implementation of Lessons Learned

Exceedances of In-Structure Spectra Can Still Occur



Questions / Comments

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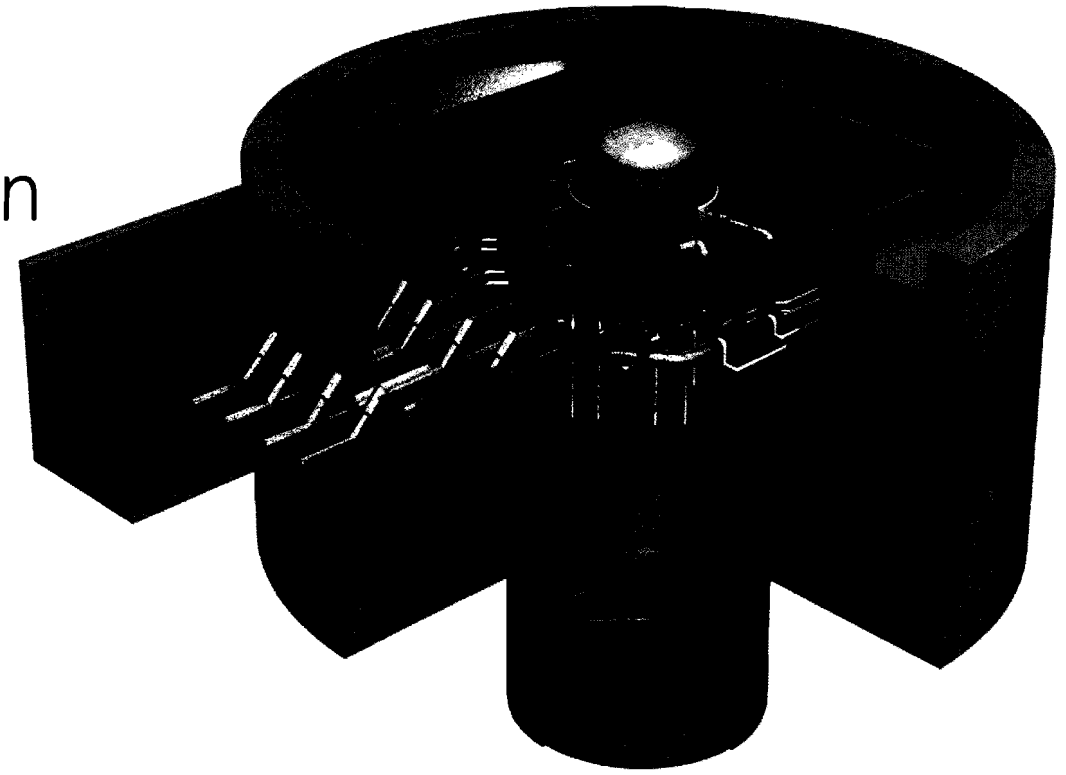
ESBWR - Overview
DCD Chapters 2, 5, 8, 11, 12, and 17



Advisory Committee on Reactor Safeguards

November 2, 2007

Jim Kinsey
Alan Beard
Rick Wachowiak
Jerry Deaver
Brian Frew

GE Hitachi Nuclear Energy

Presentation Content

- Introduction
- Overview of SER Chapters 2, 8, 11, 12, 17 and 5

Introduction

- Select DCD Chapters and associated draft NRC Safety Evaluations presented to ACRS Subcommittee.
  - > Chapters 2, 8 and 17 on October 3, 2007
  - > Chapters 5, 11 and 12 on October 25, 2007
- Brief overview of the above DCD Chapters will be presented.

Overview of Chapter 2 – Site Characteristics

- Chapter 2 provides description of:
  - > Meteorology
  - > Hydrology
  - > Geology
  - > Seismology
  - > Geotechnical Parameters
  - > Potential Nearby Hazards
- The applicant referencing the ESBWR DCD will:
  - > Establish the actual site characteristics
  - > Demonstrate site parameters

Overview of Chapter 8 – Electrical Power

- Chapter 8 provides description of:
  - > Offsite Power Distribution
  - > Onsite Power Distribution Including
    - – Plant Investment Protection Buses
    - – Safety-Related AC / DC Power Supplies
  - > Station Blackout (SBO) Analysis Provided in Chapter 15

Overview of Chapter 11 – Radioactive Waste Management

- Chapter 11 describes the radioactive waste streams; how they are processed, monitored and sampled; and radiation monitors that initiate safety-related functions.
  - > Source Terms – Fission / Activation Products
  - > Liquid Waste Management
  - > Gaseous Waste Management
  - > Process and Effluent Monitoring and Sampling

Overview of Chapter 12 – Radiation Protection

- Chapter 12 describes administrative programs and procedures, in conjunction with facility design, to ensure that the occupational radiation exposure to personnel will be kept ALARA.
  - > Radiation Sources
  - > Radiation Protection
  - > Dose Assessment
  - > Health Physics
  - > Minimization of Contamination and Waste Generation

Overview of Chapter 17

- Chapter 17 provides description of:
  - > GEH QA Program Description that establishes the Quality Assurance requirements implemented during ESBWR design.
  - > GEH ESBWR work control process defines the supplier and sub-tier supplier quality program requirements.
  - > GEH QA responsibilities.
  - > ESBWR Design Reliability Assurance Program (D-RAP)
    - – Assures important ESBWR reliability PRA assumptions are considered throughout plant life
    - – Includes risk-significant SSCs that provide defense-in-depth or result in significant improvement in the PRA
    - – The site specific D-RAP will be confirmed following construction and will be verified using ITAAC

Overview of Chapter 5 – RCS and Connected Systems

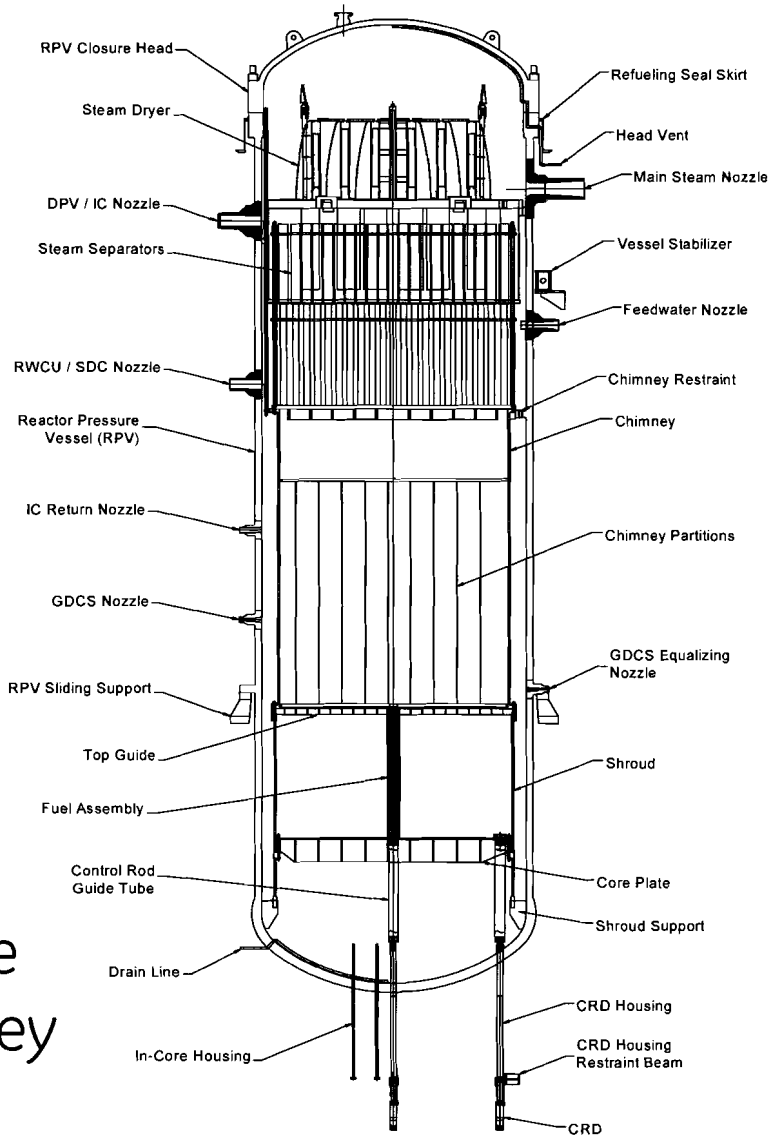
- Chapter 5 provides description of:
  - > Reactor Coolant System (RCS) including those systems and components that contain or transport fluids coming from or going to the reactor core
    - These form the major portion of reactor coolant pressure boundary (RCPB)
  - > RCPB components up to and including:
    - Outermost containment isolation valve in piping that penetrates containment
    - Second of two valves normally closed during normal operation
    - RCS safety/relief valve (SRV) piping and depressurization valve (DPV) piping

Overview of Chapter 5 – Reactor Vessel

ESBWR RPV Changes from Prior BWRs

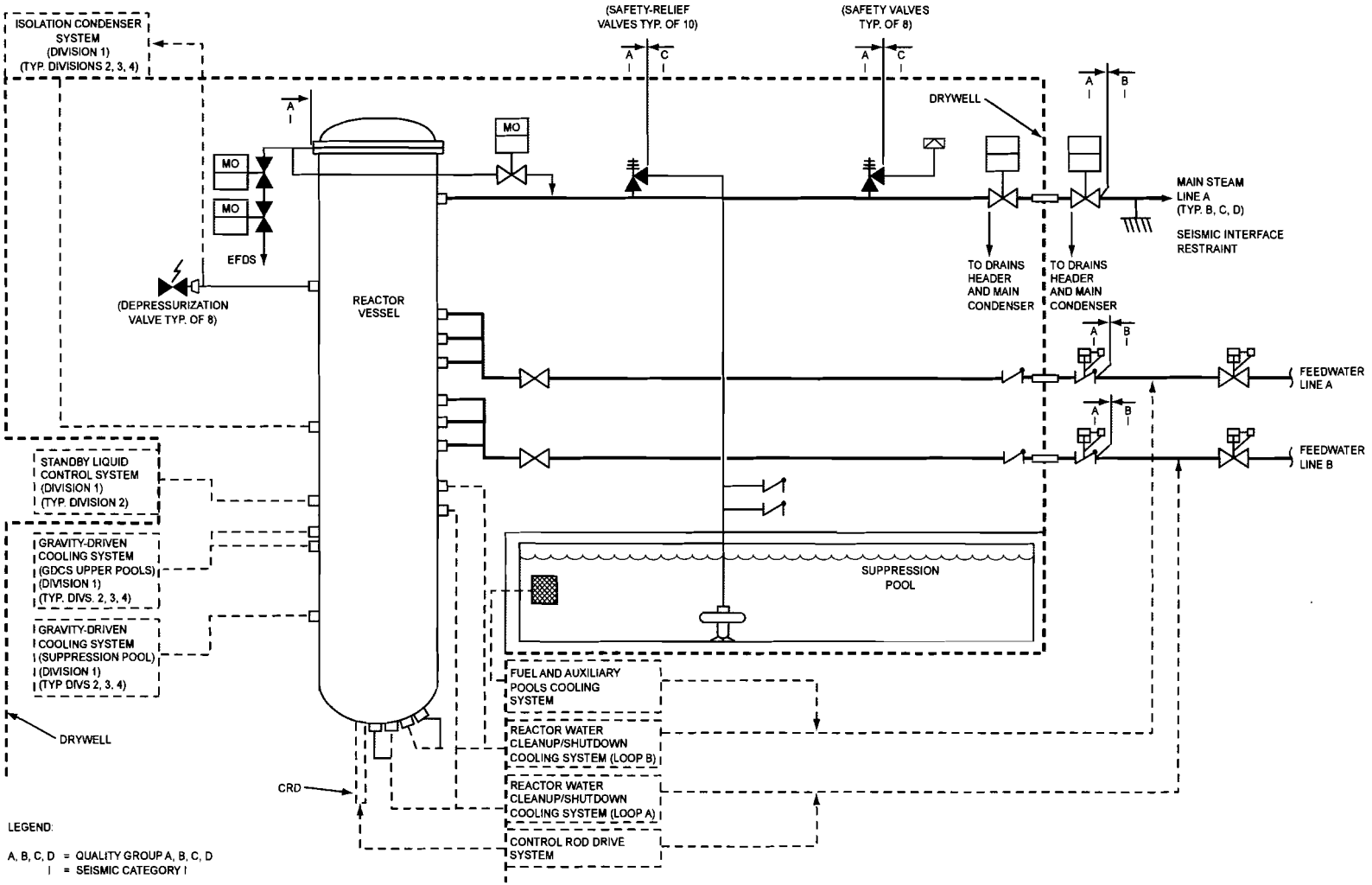
- > Major Reactor Vessel Penetrations Are Above Top of Active Fuel
- > 6 Large Ring Forgings Are Used; Closure Flanges and 4 Lower Vessel Forgings Including Core Beltline Region
- > Core Region Is ~2 Ft Shorter Due to Shorter Fuel
- > Chimney Is a New Component to Facilitate Natural Circulation
- > RPV Height Is ~ 6.5 M Higher Than ABWR
- > RPV Diameter Is 7.1 M – Same As ABWR
- > RPV Head Vent Exits from Main RPV Body
- > Main Steam Flow Restrictor Is Integral With RPV Nozzle
- > RPV Supported by 8 Sliding Supports

Overview of Chapter 5 – Reactor Vessel

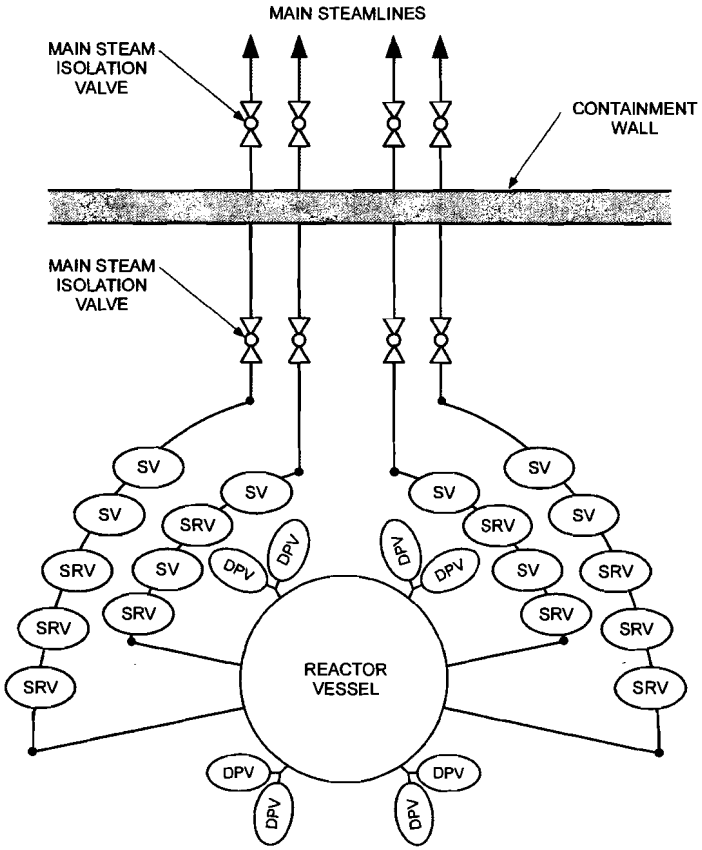


Reactor Pressure Vessel System Key Features

Overview of Chapter 5 - Nuclear Boiler System

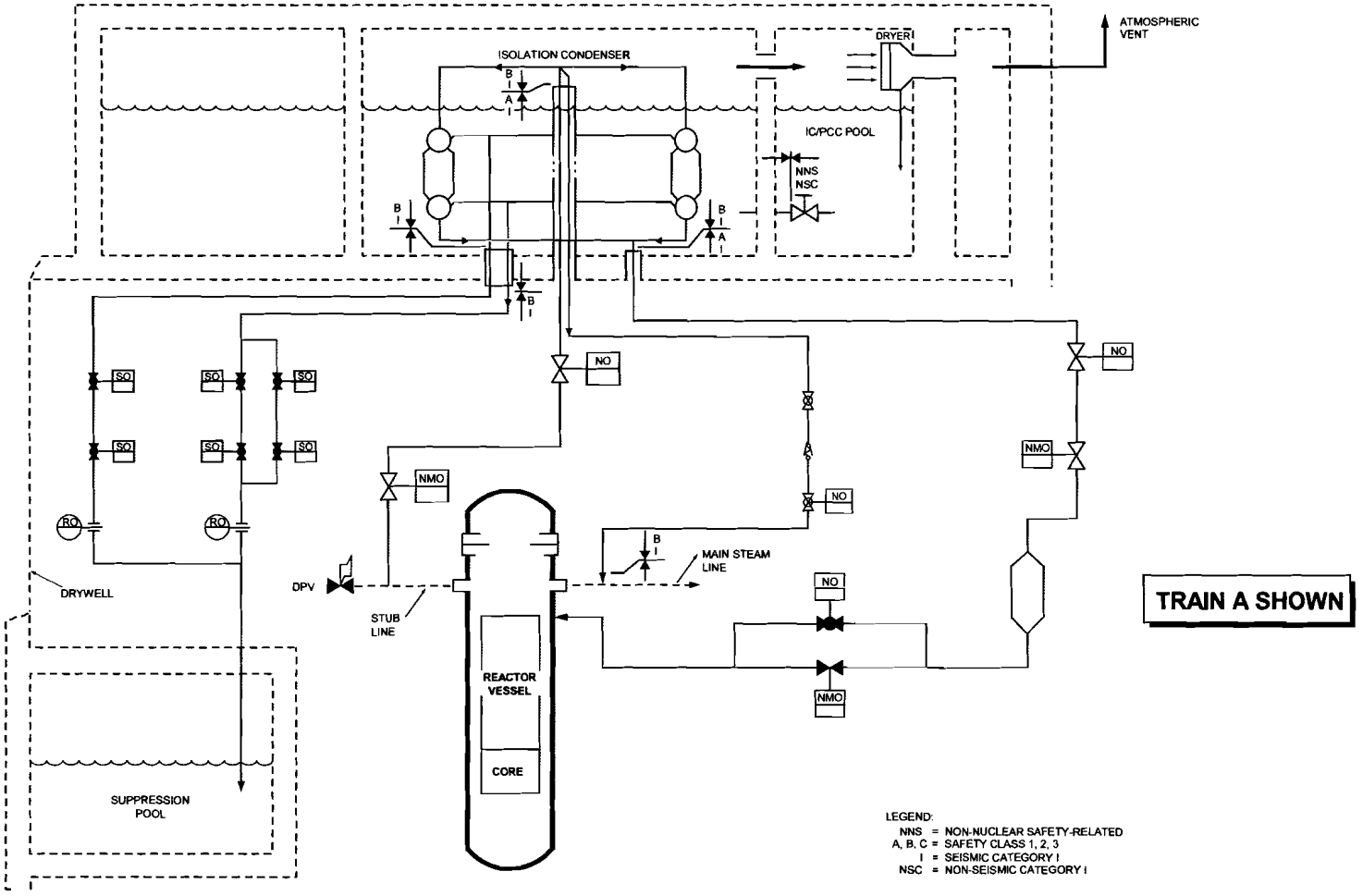


Overview of Chapter 5 – Integrity of RCPB



Safety-Relief Valves, Safety Valves, and Depressurization Valves on Steamlines

Overview of Chapter 5 – Isolation Condenser System



Overview of Chapter 5 – Integrity of RCPB

Measures to Avoid Stress Corrosion Cracking in SST

- Avoidance of sensitization
  - Materials supplied in solution heat treated (SHT) condition
  - Carbon Content < 0.02%
  - No heating above 800°F during fab unless SHT applied
  - Welding heat input controls and filler metal ferrite control
- Process controls to minimize contaminants during fabrication
  - Control of process materials and water quality
  - Cleanliness prior to elevated temperature treatment
- Avoidance of Cold Work
  - Controlled by applying hardness limits
  - Surface finish and process control on ground surfaces

U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Presentation to the ACRS
ESBWR Design Certification Review
Chapters 2, 5, 8, 11, 12 and 17

Amy Cubbage, Senior Project Manager, NRO
November 2, 2007

ACRS Presentation
ESBWR Design Certification Review

Purpose:

- Brief the ACRS on the ESBWR Design Certification review
- Summarize the open items contained in the Staff's SER with Open Items for Chapters 2, 5, 8, 11, 12 and 17
- Address the Committee's questions on these Chapters

ACRS Presentation
ESBWR Design Certification Review

Subcommittee Briefings:

- October 2 and 3, 2007
  - Design overview and project status
  - SER with open items for Chapters 2, 8 and 17
- October 25, 2007
  - SER with open items for Chapters 5, 11 and 12

ACRS Presentation
ESBWR Design Certification Review

Background:

- SERs based on DCD Rev. 3 and RAI responses
- DCD Rev. 4 submitted by GEH on September 28, 2007
  - Some open items may be resolved by DCD Rev. 4
  - Additional RAIs expected based on the changes in DCD Rev. 4
- DCD Rev. 5 expected in March 2008 – to address remaining open items
- Staff identifying any changes in the March 2007 SRP that would impact the staff's conclusions
  - Any impacts will be addressed in the final SER

ACRS Presentation
ESBWR Design Certification Review

Chapter 2 RAI Status Summary

- Original RAIs: **54**
- RAIs resolved: **50**
- Open Items: **4**

ACRS Presentation
ESBWR Design Certification Review

Chapter 2 Open Items:

- Provide an additional roof design site parameter to account for additional weight if at least part of the 48-hr probable maximum winter precipitation falls as frozen precipitation. (Open Item 2.3-4)
- Discuss why a EAB X/Q value of 1×10^{-3} used in the feedwater line break and RWCU/SDC line break accidents differs from the EAB X/Q site parameter of 2×10^{-3}. (Open Item 2.3-8)
- Identify the control room filtered air intake and unfiltered inleakage locations and potential release pathways to the environment for each accident. (Open Item 2.3-9)
- Discuss the assumptions used in deriving the long-term average X/Q and D/Q site parameters. (Open Item 2.3-10)

ACRS Presentation
ESBWR Design Certification Review

Chapter 5 RAI Status Summary

- Original RAIs: 138
- RAIs resolved: 118
- Open Items: 20

ACRS Presentation
ESBWR Design Certification Review

Chapter 5 Open Items:

- ASME Code Case – use of ASTM A709 HPS 70W materials (Open item 5.2-50)
- Use of ASTM A800 vs. Hulls Equivalent Factors for delta ferrite content in cast austenitic stainless steels (Open item 5.2-38)
- Component accessibility for inspections per ASME Code, Section XI and 10 CFR 50.55a (Open item 5.2-62)
- Issues related to materials selection and integrity of ICS and PCCS tubes (Open items 5.4-20, 5.4-53, 5.4-55 through 58)
- Instrument sensitivity and alarm limit for unidentified RCPB leakage (Open items 5.2-2 and 16.2-4)
- Issues related to RWCU/SDC decay heat removal capability (RPV level required, flow and mixing) (Open item 5.4-59)

ACRS Presentation
ESBWR Design Certification Review

Chapter 8 RAI Status Summary

- Original RAIs: 116
- RAIs resolved: 115
- Open Items: 1

ACRS Presentation
ESBWR Design Certification Review

Chapter 8 Open Item:

- Staff requested GEH to provide the loading profile on UPS (i.e., battery sizing) (Open Item 8.3-52)

ACRS Presentation
ESBWR Design Certification Review

Chapter 11 RAI Status Summary

- Original RAIs: 88
- RAIs resolved: 85
- Open Items: 3

ACRS Presentation
ESBWR Design Certification Review

Chapter 11 Open Items:

- Three RAIs remain open
  - Staff has requested ITAAC be added for the solid waste management system (Open Item 11.4-15)
  - Staff requested clarification of the conceptual nature of the mobile liquid waste management system (LWMS) design in the DCD. (Open Item 11.2-16)
  - Staff requested clarification of the conceptual nature of the mobile solid waste management system (SWMS) design in the DCD. (Open Item 11.4-18)

ACRS Presentation
ESBWR Design Certification Review

Chapter 12 RAI Status Summary

- Original RAIs: 80
- RAIs resolved: 56
- Open Items: 24

ACRS Presentation
ESBWR Design Certification Review

Chapter 12 Open Items:

- Estimate of the source term for airborne and liquid effluent releases (Open Items 12.2-9 and 12.2-15)
- Adequacy of shielding for inclined fuel transfer tube area (Open Item 12.4-19)
- Description of post-accident dose rates near HVAC filters (Open Item 12.4-23)
- Location of vital areas on post-accident radiation zone drawings and associated post-accident mission doses for these areas (Open Items 12.4-31, 12.4-32, and 12.4-33)
- Issues related to dose assessment for operational exposures (Open Items 12.5-1, 12.5-6, and 12.5-8)
- Issues related to conformance with 10 CFR 20.1406 (minimization of contamination) (Open Items 12.7-1, 12.7-2, and 12.7-3)

ACRS Presentation
ESBWR Design Certification Review

Chapter 17 RAI Status Summary

- Original RAIs: 19
- RAIs resolved: 18
- Open Items: 1

ACRS Presentation
ESBWR Design Certification Review

Chapter 17 Open Item:

List of risk significant SSCs within D-RAP (Open Item 17.4-1)

- Staff requested that GEH identify the risk-significant SSCs within the scope of the D-RAP.
- GEH is assembling an expert panel with experts in probabilistic risk assessment, engineering judgment and operating experience to identify the list risk significant SSCs within the scope of D-RAP for the ESBWR design.

ACRS Presentation
ESBWR Design Certification Review

Conclusions:

- The staff is requesting feedback from the ACRS on Chapters 2, 5, 8, 11, 12, and 17
  - Based on SER with open items and DCD Rev 3
- The staff will brief the ACRS on the final SER
  - Late 2008/Early 2009
  - Address closure of open items
  - Address changes resulting from GEH revisions to DCD
- Additional meetings planned near term
  - SER with open items Chapters 9, 10, 13, and 16
    - November 15 Subcommittee/December 6 or 7 Full Committee
  - SER with open items Chapters 4, 6, 15 and 21
    - Late January Subcommittee/February Full Committee
  - Remaining Chapters Spring 2008

Backup

ACRS Presentation
ESBWR Design Certification Review
Site Parameters

- A design certification applicant provides postulated site parameters for the design, and an evaluation of the design in terms of such parameters
- DCD Tier 1 and 2 define the envelope of site-related parameters that the ESBWR Standard Plant is designed to accommodate
- The specified site parameters are the top-level bounding site parameters used to define a suitable site for a facility referencing the certified design
- COL applicants referencing a certified design are required to demonstrate compliance with the site parameters provided in DCD Tier 2, Table 2.0-1

SCHEDULE FOR INTERVIEWING CANDIDATE
CHARLES BROWN
FOR ACRS MEMBERSHIP

FRIDAY, NOVEMBER 2, 2007

CANDIDATE	PANEL	ACRS MEMBERS	LOCATION
Charles H. Brown Jr.	Interviewed 10/24/07	12:00-1:00	T2-B1

ACRS MEMBERS

Apostolakis	Bonaca
Bley	Abdel-Khalik
Maynard	Powers
Shack	Banerjee
Corradini	Sieber
Stetkar	Armijo

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4301 North Fairfax Drive, Suite 330, Arlington, VA 22203 USA
Phone: (703) 525-3403 Fax: (703) 525-0833 info@bmtsyntek.com
www.bmtsyntek.com

Resume – Charles H. Brown, Jr.
February 2003

Work Summary:

Over 35 years experience in engineering management involving policy setting, planning, and technical direction for reactor and reactor plant instrumentation, control, protection, and electrical systems and equipment (Reactor IC&E) design, development, systems integration, procurement, testing, operation, safety, maintenance, and long term support programs management for all nuclear powered ships for the Naval Nuclear Propulsion Program (NNPP) of the U.S. Navy.

Over 35 years of similar experience for propulsion and electric plant systems, system integration, and components, and for electric plant system design, integration and major electric plant component design, development, and procurement for new design nuclear powered ships for the NNPP of the U.S. Navy.

Experience:

2000 – Present **BMT Syntek Technologies, Inc.** Arlington, VA
Senior Advisor for Electrical Systems

- Responsible for electrical systems analyses, concept design studies, and engineering and program management review for naval and commercial ships and for land-based commercial plants.
- Primary thrusts are power generation, distribution, and plant instrumentation, control, and electrical systems associated with all-electric ship applications, including electric drive.
- Developing concepts, policy, strategic planning, and engineering and program management review and oversight of propulsion/power plant electrical, instrumentation, and control system research, development, and production/manufacturing programs

1965 – 1999 **Naval Sea Systems CommandWashington, DC and Arlington, VA**
Director- Instrumentation and Control Division- Naval Nuclear Propulsion Program (1977-1999)

- Responsible for management of all aspects (cradle to grave) for all reactor instrumentation, control, and reactor plant electrical systems for all nuclear powered ships in the Navy, operating and new construction, and every nuclear prototype and training facility (over 90 ships and prototype plants with over 110 reactor plants).
- Leadership, planning, technical direction, and oversight is provided to two Department of Energy laboratories (Bettis and Knolls Atomic Power Laboratory) and two procurement prime contractors with over 400 engineers and procurement professionals dedicated to the Reactor IC&E

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program. Led a headquarters staff of over 25 engineers providing day-to-day, long range direction and oversight, real time problem solving and technical response, around the clock and the world, to all nuclear powered ships and prototypes.

- Managed a budget of over $250 million of outstanding contracts with awards of over $100 million each year. Long-range plans are developed and maintained to forecast needs up to 10 years in the future.

Branch Head, Surface Ship Branch, 1974-1977

- Responsible for design, development, procurement, testing, operation, maintenance of all reactor plant IC&E systems for operating and new design, construction nuclear aircraft carriers and cruisers. Led a staff of four to six engineers and one secretary. Budget of about $15 to $20 million per year. Direct report to Division Director.

Branch Head, Nuclear Cruiser Branch, 1971-1974

- Responsible for design, development, procurement, testing, operation, maintenance of all reactor plant IC&E systems for operating and new design, construction nuclear powered cruisers. Staff of two engineers. Budget of $5 to $10 million per year. Direct report to Division Director.

Lead Nuclear Power Engineer, 1967-1971

- Responsible for design, development, procurement, testing, operation, maintenance of all reactor plant IC&E systems for operating and new design, construction nuclear cruisers and the cruiser prototype reactor plant. Supervised one engineer. Budget about $2 to $10 million per year.

Nuclear Power Engineer, 1965-1967

- Responsible for the operation, maintenance, modification, and safety features for all IC&E systems for the nuclear aircraft carrier prototype and carrier and cruiser reactor plants.

Other Experiences:

Summer/Fall 2001 – Department of the Navy, Office of Naval Research, Naval Research Advisory Committee – Invited Member of the Study Panel for the **Roadmap to an Electric Naval Force.**

Purpose was to develop and recommend a science and technology roadmap for the Department of the Navy for the development of an integrated electric Naval Force.

Summer/Fall 2002 – Defense Advanced Research Projects Agency – Invited Member of the Study Panel for Advanced Weapons and Sensors for Navy Electric Ships.

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Purpose was to examine and assess technolgies that can provide enhanced naval capabilities through the use of the excess electrical power available in an all electric Navy ship.

Achievements:

- Led the NNPP Reactor Instrumentation and Control Division responsible for all matters relating to fleet support, overhaul, design, development, procurement, testing, reactor safety applications, maintenance, and ship construction for all IC&E systems and equipment used in nuclear reactor plants in U.S. Navy ships.

- Led the NNPP Reactor IC&E in a transition from vacuum tubes, magnetic amplifiers, and rotating machines to microprocessors and power electronics equipment and systems to reduce cost and improve support and performance. Developed and managed programs to modernize and improve Reactor IC&E systems (many first of a kind systems) in all nuclear powered ships and prototypes. Budget authority (which I controlled) from about $180 Million to about $580 Million over three planning periods. Equipment modernization is now an integral part of the NNPP planning and budget process.

- Championed employing and led the development of a revolutionary, new electric plant utilizing advanced solid state power conversion equipment and a turbine generator set using an advanced bearing system, first of its kind technology, in the Navy's latest class of attack submarines.

- Initiated a major NNPP policy and practice change in IC&E quality assurance processes to transition from costly, mandatory/hold point methods to in-process and, finally, to industry -based ISO 9000 methods.
- Initiated a major reengineering program for NNPP Reactor IC&E development processes to reduce development cost and schedule liability.

- Established policy, planning, and actions necessary to maintain a viable, competitive vendor base during the aggressive, post cold war Department of Defense downsizing.

- Championed employing, first of its kind in the U.S. Navy, high voltage turbine generators and electric plant in the Navy's newest nuclear aircraft carrier design, the CVNX.

- Championed, set the goals, and led development of an innovative system of standard circuit cards, cabinets, and system

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software(hardware/software building blocks) that reduce initial system development costs and the costs of redevelopment due to integrated circuit obsolescence by 10's of millions of dollars.

Education:

1972 **University of Louisville** **Louisville, KY**
M.S., Engineering
1965 **University of Louisville** **Louisville, KY**
B.S., Electrical Engineering with Honors

Additional Courses and Seminars:

- Certificate of Completion (M.S. equivalent) Nuclear Reactor Engineering - Bettis Atomic Power Laboratory

Professional Affiliations:

Registered Professional Engineer, Virginia
Institute of Electrical and Electronic Engineers – Senior Member
American Society of Naval Engineers – Life Member

Awards:

2001 Professional Award in Engineering – Electrical and Computer Engineering – University of Louisville

American Society of Naval Engineers Harold E. Saunders Award for 2000 for Career Achievement and Influence

1999 Civilian Meritorious Service Award – United States Department of Energy

Two Meritorious Presidental Rank Awards – Awarded annually to about 200 to 300 SES executives (less than 5% of the Senior Executive Service) and limited to once very 5 yers:

1988 Senior Executive Service Meritorious Executive Award
1996 Senior Executive Service Meritorious Executive Award

1981 through 1999 Exceptional Performance Awards – United States Department of Energy – Naval Nuclear Propulsion Program

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
REVIEW OF SELECTED CHAPTERS OF ESBWR
SAFETY EVALUATION REPORT WITH OPEN ITEMS
November 2, 2007
Rockville, MD

-PROPOSED SCHEDULE-

Cognizant Staff Engineer: Charles G. Hammer cgh@nrc.gov (301) 415-7363

Topics	Presenters	Time
Opening Remarks	M. Corradini, ACRS	8:30 am - 8:35 am
ESBWR Design Control Document (DCD) - Chapter 2, "Site Characteristics" [1] - Chapter 5, "Reactor Coolant System and Connected Systems" [1] - Chapter 8, "Electric Power" [1] - Chapter 11, "Radioactive Waste Management" [1] - Chapter 12, "Radiation Protection" [1] - Chapter 17, "Quality Assurance" [1]	GE-Hitachi Nuclear Americas LLC	8:35 am - 9:30 am
SER with Open Items for Chapters 2, 5, 8, 11, 12, and 17 [1]	Amy Cubbage, Andrea Johnson, Ilka Berrios, and Eric Oesterle, NRO	9:30 am - 10:25 am
Committee Discussion	M. Corradini, ACRS	10:25 am - 10:30 am

[1] A portion of this session may be closed for presentation of unclassified safeguards and proprietary information.

NOTE:

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.

- 50 copies of the presentation materials to be provided.

ITEMS OF INTEREST

547th ACRS MEETING

NOVEMBER 1-3, 2007

ITEMS OF INTEREST
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
547th MEETING
November 1-3, 2007

Page

SPEECHES

MEMORANDUM AND ORDER

CONGRESSIONAL CORRESPONDENCE

NRC ANNOUNCEMENT

YELLOW ANNOUNCEMENT

NRC: CURRENT ISSUES AND ACTIONS

•INSIDE NRC

OFFICE OF PUBLIC AFFAIRS

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E-mail: opa@nrc.gov
Web Site: Public Affairs Web Site

No. S-07-046

PDF Version

Remarks Prepared for NRC Chairman Dale E. Klein

Packaging and Transportation of Radioactive Materials (PATRAM) Conference

Miami, FL

"Global Cooperation in Nuclear Packaging and Transportation Issues"

October 22, 2007

Good morning. It is a pleasure for me to be with you today.

This conference offers all of us the opportunity to learn from each other and share our collective knowledge and experience regarding the transportation of radioactive materials. Let me, therefore, congratulate the hosts of the conference for organizing this event, and express my thanks to them for inviting me to speak to you today.

I would like to begin by making an observation that I don't think will shock any of you: I think it can be safely said that the Nuclear Renaissance has officially begun. I don't say that as an advocate for or against nuclear power. It is just a statement of fact, considering that a few weeks ago the NRC received the first application for a new reactor license in over thirty years. Over the next year and a half we expect about fifteen to twenty more license applications.

We knew this day was coming, and the NRC has invested a great deal of thought, planning, and effort into getting ready. And we are ready. I've assured both industry and Congress that the NRC will not be a bottleneck; and I am confident that the plan we have in place will allow to us to perform timely, quality reviews with no compromise of safety.

Now, when people talk about the Nuclear Renaissance, they tend to focus on power plants... for obvious reasons. But we all know that one of the key parts of a nuclear industry infrastructure is the packaging and transportation sector. And as this sector expands to meet the growing needs of an expanding industry, it will be challenged in various ways. In fact, I would go so far as to say that, in the eyes of the public, transportation is among the most challenging aspects of the resurgence in nuclear power. In part, this is because the excellent safety record in this area is not always well appreciated by the general public. But that simply means we cannot afford to be complacent. All of us—regulators, government agencies, as well as industry—must be extra vigilant in demonstrating our commitment to safety and security.

Of course, we also need to do much more than that. The first license applications for new reactors are just starting to come in to the NRC, and we understand that DOE will submit an application for Yucca Mountain next year. It will probably be another ten years, therefore, before major upgrades and changes will have to be made to the current generation of packages, the transportation fleet, and other parts of the nuclear transport infrastructure. This is independent of whether the U.S. recycles spent fuel or uses a once-through fuel cycle.

We [redacted]uld not wait nine years, however, to start planning for these changes. We need to begin today. One of the ch[redacted]es I would set out for you, therefore, during your discussions at this conference is to develop a clear plan for rese[redacted]h and investment in developing the next generation of packages and transportation systems. In turn, I think those of us in the regulatory community need to begin developing new analytical tools that will help expedite and streamline the process of certification reviews.

I should confess here that I have a personal interest in this subject. As some of you may know, I am on leave of absence from the University of Texas at Austin. While I was there, one of my responsibilities was analyzing nuclear packaging. I was involved with reviewing the Tru-Pac, as well as conducting thermal analysis of spent fuel casks. But when I mention the need for developing the next generation of packages, I am not speaking as a professor contemplating my return to academia... I really do believe, as the NRC Chairman, that this is important!

I also believe that the challenges I have mentioned cannot be resolved by the United States on its own. We live in global economy, and the nuclear packaging and transportation business is clearly global in scope. The commerce of radioactive materials crosses national boundaries, linking separate regulatory institutions with a common purpose... and making it necessary for these institutions to work together in order to achieve common safety goals. Today, with the global nuclear resurgence, this spirit of cooperation is even more critical.

Last week I was in Berne, Switzerland to attend a major international conference on geologic waste repositories. One of the themes I raised in my talk was the possibility of greater international cooperation on waste form designs and disposal canisters. The IAEA already plays an important role in promulgating regulations and guidance documents for packaging and international transport of radioactive materials. It is my hope and belief that we can build on this work—as well as other efforts such at the Multinational Design Evaluation Program, or MDEP—to extend this international cooperation to other parts of the fuel cycle... including transportation, aging, and disposal canisters, or TADS, as the Department of Energy has proposed.

Not every nation, of course, will choose to adopt identical waste forms and packages. We each have different requirements cor[redacted]onding to our different storage approaches. But I think that there is ample opportunity for us to work toward a st[redacted] approach by which we evaluate waste forms and packages. Clearly, the prospects for an international repository pr[redacted]m are too far off to be contemplated today. Nevertheless, it seems to me that we can begin laying the groundwork for more cooperation in the future, perhaps by our grandchildren... so that the possibility of such international repositories could eventually be developed, consistent with the laws and policies of each nation.

It also seems clear that international cooperation is important to help prevent safety problems and unnecessary burdens associated with incongruent or redundant regulatory requirements by the various countries through which radioactive material is transported. The lack of stability and predictability in transportation standards may have negative safety consequences due to incorrect interpretations and difficulty in keeping abreast of changes.

As a guiding principle, I submit that changes to existing standards should be made only if they are deemed necessary and have a significant positive impact on safety, security, or efficiency. It also seems sensible that risk considerations should be used as a guiding principle in our assessment of whether changes are needed to transportation standards and regulations. The NRC recognizes and supports the rights of individual countries to decide if and how to adopt international standards, in order to accommodate their specific economic, social, and national systems. However, transportation requires greater consistency across different nations, and I think care must be taken to avoid changes or differences in application of standards that can create unnecessary complications, and incompatible regulatory approaches.

Unfortunately, the perception that shipments of radioactive material pose tremendous risk may have resulted in unnecessary restrictions, denials, or delays. In some cases carriers may have imposed additional burdens for a shipment or required that a shipment be rerouted, when such actions were clearly unnecessary for safety or security. This should not be the case. Everyone here should work toward improving their methods for informing the public of the basic safety and security considerations for radioactive material shipments to ensure that these shipments are made in the most direct and expedient manner.

Whi[redacted]this is important, I don't mean to suggest that it will be easy. In fact, the challenge we face here is all the more d[redacted]g in light of the increased security that is building up around the world in response to global terrorism. Certainly we ha[redacted]en the increased use of radiation detectors at various places, including airports and especially ports. This clearly is having wide-ranging consequences for international commerce... if only in terms of the extra time and effort it takes to clear cargo.

Last year, I visited the Port of Seattle and toured the radiation detectors operated by U.S. Customs and Border Patrol at the Port. Their primary mission is to examine cargo entering the U.S. that may contain nuclear materials that could be used in weapons or dirty bombs. They have excellent equipment and well trained and motivated agents. Part of that training is to understand what is a real threat versus a naturally occurring source. They need to make decisions—at this one facility, they average 1,600 hits per month. In fact, while I was there one cargo container triggered the alarms. It was a shipment of Chinese fireworks and isotopic analysis showed the culprit was potassium 40.

The Customs agents told me about one particular port that receives nothing but bananas... and virtually every shipment sets off the detectors. That struck a chord with me, because some of my fellow Commissioners have joked for some time about creating the "standard banana" as a harmless unit of radioactivity.

It seems to me that this presents an educational opportunity for all of us... to help enhance the public understanding of nuclear and radiological issues. It would be helpful, for instance, for the public to better appreciate that we live in a radioactive environment... and that ordinary, background radiation can be found in everyday household products that we consume or are exposed to on a regular basis.

The public has come to expect an exemplary safety record for transportation, thanks in part to the very robust nature of the packaging and containers that are currently in use. But as the Nuclear Renaissance unfolds, and the transportation of nuclear spent fuel and waste increases, it will be more and more important to ensure that the public deliberation over these matters proceeds in a reasonable and risk-informed manner.

Ladies and gentlemen, let me close by reaffirming the goal we share as an international community: the safe and secure transport of radioactive material around the world. I am particularly pleased by the size of this meeting, and variety of the participants, which truly exemplify the spirit of international cooperation which is so vital to this part of the nuclear industry. In fact, the nuclear transportation sector probably depends, more than any other area, on international cooperation.

Working together, I believe that we can continue to address the challenges of the 21st century, while maintaining consistency and stability in our standards and regulations, to enhance the safe and secure transport of radioactive materials around the world.

Thank you.

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PDF Version

Fuel Cycle Safety:

One Commissioner's Perspectives

Dr. Peter B. Lyons, Commissioner

U.S. Nuclear Regulatory Commission

at the

OECD Nuclear Energy Agency Fuel Cycle Safety Workshop

Wilmington, NC

October 17, 2007

It is an honor to speak to the Fuel Cycle Safety Workshop. I am pleased to share my perspectives today on the role of this Workshop in the renewed global interest in nuclear energy and to discuss some of the U. S. Nuclear Regulatory Commission's (NRC) future challenges in this area.

Many meetings focus on the reactor aspects of any nuclear renaissance. But potential new reactors, as well as the existing reactor fleets, function only when all the elements of the fuel cycle operate safely. This Workshop is not only important to assuring safety of existing facilities, but it is also taking place at a time of significant change in the global outlook of the industry. It is, thus, an excellent opportunity for industry and regulators to explore perspectives on fuel cycle safety that may influence new facilities.

Global cooperation on nuclear safety is important, since nuclear energy can no longer be regarded as a strictly domestic matter for any single country. Nuclear power is now truly international, from the mining of the uranium ore, through nearly all the steps of the fuel cycle. Answers to, or expertise in, all the technical challenges in that complete cycle do not reside totally within any country. We in the United States have a great deal to learn from the international community in areas ranging from construction techniques, to UF6 deconversion, reprocessing and recycling technologies, and operations involving MOX.

I do not mean to imply that the United States does not have much to contribute to the global community in these areas; however, the inescapable truth is that we have much to gain from interactions with the international community in terms of improving the safety of our nation's fuel cycle facilities. Through our global interactions, we exchange regulatory practices and technical information that enable safe operations both here and in other countries.

There are changes on the horizon involving the entire fuel cycle. For example, when the price of uranium fell in the early 19[redacted] conventional uranium-mining production in the United States dropped precipitously. Many conventional mills ceased o[redacted]ns or closed permanently and began decommissioning and reclamation. But today, although conventional mills will co[redacted]ue to contribute to the supply of uranium, in-situ leach facilities are the predominant source of uranium production in the United States for reasons of both economy and reduced environmental impacts. Based on discussion with the industry, the NRC is preparing to review as many as 12 new applications for uranium recovery facilities in the foreseeable future, which represent a considerable increase in licensing activity. In addition, the international press reports many new mining and milling operations under development.

On October 3, 2007, the NRC received an application from Oklahoma-based Energy Metals Corporation to construct and operate an in-situ uranium recovery facility at Moore Ranch in Campbell County, Wyo. It is the first application for a new uranium recovery facility submitted to the NRC since 1988. The NRC staff is currently reviewing the application to determine whether it contains sufficient information to begin detailed environmental and safety reviews. If the application is deemed acceptable, the Agency will formally docket it and publish a notice of opportunity to request an adjudicatory hearing.

Other examples of changes on the horizon include advanced enrichment technologies at USEC and General Electric (GE). USEC was issued a construction and operating license in April 2007 for its American Centrifuge Plant. GE is evaluating the SILEX or Global Laser Enrichment technology for uranium enrichment and may submit a license application for an enrichment facility in early 2008.

For my presentation today, I plan to offer some perspectives on the safety, future challenges, public transparency, and human capital as related to fuel cycle facilities. I will start with NRC's top priority: SAFETY.

Safety

One aspect of this focus on safety involves the concept of safety culture. The NRC is currently seeking to improve its oversight of this attribute at licensed fuel cycle facilities. We recognize that there may be lessons to be learned from the recent safety culture initiative in our reactor oversight process that apply to other areas of regulatory oversight. While the re[redacted]ory framework for fuel cycle facilities is different from that for reactors, an approach to increase NRC oversight of sa[redacted]ulture at certain fuel-cycle-facility licensees will be evaluated through a pilot effort. This pilot will assess the app[redacted]ability of the reactor safety culture components to certain fuel cycle facilities and examine how to incorporate them into our inspection program.

We are evaluating the role of Agreement States in regulation of fuel cycle facilities. As you may know, the NRC allows the Agreement States to regulate the use of source material and byproduct material. Currently, 34 states have the status of an Agreement State. Because of the potential increase in the number of fuel cycle facilities, the Commission expressed concern regarding the significant resources required to license and inspect a large fuel facility and its potential impact on an Agreement State program and asked the NRC staff to make a recommendation on the feasibility of the Agency's licensing all large fuel cycle facilities. A Commission decision will be available shortly.

Natural hazards are another area in which knowledge continues to evolve, and we continue to learn from each significant event worldwide. By way of examples, construction of a first-of-its-kind, waste-vitrification plant at Hanford experienced a delay caused by the need to reevaluate seismic and other concerns. The December 2005 tsunami has led to rapid development in the state-of-the-art of prediction, propagation, and early warning systems. The implementation of performance-based, seismic criteria in a recent Early Site Permit also reflected a substantial change from the deterministic perspective of earlier years. In addition, the recent Niigata earthquake in Japan may provide new, important insights for the entire nuclear community.

Future Challenges

In recognition of the increased interest in nuclear power around the world, new approaches to management of the fuel cycle are being proposed that may significantly challenge the NRC. The Department of Energy's (DOE) Global Nuclear Energy Partnership (GNEP) is intended to develop the systems, technologies, and policy regimes to allow recycling of used fuel from light water reactors and, to a large extent, eliminate the actinides in fast-burner reactors in a way that enhances pro[redacted]ation resistance. The resulting waste streams are envisioned to have characteristics that would lessen the volume ar[redacted]mal challenges for a geologic repository.

The GNEP initiative could involve several interconnected (and possibly co-located) facilities:

(1) a Consolidated Fuel Treatment Center; (2) an Advanced Burner Reactor; and (3) an Advanced Fuel Cycle Facility. As currently envisioned, NRC would probably be the regulator for the Consolidated Fuel Treatment Center and the Advanced Bu[redacted]Reactor, as these would be commercial enterprises. In addition, the NRC would need to be involved in development ar[redacted]rations of DOE's research facilities, such as the Advanced Fuel Cycle Facility, to understand issues that may affect its fut[redacted]licensing process. However, as DOE is formulating this program, it is not yet clear at what stage in its evolution the NRC will be participating.

I believe that NRC's regulatory role will depend largely on DOE's and industry's participation and on legislation. The interdependence of the facilities, that is, defining how each facility affects the safety, safeguards, quality, effectiveness, and efficiency of the others, will require involvement of multiple NRC program offices. We must ensure that a stable and reliable regulatory infrastructure is in place well before an application is submitted. Our challenges will be to:

(1) develop a regulatory framework for commercial GNEP facilities; (2) provide guidance to applicants; (3) develop qualified NRC staff to support a timely NRC licensing review; and (4) maintain an effective inspection program.
NRC staff has already begun to consider a path forward, including modification of existing guidance and regulations and possible new rulemakings to address the safety and security requirements for these new technologies. Also under consideration is development of specific GNEP regulations applicable to both fuel reprocessing and fast burner reactors. Under a new agreement, DOE will provide technical information on GNEP to the Agency to enable our staff to develop the technological basis for GNEP--while making it clear that NRC will not license the planned DOE fuel-cycle research facility. Under the agreement, DOE will keep the NRC abreast of its work in development of new, proliferation-resistant, reprocessing systems for spent nuclear fuel and new burner reactors.

Whether we modify existing regulations or develop new ones, experience gained in past operations must guide our efforts. We cannot afford to relearn past lessons as we build the next generation of fuel cycle facilities. One such area of experience involves control systems. Just as digital instrumentation and control systems offer advantages in reactor safety, they also offer advantages for the entire fuel cycle. But introduction of digital systems is neither simple nor guaranteed to prevent problems. For example, last summer a scram at Browns Ferry Unit 3 occurred when a digital network controlling the reactor recirculation pumps experienced a "data storm" of excessive traffic due to malfunction of one of the components on the network. It seems there was no 'limiter' designed into the network to ensure that the data flow remained within the capability of the network.

In [redacted]ner example, earlier this summer, the power supply of the digital control system failed at the Honeywell UF6 conversion plant and placed plant components into a start-up configuration while the plant was operating. Operators were able to bypass the failed power supply and restore power to the work stations and communications network. However, when communications were re-established with the plant's controllers, the controllers reinitialized as designed. Unfortunately, that design reconfigured the production equipment for a Acold start,@ which shut a number of valves. However, because the plant was operating and "hot," the valve closure caused pressure increases in some of the process tanks. The operators noted the increasing pressures and shut the plant down safely.

Another challenge for both industry and the NRC involves management of both high- and low-level wastes (LLW). We face a monumental task to review a license application for a potential Yucca Mountain waste repository whenever DOE submits its license application. LLW issues may also present challenges in the future. Without adequate LLW disposal sites, as highlighted by the recent plans to close Barnwell in 2008 to out-of-compact states, the NRC will be faced, in all probability, with assuring that the absence of disposal capacity for such wastes does not translate into unsafe and insecure storage of the waste by generating organizations.

Another challenge involves a legislative mandate giving the NRC new responsibilities with respect to DOE's military waste management activities for certain material resulting from the reprocessing of spent nuclear fuel. NRC's responsibilities include consulting with DOE in its determination of whether such waste is high-level waste (HLW), as well as monitoring its disposal. The concept behind this so-called "incidental" waste is that some material, resulting from the reprocessing of spent nuclear fuel, does not need to be disposed as HLW in a geologic repository. Such reduced disposal requirements are appropriate only if the residual radioactivity of the material, if properly controlled, is sufficiently low that it does not represent a hazard to public health and safety.

Consequently, incidental waste is considered to be LLW, instead of HLW. DOE's technical analyses are documented in a "waste determination" to evaluate whether waste is incidental or, alternatively, is HLW. Through a consultation process, NR[redacted]andated to provide to DOE its independent review of these waste determinations.

While this waste determination process currently is only applicable to certain DOE military wastes, depending on details of a future possible implementation of GNEP, similar waste determinations may become appropriate for civilian waste as well.

Public Transparency

In addition to the challenges I've mentioned, we are continuously attempting to seek the appropriate balance to ensure that our regulatory processes are open to the public while maintaining the secure use and management of radioactive materials. But since NRC's Mike Weber discussed this topic in more detail yesterday, my comments on it will be minimal.

As Mike already noted, such policies represent a very delicate balance. As one example, in 2004, in an attempt to maintain the secure use and management of radioactive materials, we limited public access to all information at two of our licensed nuclear fuel cycle facilities. That policy, at the request of the DOE, was initiated in response to post-9/11 concerns that certain publicly available documents might contain security-sensitive information. Recently, the Commission recognized that too much information was being withheld, thus affecting our sharing of information on the recent spill at Nuclear Fuel Services (NFS). As a result, the Commission directed our staff to make many documents publicly available, relating to the Agency's oversight of NFS in Tennessee and BWX Technologies in Virginia, that were previously withheld pursuant to that 2004 policy.

Human Capital

Let me now switch to the subject of human capital. Both the NRC and the industry are facing critical shortages of experienced staff. No nuclear power or fuel cycle facility can operate without trained and dedicated people who have made safety a priority. Of course, regulatory bodies must also have trained and knowledgeable staff. The global growth in nuclear power compels all of us to focus on training the next generation of construction workers, electricians, welders, engineers, operators, managers, and regulators.

While NRC has experts in many of the core technical areas needed for licensing reviews of facilities for a spent fuel recycling program, we need additional expertise in several specialty fields to review the advanced technologies used in such a facility. Specifically, the NRC needs additional chemical engineers (with a detailed knowledge of reprocessing), actinide chemists, plutonium chemists, and radio-chemists. In addition, nuclear engineers with expertise in transmutation are needed to review fuel recycling facilities.

You may be aware that the NRC is engaged in strenuous efforts to increase its staff by a net of 600 people, over 3 years, to handle the increased workload of new plant applications and other nuclear regulatory business. Obviously, we cannot simply hire people off the street and send them out to be regulators the next day. Even when hiring people with substantial experience in the industry, we have found that it takes from 6 months to a year of training before they are ready to assume regulatory responsibilities. For recent university graduates, it takes 1-2 years.

We have also employed creative approaches to build our staff capabilities. One example is the implementation of NRC's Graduate Fellowship Program for critical skills like corrosion chemistry and human factors. This Program is designed to attract and/or retain highly qualified individuals who aspire to work in areas requiring highly specialized technical knowledge and skills. This developmental program combines an initial period of work at the NRC with subsequent graduate education and a return to an NRC position that utilizes their increased knowledge.

We also want to expand our staff's knowledge base by drawing on the regulatory experiences in similar facilities around the world, such as La Hague, MELOX, and Atalante in France and Rokkasho in Japan. These and other countries have significant operational experience with facilities similar to those proposed now in the United States or which may be proposed in response to the GNEP. The discussions and presentations at this Workshop will be an important addition to the knowledge of our staff.

The NRC considers participation of our staff in these types of workshops to be vital for many reasons. I have already noted that we learn from the experience of others. In addition, it is important that we share information related to our research and regulatory initiatives, get feedback on them, and receive new perspectives from research conducted around the world. By working together, we can provide invaluable guidance on safety issues to these operating and new facilities and help ensure that safety is always the top priority.

Thank you for your attention this morning. I will be happy to take questions.

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"Resolving Fire Protection Issues"

Prepared Statement for

The Honorable Gregory B. Jaczko
Commissioner
U.S. Nuclear Regulatory Commission

at a

Public Meeting with Stakeholders
Raleigh, North Carolina

October 16, 2007

I want to thank you for meeting with me today to engage in a dialogue on the important subject of improving the protection of nuclear power plants from fires. The NRC's technical analyses tell us that the risk of fire is a significant contributor to safety concerns at nuclear plants and this an issue that must be resolved.

Today, fire protection regulations for the existing fleet of nuclear reactors are an unwieldy and confusing patchwork of requirements frequently resulting in too many exemptions and manual operator actions. I have been to several reactor sites which have good separation between safety components, and thus much simpler fire protection strategies. I have also visited sites where licensees need to request numerous exemptions from existing regulations and in turn take compensatory actions. This is not the ideal, most transparent, or safest way to deal with the issue.

Since much of the existing fleet was not built with modern fire protection standards in mind, it is important to focus on safety and address these exemptions to our existing regulations. Although it is a voluntary alternative, I believe 10 CFR 48 (c), the NFPA 805 fire protection rule, is the best solution we have today to reduce the need for exemptions and improve safety.

NFPA 805 is a good example of a beneficial risk-informed regulation that can use fire protection risk insights to enhance safety. One benefit of the program is that the NRC and licensees undertake a more comprehensive evaluation of a plant's entire fire protection programs. Any problems discovered through this process must be resolved.

I therefore believe adopting NFPA 805 should be mandatory for those plants with fire protection issues. Because current Commission policy is that this change is only voluntary, I have been strongly encouraging licensees to invest the resources and make the change. In addition, the NRC has been actively working to make improvements in many areas of fire protection such as manual operator actions, post-fire safe shutdown circuit analysis, fire barriers, fire modeling, and fire research.

I am constantly impressed with the expertise and dedication of the NRC staff who are working to finally resolve this longstanding and complex issue. The NRC continues to be a world leader in understanding the problems posed by fire at nuclear plants, coming up with solutions, and working to resolve all of the technical challenges. Through the agency's research efforts, the NRC is showing the way forward on this issue and licensees must now follow.

I look forward to your thoughts and comments on how the NRC can continue working to improve fire protection at nuclear power plants across the country.

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PDF Version

"An Emerging Fuel Cycle Renaissance?"

Remarks Prepared for NRC Chairman Dale E. Klein

Baker Center for Public Policy

Woodrow Wilson Center, Washington DC

October 4, 2007

Thank you.

Before I begin my remarks, I want to mention that this is a somewhat somber time for us at the Nuclear Regulatory Commission. Two days ago, the Commission held a memorial ceremony for our late colleague, Ed McGaffigan who—as you may know—died on September 2, after a long battle with cancer.

His wisdom and experience as the longest-serving commissioner in our agency's history, will be greatly missed.

But Ed himself would have told us that we shouldn't take too much time before getting back to work. And the truth is, we have a lot of work to do.

In fact, I think it can be safely said that the Nuclear Renaissance has officially begun.

I don't say that as an advocate for or against nuclear power. It is just a statement of fact, considering that last week the NRC received the first application for a new reactor license in thirty years. Over the next year and a half we expect about twenty more license applications.

We knew this day was coming, and we have invested a great deal of thought, planning, and effort into getting ready.

And we are ready.

I've assured both industry and Congress that the NRC will not be a bottleneck; and I am confident that the plan we have in place will allow to us to perform timely, quality reviews with no compromise of safety.

Having said that, I don't mean to suggest that we don't still have challenges ahead of us.

For one thing, both industry and the NRC are feeling the effects of the aging nuclear workforce—which is happening just at

the time the Nuclear Renaissance is unfolding.

At [redacted]RC, in one two-week pay period early this year, nearly 1,000 years of regulatory experience walked out of the ag[redacted] due to retirements; and that included 560 years of technical experience.

I have also been told that 75% of the workforce at the DOE National Labs will be eligible for retirement by 2010. On the industry side, I believe that NEI will soon publish its updated nuclear industry workforce survey.

One finding which they have already released is this: roughly 35% of current utility personnel will be eligible for retirement within 5 years.

This is not a crisis... yet. But it has the potential to become one.

I should mention that the need for workforce development is not just limited to nuclear engineers, but also includes other engineering and scientific disciplines as well... not to mention the skilled craft workers such as electricians, welders, pipe-fitters, mechanics, electronics technicians, and others needed to construct and operate the plants.

At the same time that we need to address that challenge, we are also facing another one. Because the growth of the nuclear industry was basically stalled for two decades in the U.S., there has been substantial progress in nuclear technology elsewhere in the world that we as regulators don't really have experience with.

Specifically, while the current fleet of light water reactors were designed and built in the analog electronics era, the next wave of reactors will likely move away from analog toward digital instrumentation & control. And that is just one of the challenges we face in the short-to-medium term.

Over the long term we can anticipate even more radical technological changes, including advanced and innovative new reactors and fuel cycle facilities.

As [redacted]k many of you already know, President Bush has outlined a plan for embracing these technologies in a way that ex[redacted] the safe use of nuclear energy, while reducing the threat of nuclear proliferation, through his Global Nuclear Energy Partnership—or, GNEP.

GNEP is intended to develop the systems, technologies, and policy regimes to allow recycling of used light water reactor fuel.

It seeks to eliminate, to a large extent, the actinides in fast-burner reactors in a way that enhances proliferation resistance. The resulting waste streams are envisioned to have characteristics that would lessen the volume and thermal challenges for a geologic repository.

This represents a substantial shift in the domestic approach to the back end of the fuel cycle. In fact, I think it even represents a major shift in the global approach to managing the fuel cycle. Of course, it remains to be seen whether GNEP will inaugurate what we might call a "Fuel Cycle Renaissance."

I am sure that Secretary Bodman will say more about GNEP when he delivers his remarks. So let me just mention what the development of GNEP will entail for the NRC.

The U.S. Nuclear Regulatory Commission was a light-water reactor agency when it was formed; and we continue to be a light-water reactor agency today.

But we know that a new day is coming.

The transformation in nuclear power technology that we can see on the horizon represents an unprecedented opportunity for a new global effort to oversee the safety and security of new and innovative reactors, and other fuel cycle facilities.

By [redacted]ng together, the international regulatory community can provide clear, concise, and internationally accepted guidance on safety and security requirements to the designers and architects of these new facilities. This will help ensure that safety and security are fully integrated into all aspects of a facility's design and operational characteristics.

To that end, I proposed a new initiative at the recent meeting of the International Atomic Energy Agency in Vienna for developing a multinational regulatory approach to licensing.

[redacted]ould be a cooperative international effort to delineate the regulatory design requirements for innovative reactors and other fuel cycle facilities.

I believe that such an activity should be led by the regulators who oversee the design and development of nuclear power plants, with active participation from other national regulators, and in coordination with the IAEA and NEA.

As I mentioned in Vienna, this is not a plan for imposing U.S. programs or standards on the world.

We know that other nations have been leaders in developing new nuclear technology for at least the last two decades, and their experiences are important if we are to embark on a multinational regulatory framework.

This is a suggestion for mutual collaboration—recognizing that each country is responsible for applying and enforcing those standards and requirements it determines to be necessary for safety and security.

Of course, even if this effort is entirely successful, there are still other regulatory challenges we must confront.

For instance, the NRC faces a monumental task in the review of a license application for a potential Yucca Mountain waste repository. Nevertheless, we stand ready to initiate this review when DOE submits its license application.

Low-level waste issues may also present challenges in the future. Without adequate low-level waste disposal sites, this nation may be faced with the likelihood of even more interim storage sites... and possibly the curtailment of medical procedures and other activities that generate low-level waste.

My fellow Commissioners and I believe this is something we may have to address in the near future.

[redacted]are also issues involving what might be called the "front end" of the fuel cycle.

When the price of uranium fell in the early 1980s, conventional uranium mining production in the United States dropped precipitously.

Many conventional uranium mills ceased operations or closed permanently and began decommissioning and reclamation. There is currently one NRC-licensed conventional mill and two mills that have ceased operation but expect to resume operation in the future.

There are six in-situ leach facilities that are operating or are licensed to operate. Based on discussion with the industry, the NRC expects a considerable increase in licensing activity, as many as 12 new applications, for both types of uranium recovery facilities in the foreseeable future.

I don't believe that I, or anyone else, can say for sure what other challenges might arise... but I think those are some of the major issues we will need to deal with. [PAUSE]

Ladies and gentlemen, before I conclude, let me make one final observation.

As I look out across this room, I must say I am amazed at the very high caliber of participants that the organizers of this conference have brought together.

It reminds me of the story of when John F. Kennedy invited several dozen Nobel Prize winners to the White House for dinner and remarked, "Never has so much talent been assembled in one room since Thomas Jefferson dined alone."

By [redacted] same token, I am tempted to say that never has so much expertise on nuclear matters been gathered in one room s[redacted]dmiral Rickover shared a beer with Albert Einstein.

Surely, then, by leveraging this awesome collection of knowledge and talent... by joining forces—not only across agencies

within the U.S. Government, but especially through constructive international cooperation—we can continue to assure sound oversight of the safety and security of nuclear power.

Th[redacted]ou.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED 10/05/07

COMMISSIONERS:

SERVED 10/05/07

Dale E. Klein, Chairman
Gregory B. Jaczko
Peter B. Lyons

In the Matter of	)	
	)	
PPL Susquehanna LLC	)	Docket Nos. 50-387-OLA and 50-388-OLA
	)	
Susquehanna Steam Electric Station, Units 1 and 2)	)	

CLI-07-25

MEMORANDUM AND ORDER

Eric Joseph Epstein appeals the Atomic Safety and Licensing Board's ruling denying him a hearing in the matter of PPL Susquehanna LLC's (PPL) application for a power uprate at the Susquehanna Steam Electric Station (SSES).[1] Although the Board found that petitioner Mr. Epstein demonstrated standing, it found that he had offered no admissible contention, and therefore denied his hearing request. Because Mr. Epstein has not shown that the Board made any error of law or abused its discretion, we deny his appeal.

I. PPL'S APPLICATION FOR AN EXTENDED POWER UPRATE

On October 11, 2006, PPL applied for an extended power uprate (EPU)[2] for the two nuclear reactors at the SSES on the banks of the Susquehanna River in Pennsylvania. SSES draws water from the river for all cooling associated with plant operations, and returns whatever is not lost through evaporation to the river. An 8-acre,

[1] LBP-07-10, 66 NRC ___ (July 27, 2007).
[2] PPL has asked to increase power from 3489 megawatts thermal (MWt) to 3952 MWt, or approximately 13 percent over its current maximum authorized power. A power uprate between seven and 20 percent is classified as an extended power uprate. *See* http://www.nrc.gov/reactors/operating/licensing/power-uprates.html#definition.

25 million gallon spray pond is the station's ultimate heat sink for the Engineered Safeguard Service Water System and supplies auxiliary cooling water.[3] The station also draws makeup water from the Susquehanna to keep the spray pond at the 25 million gallon level required by its licenses. [4]

The use of water from the Susquehanna River is controlled by the Susquehanna River Basin Commission (SRBC), an agency created by a compact between the Federal government and the states hosting the Susquehanna River.[5] After PPL submitted its EPU application to NRC, it applied to SRBC for approval to increase its water use to meet its increased water needs under the proposed uprate. PPL currently withdraws a maximum of 58 million gallons per day from the Susquehanna, and has asked SRBC to increase this limit to a maximum of 66 million gallons of water per day.[6] PPL's average consumptive water use at SSES (that is, water not returned to the river), is about 38 million gallons per day when both reactors are at full power.[7] According to PPL's EPU application, the uprate is expected to increase average consumptive use to 44 million gallons per day.[8] PPL currently has SRBC's approval for a maximum consumptive use of up to 48 million gallons per day, and it apparently has not asked SRBC to raise that limit.[9]

Mr. Epstein filed a timely petition to intervene, request for hearing, and proposed contentions on May 11, 2007. Both PPL and the NRC Staff opposed the intervention.

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[3] Susquehanna Environmental Report, Extended Power Uprate, Susquehanna Steam Electric Station (March 2006) (ER), at 7-7.
[4] *Id.*
[5] Susquehanna River Basin Compact, Pub. L. 91-575, 84 Stat. 1509 et seq. (1970). *See* http://www.srbc.net/docs/srbc_compact.pdf.
[6] *See* Eric Joseph Epstein's Petition for Leave to Intervene, Request for Hearing, and Presentation of Contentions with Supporting Factual Data (May 11, 2007) (Petition for Intervention), Exhibit 1, PPL Susquehanna, LLC Application for Surface Water Withdrawal Request to Modify Application 19950301 EPUL-0578 (Dec. 20, 2006) (SRBC Application), at 2.
[7] ER at 7-7.
[8] *Id.*
[9] SRBC Application, at 3. In addition to the 48 million gallon per day maximum, PPL currently must maintain a 30-day average consumptive use of 40 million gallons per day. Its SRBC application requested the elimination of this requirement. *Id.*

The Board issued a prehearing order stating that, as an initial matter, it considered each of the proposed contentions to be "technical," as opposed to "environmental" contentions.[10] The Board held a prehearing conference by telephone on July 10, 2007.

In LBP-07-10, the Board found that none of the three proffered contentions raised a litigable issue in this licensing proceeding. Mr. Epstein appeals the Board's ruling with respect to two of those proposed contentions, but does not dispute the ruling on the third, which claimed that PPL failed to consider the consequences of an accident caused by the proposed uprate.

On July 27, 2007 – the same day the Board issued its ruling on standing and contentions – Mr. Epstein filed a "Notice of Intent to File a Petition in Opposition to PPL Susquehanna, Application for Surface Water Withdrawal Request to Modify Application 19950301-EPUL-0572"[11] with the SRBC. On August 1, 2007, he filed a petition with the SRBC opposing PPL's application for increased water usage.[12]

II. MR. EPSTEIN'S PROPOSED CONTENTIONS DID NOT RAISE A LITIGABLE ISSUE WITHIN THE SCOPE OF THE UPRATE PROCEEDING

NRC rules of practice provide for an automatic right to appeal a Board decision denying a petition to intervene.[13] The Commission defers to the Board's rulings on admissibility of contentions, however, unless the appeal points to an error of law or abuse of discretion.[14] Here, Mr. Epstein largely ignores the Board's thorough explanations of why the contentions are outside the scope of the proceeding, do not present an issue material to the findings the NRC must make in its review, or are factually unsupported. Instead, he simply repeats or adds to his previous claims.

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[10] Memorandum and Order (Initial Prehearing Order), at 2 (May 31, 2007).
[11] A copy is available on the Agencywide Documents and Management System (ADAMS), accession number ML072210358.
[12] A copy is available on ADAMS ML072210363.
[13] 10 C.F.R. § 2.311(b).
[14] *E.g., AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), CLI-06-24, 64 NRC 111, 121 (2006); *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-04-36, 60 NRC 631, 637 (2004).

A. Contention TC-1: PPL Did Not Consider Impact of Uprate on Water Use Issues

Mr. Epstein's first contention, which the Board designated TC-1, fails because it attempts to interject into this proceeding matters that are not material to the findings the agency must make on this application, and that are appropriately within the jurisdiction of other agencies. Contention TC-1 claimed that PPL did not consider the impact the uprate would have on the use of water from the Susquehanna River. It is telling that the contention cites Pennsylvania law and U.S. Environmental Protection Agency (EPA) regulations, but no NRC regulation:

> PPL failed to consider the impact of the proposed uprate on certain state and federal water use issues, and the potential impact these regulations will have on water flow, water volume and surface water withdrawal for the SSES's cooling systems. The traditional implications of the Pennsylvania Public Utility Commission ("Pa PUC") policy and regulations relating to "withdraw and treatment" of water, i.e., referred to as "cost of water" under the Public Utility Code, Title 66, have to be factored in this application absent a Pa PUC proceeding as well as Act 220 water usage guidelines. PPL has not established (nor has the NRC reviewed) compliance milestones for EPA's Act 316(a) or 316(b) [*sic.*][15] and their impact on power uprates at the Susquehanna Electric Steam Station [*sic.*][footnote omitted].[16]

The Board's decision also took into consideration Mr. Epstein's concerns as discussed during the July 10, 2007 prehearing conference. According to Mr. Epstein, in March 2008, the SBRC will complete a study of projected water use which could result in water rationing among permittees in areas where water use threatens to exceed supply.[17] Mr. Epstein contends that the uprate will require the use of additional water from the Susquehanna River, and, because it is unknown whether the SRBC will allow PPL to

[15] Mr. Epstein apparently intended to cite sections of the Federal Water Pollution Control Act, or "Clean Water Act," 33 U.S.C. §1251 et seq.
[16] Eric Joseph Epstein's Petition for Leave to Intervene, Request for Hearing, and Presentation of Contentions with Supporting Factual Data (Petition for Intervention), at 10 (May 11, 2007).
[17] *Id.* at 12.

withdraw more water, PPL should submit an alternative plan to address that contingency.[18]

The Board found that this contention – as stated in Mr. Epstein's original pleading and as explained during the prehearing conference – was outside the scope of, and not material to, the proceeding, and lacked factual support.[19] The Board correctly explained that the NRC's adjudicatory process was not the proper forum for investigating alleged violations that are primarily the responsibility of other Federal, state, or local agencies.[20] Further, the Board observed that the potential restrictions in water use from the Susquehanna River did not present a safety issue, because the spray pond provides cooling in the case of an emergency, and the spray pond as ultimate heat sink is governed by technical specifications.[21] If SRBC were to impose water rationing, the Board acknowledged, PPL might have to reduce its power generation levels accordingly.[22] But the Board found that Mr. Epstein offered no factual support for the claim that "[p]eriodic modification of power generation levels ... would be the type of unplanned reactor scram that has been identified as potentially resulting in safety significant challenges to reactor systems." [23]

Much of Mr. Epstein's argument on appeal consists of factual assertions, which, even if true, would provide no basis for overturning the Board's decision. For the most part, Mr. Epstein simply repeats the claims that the Board found to be outside the scope of the hearing, immaterial, or unsupported, without ever attempting to show that the

[18] *Id. See also* Eric Joseph Epstein's Appeal of the Atomic Safety & Licensing Memorandum and Order (Ruling on Standing and Contentions)(Appeal), at 15 (Aug. 5, 2007).
[19] LBP-07-10, slip op. at 22.
[20] *Id.* at 22-23, *citing Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), CLI-98-16, 48 NRC 119, 121-22 (1998).
[21] LBP-07-10, slip op. at 22.
[22] *Id.* at 22 n.19.
[23] *Id.*

Board erred or abused its discretion in so finding. But Mr. Epstein also makes claims of fact that go beyond his initial contentions.

For example, Mr. Epstein dedicated two pages of his appeal brief to arguing that PPL failed to obtain SRBC approval for increased water usage for an earlier uprate in 2001.[24] That claim never appeared in his original intervention petition, and Mr. Epstein first raised it in the prehearing conference.[25] Unless Mr. Epstein could show good cause why he did not raise the issue in his initial pleading, the argument came too late.[26] But even if Mr. Epstein had filed a timely contention on the issue, he would not be entitled to relief. Whether PPL needed any SRBC approval prior to the earlier uprate is a question for SRBC. The issue is outside the scope of the current licensing proceeding, and not material to any matters the NRC must decide herein.[27]

Mr. Epstein urges the NRC to coordinate with the SRBC and Pennsylvania authorities to resolve water use issues. We think, however, that the respective responsibilities of NRC, Pennsylvania PUC, SRBC, and the EPA in this area are clear. A contention that merely seeks to "advance generalizations regarding [a petitioner's] particular view of what applicable policies ought to be" is not admissible.[28] And as the Board's ruling recognized, it is clearly SRBC that is charged with determining whether increased water use from the Susquehanna River is permissible. The NRC's

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[24] Appeal at 10-12.
[25] *See* Susquehanna Steam Electric Station Prehearing Conference (Jul. 10, 2007), Tr. 12-13, 33, 41, 51.
[26] As is true in courts of law, litigants in NRC proceedings cannot raise entirely new arguments in a reply brief *(see, e.g., Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-04-25, 60 NRC 223, 225 (2004)), or on appeal, *USEC Inc.* (American Centrifuge Plant), CLI-06-10, 63 NRC 451, 458 (2006), *cf.*10 C.F.R. §2.341. Similarly, an issue first raised in a prehearing conference comes even later in the proceeding than a reply brief, and its admission could defeat the Commission's rules regarding timeliness of submissions. Therefore, a matter raised for the first time in a prehearing conference would only be admissible if the petitioner could satisfy the test for admitting late-filed contentions, found at 10 C.F.R. § 2.309(c).
[27] *See, e.g., Hydro Resources,* 48 NRC at 120-22.
[28] *Philadelphia Elec. Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 20-21, n.33 (1974), *citing Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-128, 6 AEC 399, 401 (1973).

consideration of the EPU application does not affect SRBC's authority to grant or deny the permit for additional water usage.[29]

Similarly, Mr. Epstein asks NRC to "investigate the impact of the Environmental Protection Agency's [Clean Water Act] 316(a) and 316(b) compliance milestones." Mr. Epstein ignores the Board's ruling, which pointed out that the EPA's alternative thermal effluent limitations, issued pursuant to Clean Water Act §316(a), do not apply to the SSES because it employs closed-cycle cooling, and that PPL's environmental report had addressed §316(b) compliance.[30] Again, Mr. Epstein's argument does not show Board error, but simply sets forth what he believes NRC policy ought to be.

In short, we agree with the Board. Mr. Epstein did not show that information in PPL's application was inaccurate or insufficient to satisfy NRC regulations. He did not show that the Board misapplied the law or abused its discretion. He only claims that NRC ought to concern itself with water use matters within the jurisdiction of other state and Federal agencies. Mr. Epstein's water use complaints simply do not articulate any issue material to this proceeding, and he has shown no reason for us to otherwise overturn the Board's ruling.

B. Contention TC-2: Failure to Disclose Needed Repairs In River Water Intake System

Mr. Epstein's second proposed contention failed before the Board because it concerns matters that are entirely the concern of SRBC, and thus outside the scope of this uprate proceeding. Mr. Epstein claims PPL omitted information about the condition of the river water intake pipes in its application, and argues that the NRC should oversee repairs to correct constriction in the pipes. But Mr. Epstein has not shown that the Board erred or abused its discretion in finding that possible repairs to the river water intake

[29] Mr. Epstein seemed to recognize this when, shortly after the Board's decision, he filed a petition before the SRBC opposing PPL's application to increase its water use. SBRC Petition, *supra* note 12.

[30] LBP-07-10, slip op. at 23 n.20. *See also* ER at 7-8 to 7-9.

pipes were not material to the uprate proceeding, and that there was no reason for PPL to include this information in its uprate application.

According to Mr. Epstein, PPL's EPU application "failed to disclose damaging information included in a hastily filed Application for Surface Water Withdrawal" that PPL filed with the SRBC.[31] The "information" to which the contention referred is that PPL discovered constriction in the pipes that take in water from the Susquehanna River, which had in turn caused errors in the calibration of meters used to monitor water withdrawal for the plant. According to PPL, the intake pipes are not clogged (and Mr. Epstein offered no evidence that they are).[32] PPL states that it now uses an alternative method for calculating how much river water the plant takes in to satisfy SRBC monitoring requirements.[33]

The Board rejected Mr. Epstein's claim that the problems with the river intake system reduced the margin of safety at the plant.[34] The Board pointed out that Mr. Epstein's concerns were based on the "misdirected premise that, in the context of the EPU application, the river intake system is a safety-related structure.[35] It appears that Mr. Epstein never disputed PPL's assertion that the water kept in the 25 million gallon spray pond is sufficient to cool the reactor and the spent fuel pool for thirty days in an emergency.[36] In addition, the Board noted that Mr. Epstein's contention lacked any supporting expert opinion, and appeared to confuse various plant components.[37] In fact, the flow meters in the river intake structure are not used to meet an NRC requirement.

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[31] Petition for Intervention at 19-20.
[32] *See* Tr. 62-63.
[33] SRBC Application at 3 and Att. C. *See also* PPL Susquehanna's Answer to Eric Epstein's Petition for Leave to Intervene (June 5, 2007), at 25.
[34] LBP-07-10, slip op. at 25.
[35] *Id.* at 26.
[36] *See* PPL Answer to Eric Epstein's Petition for Leave to Intervene (June 5, 2007), s*ee also* Attachment 6 to PLA-6076, Power Uprate Safety Analysis Report, at 6-12.
[37] LBP-07-10, slip op. at 26-27 & n. 21 (For example, Mr. Epstein was concerned that inability to gauge river water intake would threaten the standby liquid control system that uses borated water. But, as the Board pointed out, that system is separate from the intake system that feeds the cooling basin).

For that reason, the Board found that repairs to the system fall under the purview of SRBC, not the NRC.[38]

In the brief discussion of this concern in his appeal, Mr. Epstein has not demonstrated that the Board erred in making these findings. We agree with the Board that neither problems with the river water intake flow meters, nor PPL's failure to include this information in its EPU application, are material to this proceeding. Mr. Epstein has not shown how a slight constriction in the intake pipes could have a safety-significant impact, given the 25 million gallon ultimate heat sink available in case of an emergency. We also agree with the Board that this issue falls properly within SRBC's jurisdiction to determine what steps PPL must take to verify its water use, and that this matter is outside the scope of our EPU proceeding. We therefore reject Mr. Epstein's suggestion that NRC take on the task of inspecting the river water intake pipes at the SSES.

For the foregoing reasons and for the reasons discussed in the Board's opinion, we deny Mr. Epstein's appeal.

IT IS SO ORDERED.

For the Commission

/RA/

Annette L. Vietti-Cook
Secretary of the Commission

Dated at Rockville, Maryland,
this 5th day of October 2007

[38] *Id.* at 25.

October 2, 2007

The Honorable Christopher Shays
Ranking Member, Subcommittee on National
Security and Foreign Affairs
Committee on Oversight and Government Reform
United States House of Representatives
Washington, D.C. 20515

Dear Congressman Shays:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am providing you the NRC's position on the Government Accountability Office's (GAO) unclassified summary report, "Nuclear Security: DOE and NRC Have Different Security Requirements for Protecting Weapons-Grade Material from Terrorist Attacks" (GAO-07-1197R).

Before commenting on recommendations contained in GAO's report, I believe it is necessary to describe the NRC's actions following September 11, 2001, to supplement our Design Basis Threats (DBTs) for commercial nuclear power plants and Category I fuel cycle facilities. The NRC considers the DBTs to be the largest threat against which private sector facilities must be able to defend with high assurance. The DBTs are one component of the overall approach to the protection of public health and safety. In response to the September 11, 2001 terrorist attacks, the NRC supplemented its DBTs to provide additional details regarding specific adversary characteristics against which these facilities need to protect. As described in GAO's March 2006 report,[1] the NRC, in supplementing our DBTs, followed its, "... generally logical and well-defined process in which trained threat assessment staff made recommendations for changes based on an analysis of demonstrated terrorist capabilities." Based on this well-defined process, the NRC evaluated relevant threat assessment information and determined appropriate DBT adversary characteristics to ensure that nuclear power plants and Category I fuel cycle facilities provide adequate protection. The NRC is confident that the agency's process resulted in supplemented DBTs that continue to ensure that our primary mission is accomplished to both protect the public health and safety and common defense and security. The NRC reviews current and relevant threat assessment information on an ongoing basis to determine whether additional changes to the DBTs are necessary.

The NRC response to the recommendations contained in GAO's unclassified report is provided below.

Recommendation: The Department of Energy (DOE) and the NRC should develop a common DBT for DOE sites and NRC licensees that store and process Category I special nuclear material.

[1] GAO-06-388, Nuclear Power Plants: Efforts made to Upgrade Security, but the Nuclear Regulatory Commission's Design Basis Threat Process Should Be Improved.

While the NRC agrees with GAO that Category I special nuclear materials must be rigorously protected to ensure terrorists will not be able to use these materials in malevolent acts, as indicated in the report, DOE and the NRC do not agree with GAO that we should establish a common DBT for facilities that store and process Category I special nuclear material. There are many different forms of Category I special nuclear materials, each representing different levels of risk and associated attractiveness to adversaries. The NRC believes that it is more important to set protection levels that are appropriate for potential scenarios and associated consequences that involve the malevolent use of nuclear materials stored or handled at a given site. It must be noted that the types of materials, their attractiveness, and their quantities differ between DOE sites and NRC licensees. Given these differences and widely varying site characteristics, a range of protection strategies have evolved at both DOE and NRC-licensed facilities. Both agencies recognized that protection strategies may differ between the sites they oversee based on the type, form, purpose, and quantity of material at their sites. GAO's conclusion that NRC licensees and DOE sites should have similar DBTs oversimplifies the significant differences between these facilities. Of note, both agencies have maintained communication and have kept each other apprised of changes to their respective DBTs.

In another DBT-related issue, the GAO report implies that the 2003 Postulated Threat Document for Department of Defense (DoD) installations is its basis for concluding that the November 2005 DOE DBT is more appropriate for the protection of Category I nuclear materials. The 2003 Postulated Threat Document is a DoD product which does not represent the position of the Intelligence Community at large. The Postulated Threat Document states that, "... it should not be used as the sole consideration to dictate changes to specific security programs." Based on these facts, the NRC maintains that the 2003 Postulated Threat Document should not be used as the primary criterion for determining the appropriateness of the NRC DBT for commercial facilities.

Recommendation: The NRC should expedite its efforts to ensure that its licensees have the same legal authorities to acquire heavier weaponry and use deadly force as DOE sites currently have to protect such material.

The Energy Policy Act of 2005 provided the NRC with the Federal authority to permit the use of enhanced weapons at Category I and other facilities. The NRC had sought this enhanced authority prior to the September 11, 2001 terrorist attacks and appreciates the Congressional support received on this issue. The NRC continues to work with the Department of Justice to implement this authority. Given the advanced nature of the NRC rulemakings on security enhancements and the fact that both NRC-licensed Category I facilities have received increased authorities through their State governments, the NRC has chosen to incorporate this authority into those rulemakings.

The NRC agrees with GAO that clarification of the authority of security forces to use deadly force in the protection of Category I material could enhance their protective response. The NRC continues to explore potential avenues to clarify the use of deadly force by private security personnel.

Recommendation: DOE and NRC should cooperate in establishing computer modeling capabilities and force-on-force performance testing programs to better assess security preparedness and detect vulnerabilities.

The NRC supports GAO's conclusion that much can be gained by taking advantage of DOE experience in force-on-force exercise programs to enhance the already successful NRC program. The NRC maintains a cooperative working relationship with DOE and DoD regarding force-on-force best practices. Representatives of all three agencies have attended and reviewed one another's exercises within the past 12 months, and all have benefited from the resulting exchange of ideas. The NRC also agrees that vulnerability assessment modeling of the type utilized by DOE would benefit NRC licensees and may lead to more effective security strategies. The NRC intends to continue its cooperative relationships with DOE and DoD in this area, especially as they develop new and better analysis tools. The Commission has recognized the value of these capabilities and directed the NRC staff to explore the possibility of using tools such as the Joint Conflict and Tactical Simulation model in assessing the security of NRC-regulated facilities.

With regard to general sharing of security technology information, the NRC is a member of the Technical Support Working Group of the Counter Terrorism Technology Support Office. In addition, the NRC participates in DOE's National Nuclear Security Administration Security Systems Engineering Team, the DoD Physical Security Action Group, and the multi-agency Nuclear Security Interagency Technology Working Group. Each of these groups is focused on utilizing promising technologies to enhance the protection of nuclear material.

Again, thank you for the opportunity to comment on this report. The NRC looks forward to increased interagency cooperation to ensure the continued protection of the public health and safety.

Sincerely,

/RA/

Dale E. Klein

cc: Representative John F. Tierney

N[redacted] Announcement

O[redacted]ber 30, 2007 - IT/IM Resources: RES Training Seminars Available on DVD

The following Office of Nuclear Regulatory Research (RES) seminars are available on DVD for distribution to NRC staff:

1. State-of-the-Art Reactor Consequence Analysis (SOARCA) - Presented by Robert Prato on August 15, 2007

2. Advanced PRA Methods for Modeling Dynamic Systems - Presented by Prof. Tunc Aldemir, Prof. Rich Denning and Prof. Umit Catalyurek on September 7, 2007

3. Application of Lasers for Nondestructive Evaluation in Nuclear Reactors - Safety and Effectiveness for In-service Inspections - Presented by Iouri Prokofiev and Jeffery Hixon on September 14, 2007

To obtain an RES seminar available on DVD, please go to http://www.internal.nrc.gov/RES/res-seminars.html:
- Click on "Completed Seminars."
- In the Topic/Title column, click on the "[DVD]" link following the title of the seminar.
- Complete the Request for Seminar DVD form.
- Click on "Submit by Email."

Distribution: Headquarters, Regions

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

Announcement No. 121

Date: October 16, 2007

To: All NRC Employees

SUBJECT: REORGANIZATION OF THE OFFICE OF NUCLEAR REGULATORY RESEARCH

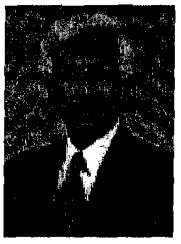
Effective October 1, 2007, the Office of Nuclear Regulatory Research (RES) has reorganized in order to more closely align with the organizational structures of our customer offices. RES now has three technical divisions: Division of Engineering, Division of Systems Analysis, and Division of Risk Analysis. The new organization allows RES to provide improved coordination and integration of activities, as well as better overall support to our customer offices.

I am pleased to announce the following managerial assignments:

Jennifer Uhle, Director,
Division of Engineering

Richard Croteau, Deputy Director
Division of Engineering

Farouk Eltawila, Director
Division of Systems Analysis



Sher Bahadur, Deputy Director
Division of Systems Analysis

Christiana Lui, Director
Division of Risk Analysis

John Monninger, Deputy Director
Division of Risk Analysis

Michael R. Johnson remains the Deputy Office Director and Mabel F. Lee remains the Director of Program Management, Policy Development and Analysis Staff.

An organization chart can be found at http://www.internal.nrc.gov/RES/REORG021906.pdf.

/RA/

Brian W. Sheron, Director
Office of Nuclear Regulatory Research

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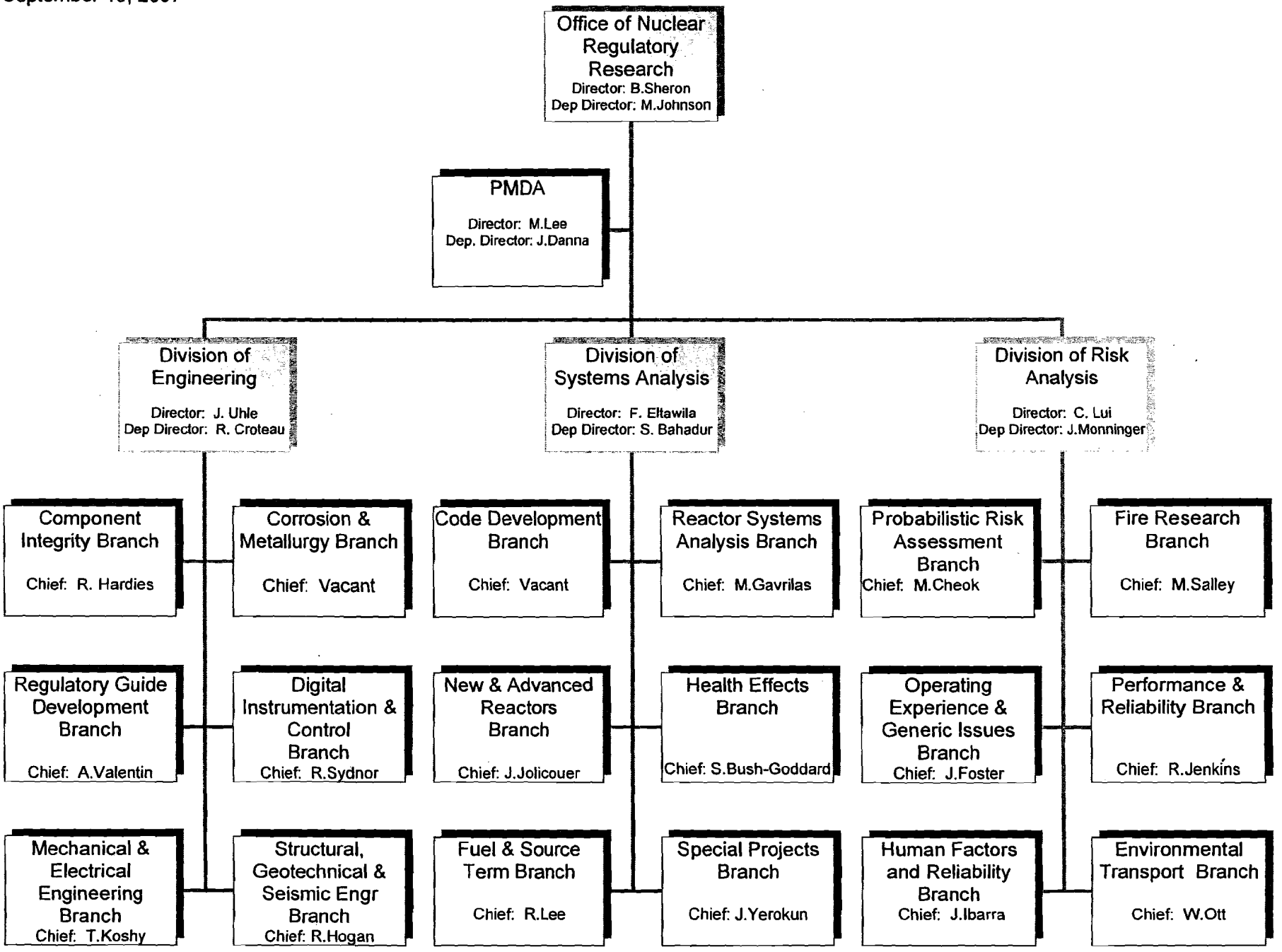
Office of Nuclear Regulatory Research
Director: B.Sheron
Dep Director: M.Johnson
PMDA
Director: M.Lee
Dep. Director: J.Danna
Division of Engineering
Director: J. Uhle
Dep Director: R. Croteau
Division of Systems Analysis
Director: F. Eltawila
Dep Director: S. Bahadur
Division of Risk Analysis
Director: C. Lui
Dep Director: J.Monninger
Component Integrity Branch
Chief: R. Hardies
Corrosion & Metallurgy Branch
Chief: Vacant
Code Development Branch
Chief: Vacant
Reactor Systems Analysis Branch
Chief: M.Gavrilas
Probabilistic Risk Assessment Branch
Chief: M.Cheok
Fire Research Branch
Chief: M.Salley
Regulatory Guide Development Branch
Chief: A.Valentin
Digital Instrumentation & Control Branch
Chief: R.Sydnor
New & Advanced Reactors Branch
Chief: J.Jolicouer
Health Effects Branch
Chief: S.Bush-Goddard
Operating Experience & Generic Issues Branch
Chief: J.Foster
Performance & Reliability Branch
Chief: R.Jenkins
Mechanical & Electrical Engineering Branch
Chief: T.Koshy
Structural, Geotechnical & Seismic Engr Branch
Chief: R.Hogan
Fuel & Source Term Branch
Chief: R.Lee
Special Projects Branch
Chief: J.Yerokun
Human Factors and Reliability Branch
Chief: J.Ibarra
Environmental Transport Branch
Chief: W.Ott

Materials Actions

R&M Engineering, Inc. (EA-07-180; 07-181)

On October 23, 2007, a Notice of Violation (NOV) and Proposed Imposition of Civil Penalty in the amount of $3,250 was issued for a Severity Level III violation of 10 CFR 30.34(i) involving the licensee's failure, on two instances, to maintain a minimum of two independent physical controls that formed tangible barriers to secure a portable gauge from unauthorized removal during a period when the portable gauge was not under the control and constant surveillance of the licensee. In the second instance, this resulted in the loss of the gauge into the public domain. Specifically, in the first instance, an authorized portable gauge user left the portable gauge unattended and unsecured in the bed of a company truck as he returned to the office to retrieve paperwork. In the second instance, the licensee failed to use two independent physical controls to secure a portable gauge after it fell out of a company vehicle onto a public highway and until it was retrieved and returned by a member of the public a few minutes later.

Alaska Industrial X-Ray, Inc. (EA-07-261)

On October 19, 2007, an Order Suspending Licensed Activities (Effective Immediately) was issued to Alaska Industrial X-Ray, Inc. (AIX) based on the NRC's determination that all AIX radiographers, including AIX's Radiation Safety Officer, and assistants, violated 10 CFR 34.41(a) by performing industrial radiographic operations at a temporary job site with only one qualified individual present during operations. The evidence the NRC relied on indicates that these activities have occurred on numerous occasions, for a period of up to three years. Because the NRC issued a Notice of Violation on April 25, 2001, for a willful violation of 10 CFR 34.41(a) at the same client facility location, serious concerns were raised regarding AIX's willingness to comply with the Commission's requirements and its ability to conduct licensed activities without undue risk to the public's health and safety, resulting in the issuance of this order suspending all radiographic operations authorized by AIX's license.

Individual Actions

Mark Sharp (IA-07-039)

On October 19, 2007, a Confirmatory Order (Effective Immediately) was issued as part of a settlement agreement confirming commitments reached during alternative dispute resolution (ADR) mediation. In this case, the NRC concluded that the individual deliberately falsified a steam generator blowdown log entry in order to cover up an error he had made. As part of the settlement agreement, the individual agreed to take a number of actions including: restricting his 10 CFR Part 55 related activities until certain specified actions were accomplished; submitting a letter to the NRC outlining why the NRC can have confidence in his future activities in the industry; and sharing his lessons learned with the industry through several venues.

Reactor Actions

Arizona Public Service Company (Palo Verde Nuclear Generating Station) EA-07-162

On October 19, 2007, a Confirmatory Order (Effective Immediately) was issued to Arizona Public Service Company (APS) to formalize commitments made as a result of a successful alternative dispute resolution (ADR) mediation session. The commitments were made by APS as part of a settlement agreement between APS and the NRC concerning the falsification, by a qualified senior reactor operator, at the Palo Verde Nuclear Generating Station (PVNGS), of a record related to a steam generator blowdown. As part of the settlement agreement, APS agreed to take a number of actions. In recognition of these actions, and those corrective actions already completed by APS, the NRC is satisfied that its concerns will be addressed.

Inside NRC

Volume 29 / Number 22 / October 29, 2007

NRC staff to change component inspection from biennial to triennial basis

NRC staff said it will be reducing the frequency of a newly implemented inspection that top agency officials have touted to lawmakers and the public as a significant improvement to the reactor oversight process, or ROP. Terrence Reis, NRC's chief of the reactor inspection branch, said at an October 18 meeting that the staff will conduct the component design bases inspection, or CDBI, on a triennial, rather than biennial, basis. But he said the scope of the inspection would not change, at least for now.

News of the change prompted David Lochbaum, director of the Union of Concerned Scientists' Nuclear Safety Project, to caution the staff that NRC should expect to take some heat for the proposal. "The agency sold Congress on this as the reason an independent safety assessment was not needed," he said.

The independent safety assessment, or ISA, was a one-time inspection conducted at the Maine Yankee station in 1996 and held up by some elected officials and members of the public as the gold standard for an independent evaluation of plant performance. Over the past few years, there have been calls for NRC to conduct ISAs at Vermont Yankee and Indian Point. NRC has repeatedly resisted. It has said lessons learned from the Maine Yankee ISA have been incorporated into the 7-yearold ROP and that the oversight process captures plant deficiencies through a combination of inspections and performance indicators.

NRC Chairman Dale Klein told a Senate oversight panel earlier this month that the ROP was "superior" to the Maine Yankee ISA and cited the CDBI as an "important" new procedure.

"For example, in 2006, the NRC staff, at the direction of the commission, significantly enhanced the way NRC reviews design issues," he said in his October 3 testimony. "This inspection procedure ensures that selected components are capable of performing their intended safety functions." The CDBI was developed as a way of monitoring selected risk-significant, low-design margin components and relatively high-risk operator actions that might impact risk-significant structures, systems and components. NRC says the inspection verifies that the initial design and subsequent modifications of components are capable of performing their intended safety functions.

"As plants age, their design bases may be difficult to determine and an important design feature may be altered or disabled during a modification," NRC inspection procedures said. So the agency carefully chooses a sampling of components for an evaluation.

NRC told lawmakers in February that the Maine Yankee ISA team had evaluated the high-pressure safety injection, service water and component cooling water systems, the offsite power capability, station batteries, backup emergency diesel generators and environmental qualification of components. The agency said all of these areas have components that could be reviewed in a CDBI. But it also emphasized, "The CDBI probes heavily into the engineering area to ensure compliance with the design and licensing basis, including review of calculations and design margin." The Maine Yankee ISA took place from July to October 1996 and involved a 25-member team, including three state representatives, six contractors, and NRC staff from areas other than the Office of Nuclear Reactor Regulation and NRC Region I, where the plant was located. The CDBI is a seven-week inspection — about half of which is done onsite — by a team of three engineering inspectors, one operations inspector, and two contractors. NRC says that like the Maine Yankee ISA, the CDBI inspection team "has not been significantly involved in the licensing and inspection of the facility" it is reviewing.

One NRC staffer said that reducing the frequency of the CDBIs would allow the agency to use the same teams for multiple inspections. He said the change will go into effect in January 2009.

In a paper it sent to the commissioners earlier this year, the staff said it had completed 37 CDBIs and planned to conduct 29 others. It also said it would be evaluating the scope and frequency of the inspections. But NRC's Reis said the staff has no plans to change the scope in the next round of CDBIs. He said the inspections are an "integral part" of the ROP but are not the only element of the program. He also said that staff believes reducing the frequency of the inspections will result in "higher quality" reviews.—*Jenny Weil, Washington*

NRC launches steering committee for fire protection issues

NRC's new fire protection steering committee held its first public meeting earlier this month, addressing a wide range of issues with industry representatives.

The members of the fire protection steering committee are John Grobe, associate director for engineering and safety systems in the Office of Nuclear Reactor Regulation, or NRR (chairman); Mark Cunningham, director of the division of risk assessment in NRR; Steven West, director of the division of reactor safety in NRC Region III; Christiana Lui, director of the division of risk analysis in the Office of Nuclear Regulatory Research; and Stewart Magruder, deputy director of the Office of Enforcement.

The committee's purpose, Grobe said in slides accompanying his presentation at the October 17 meeting at NRC headquarters, is to "facilitate predictable and clear implementation" of the National Fire Protection Association 805 standard, a voluntary, risk-informed alternative to current fire protection regulations; "facilitate resolution of key fire protection policy, regulatory, and technical issues; interface with industry on fire protection issues; ensure effective interoffice coordination; [and] interface with senior NRC managers."

Harry Barrett of NRR said at the meeting that 38 units at 25 sites "are actively transitioning" to NFPA 805, which will require those plants to develop complete fire probabilistic risk assessments, or PRAs. Grobe said that a "separate team" of NRC staffers will review licensee submittals for NFPA 805 to maintain "appropriate focus" and "not to distract from the routine licensing efforts" in other areas.

NRC staff plans two more observation visits to the NFPA 805 pilots, Harris and Oconee, in November and April, Barrett said. Staff will review these plants' fire PRAs in January and February, and the plants are expected to submit their license amendment requests to transition to NFPA 805 in May and June, he said.

Fire PRAs

Alexander Marion, executive director of nuclear operations and engineering at the Nuclear Energy Institute, noted that 20 units that do not currently plan to transition to NFPA 805 are also developing fire PRAs. Marion said there is a "growing sense of concern" in the industry that there is not yet available a fire PRA quality standard that has been endorsed by NRC. As a result, the industry "may not have all the necessary data we need" to develop satisfactory fire PRAs before the current enforcement discretion granted to some licensees expires, Marion said.

Grobe said there "shouldn't be any consideration of extension" of the period of enforcement discretion. Cunningham said that the schedules for issuance of the American Nuclear Society's fire PRA standard, and a combined ANS-American Society of Mechanical Engineers PRA quality standard, are "not clear." But he said NRC wants to provide a "public description" of its endorsement of whichever standard is issued first "as soon as possible," to be followed later by a "more formal endorsement." Raymond Gallucci, senior fire probabilistic safety assessment engineer at NRR, said it "would be nice" to have a fire PRA standard in place, but its absence should "not interfere in any way with the execution of full fire PRAs" by licensees. Grobe asked the industry representatives at the meeting why, some 10 years after the creation of NFPA 805, there are still not enough fire PRA experts available. Chris Lambert of Exelon said there has been a "shortage within the utilities of risk engineers for many years" and that it "takes time to mature an engineer." Jim Riley, director of engineering at NEI, said the

shortage of PRA experts is a "demand driven problem" because "risk applications are growing" in the industry. Marion said the industry's PRA leadership committee would discuss the issue at its November meetings.

Other issues

At the meeting, Marion provided an update on a methodology being developed by the industry to assess circuit failures that could jeopardize post-fire safe shutdown (INRC, 30 April, 9). He said NRC should issue interim guidance endorsing a new approach under which each power reactor licensee would "docket a letter" with the agency, saying either that it can demonstrate that its unit can achieve post-fire safe shutdown or identifying remaining issues and how they will be dispositioned. This "more straightforward" and "efficient" approach "puts the licensee on the record," and allows NRC to "focus" its fire protection inspections in the future, Marion said.

Grobe reiterated staff's position that fire tests have shown that multiple hot short circuits that could jeopardize safe shutdown are "not improbable," and said that incorporating risk assessments in the determination of compliance, as the industry proposes, may not be acceptable unless a licensee has transitioned to NFPA 805. However, "it's not a simple legal question," Grobe acknowledged (INRC, 9 July, 4).

Riley said that NRC staff has previously acknowledged that non-NFPA 805 plants may utilize risk-informed approaches to fire protection if it is "consistent with their current licensing basis." Marion said that "the practical reality" is some plants will want to do this.

Grobe said the issue needs to be resolved definitively, but said he viewed the use of risk assessments as "a component of compliance" with fire protection requirements to be inconsistent with current regulations and commission guidance. Daniel Frumkin, fire protection engineer at NRR, said that staff expects the final version of Nureg-1852, which provides criteria that licensees may use to demonstrate the feasibility and reliability of operator manual actions in response to fire, to be issued in October or November (INRC, 11 June, 13). Licensees are expected to bring their operator manual actions "back into compliance" as described in Regulatory Issue Summary 2006-10 by March 2009, he said.

The staff "intends to use Nureg-1852 for future licensing actions or exemptions related to the use of post-fire operator manual actions," but does not plan to apply the methodology retroactively to review operator manual actions that have been already been approved by NRC, Frumkin said. "From our perspective, this issue is resolved," and staff needs to know from industry if additional clarity is needed, Grobe said. Riley said the industry "may want to discuss some issues" on Nureg-1852 because it has not yet seen the final version.

Grobe announced at the meeting that Alex Klein was now chief of NRC's fire protection section, replacing Sunil Weerakkody, who is on a rotation with NRC's executive leadership program.

The next meeting of the steering committee will be in late November or early December. —*Steven Dolley, Washington*

Bringing Browns Ferry-1 back into the ROP fold negotiated

NRC staff and the Tennessee Valley Authority are debating how to fully integrate Browns Ferry-1 into the reactor oversight process, or ROP, after its 22-year operating hiatus. Following a five-year recovery project, the unit went critical May 22, synchronized to the grid on June 2, and reached full power on June 8. In mid-May, the agency told TVA that it expected Browns Ferry-1 would finish transitioning to the ROP once it began startup. The phased-transition to the ROP began in late 2004 when NRC said TVA was ready to monitor the occupational radiation safety, public radiation safety, emergency preparedness, and physical protection safety cornerstones.

But NRC said TVA would not be in a position to integrate the three remaining cornerstones – initiating events, mitigating systems and barrier integrity – until the unit restarted. In a July 30 letter, NRC told the federal utility that the "full transition of all Unit 1 cornerstones under the regulatory oversight of the ROP [was] effective upon startup of Unit 1." That meant that as of mid-May, all three units were "subject to the ROP inspection program and regulatory oversight." NRC said that until all data were being collected and reported, unit 1 would have some inspections above the baseline requirements to "compensate for the lack of valid Performance Indicator (PI) data." But the agency stressed that those additional inspections would only be an "interim substitute" until the PI data were developed. Some NRC staffers believe unit 1 is nearly ready to be completely engaged in the ROP, without any additional inspections, unless the reactor's performance warrants it.

Remaining cornerstones

At an October 18 meeting, James Andersen, chief of NRC's performance assessment branch, said it was time to start activating the remaining cornerstones. He said he believed the barrier integrity cornerstone should go "live," or be in use, now. The staff is trying to set up a meeting with TVA management to discuss the timing of the mitigating systems performance index, or MSPI, and the initiating events cornerstone should be put in place at the end of fourth-quarter 2007, he said.

Frederick Mashburn, TVA senior program manager of nuclear licensing, said TVA officials wanted to sit down and discuss with the staff each of the inputs for the MSPI. But he and other industry representatives strongly disagreed with the

staff's assessment on the initiating events cornerstone. Under that area of the ROP, the newest PI, which was implemented in July, tracks unplanned scrams with complications. Mashburn noted that data used to establish this threshold came from reactors that have been operating for some time. Browns Ferry-1, on the other hand, has been in a "shakedown period" of initial operations, he said. He said it didn't make sense to use this indicator until the data were "valid."

John Butler of the Nuclear Energy Institute argued that the unplanned scrams with complications PI wasn't valid after only two quarters. He said that would be a deviation from the guidance, which calls for tracking the total number of unplanned scrams in the past four quarters. Also debated was how many critical hours of operation would be required for tracking purposes. Butler said the reactor would have to have 2,400 critical hours of operation. But Andersen said unit 1 should have accrued more than 2,400 hours by the end of the fourth quarter.

Industry representatives argued that activating the PI now would mean Browns Ferry-1 would cross the greenwhite threshold, resulting in increased regulatory attention. The ROP has a four-color system, with inspections increasing as plant performance moves from green to white to yellow and red. The threshold to cross from green to white for the unplanned scrams with complications PI is two complicated scrams within a 12-month period. The reactor has had five scrams since startup in May. There are no yellow or red thresholds for this PI.

"Browns Ferry-1 has certainly scrammed more than TVA would have wanted," Mashburn said at the meeting. Andersen said the staff is planning for additional inspection even though the unit hasn't officially crossed the threshold. —*Jenny Weil, Washington*

Inside NRC

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Review on first COL application shows learning curve just beginning

NRC staffers said last week they were hitting some bumps in the initial review of the South Texas Project Nuclear Operating Co.'s application for a combined construction permit-operating license, or COL.

But STP officials said they expected snags in this trailblazing effort and that they would work with the staff to deliver whatever documentation was needed to get the technical review rolling. The application, a 200,000-page document submitted on a single DVD, was filed on September 24. But the staff did not start its "acceptance" assessment to determine whether there is all the information it needs for a fullblown review until the start of the new federal fiscal year, on October 1. The staff and STP officials met October 11 for the first public meeting since the application was filed – the beginning of more than a dozen others expected by the end of 2008. NRC staffers outlined several issues during the meeting, including a lack of supporting documents for at least two sections, outdated data for one section, missing figures for another and, in one instance, the absence of state emergency preparedness plans that were cross-referenced in the application. STP officials took the staff's feedback in stride. Greg Gibson, STP Nuclear Operating Co.'s manager of regulatory affairs, emphasized the sheer volume of the application, which includes 375 sections. "If we need to supplement the COL application, we will," he told the staff. But he said STP believes the application is sufficient for docketing.

Meantime, he said, the company is working on a revision and expects to submit it in early January. "We are the first [applicant], and there are going to be a lot of lessons learned," he said. "There are areas where we thought we hit the target, but we didn't. We're happy to augment our application however we can."

One lesson the staff already discovered is that the DVD was too large to upload to its electronic library Adams. The information had to be broken up into files of about 50 megabytes. The agency released the document October 11. In a description of its plans, STP projects it will take 108 months to complete the COL application review and build the two proposed General Electric ABWRs. The schedule estimate is per unit.

It said it expects to cover the operating costs of the proposed STP-3 and -4 for the first five years largely through the sale of electricity from power purchase agreements. It expects 70% of the units' generating capacity to be under contract and the remaining 30% to be sold on the open market. It said that NRG Energy,

the majority stakeholder in STP Nuclear Operating Co., already has "negotiated three term letter agreements with purchasers." The two units would be built on the site of the existing two-unit station, in Matagorda County, Texas, about 100 miles south of Houston.

The project has been driven by NRG, which owns 44% of the twin 1,333-MW PWRs and, as NRG President/CEO David Crane has said, also provides the "strategic [direction], funding and business acumen" for the operations. It is still seeking partners for the two new units but expects the city of San Antonio, a 40% owner of units 1 and 2, to sign on with STP endeavor, and has said others have expressed an interest. Crane said it is using the same operating company model for building the new units because the company has the proven "technical horsepower" for the project. NRG has made clear that it does not intend for the COL application review to be a licensing exercise, unlike NuStart Energy's soon-to-be filed Bellefonte COL request. NuStart, a consortium of 10 electric companies and two vendors, chose the Tennessee Valley Authority site in Scottsboro, Alabama, where two partially finished PWRs were mothballed in 1988, as the lead application for the Westinghouse AP1000. But TVA has indicated it has no near-term plans to move beyond licensing, which had been a source of frustration to the late NRC Commissioner Edward McGaffigan, who wanted the industry to put forward a lead application for a project that was intended to be more than theoretical.

NRG chose the ABWR, rather than a newer design, because four of the reactors have been built in Japan, and two units are under construction in Taiwan. Although the design was certified by NRC a decade ago, NRG wants to update the control room to a digital system. Trying to adhere as closely to the original ABWR design control document while modernizing the technology has been a challenge for STP. It expects the digital instrumentation and control room to be modeled after the Lungmen design in Taiwan.

"We are not starting from scratch," Tim Hurst, principal I&C engineer with STP, told NRC staff at last week's meeting. "We want to make this an evolution from what's already been built."—*Jenny Weil, Washington*

George Mason University professor is favored by Reid to join NRC

Allison Macfarlane, a George Mason University professor who has expressed skepticism about Yucca Mountain, Nevada being an appropriate place to dispose of the nation's spent fuel, is said to be Senate Majority Leader Harry Reid's pick for the latest vacancy at the NRC.

An associate professor of environmental science and policy at the Virginia university, Macfarlane has built a reputation as being an expert on nuclear weapons and nuclear fuel cycle issues. She has testified before congressional panels on the viability of the planned Nevada repository site and made rounds as

an author and lecturer on the subject. Macfarlane has spent most of her career at academic institutions, earning a PhD in geology from the Massachusetts Institute of Technology and later becoming a research associate at MIT's Security Studies Program. In between, she was an associate of the Belfer Center for Science and International Affairs' Managing the Atom Project at Harvard University and taught at Georgia Tech. Before that, she held fellowships at the Bunting Institute at Radcliffe College, the Center for International Security and Arms Control at Stanford University and at the Belfer Center.

She is on the board of directors for the Bulletin of Atomic Scientists, according to her biography, and has served on at least two National Academy of Sciences panels, most recently on a committee to review DOE's nuclear energy and research and development program. But what cemented her association to the Yucca Mountain issue was a book she co-edited, called "Uncertainty Underground: Yucca Mountain and the Nation's High-Level Nuclear Waste," which was released in May 2006. A synopsis of the book says experts from the geosciences, industry and government provide insight on uncertainties on various aspects of the repository system. It also says the book "does not pass judgment on the suitability of the site."

But Macfarlane herself has openly questioned whether Yucca Mountain is the right place to put spent fuel for hundreds of thousands of years. In testimony before a Senate panel last year, Macfarlane laid out what she believed were troubling geological characteristics of the site. She said the region is seismically and volcanically active, and questioned whether pathways in the fault zones and fractures in the rock had been adequately analyzed.

Reid, a longtime opponent of moving spent fuel to his home state, is said to have sent a letter supporting Macfarlane to the White House shortly after NRC commissioner Edward McGaffigan died September 2. Reid's office declined to comment.

Before that seat opened, there had already been one vacancy on the NRC. President George W. Bush nominated in late April Kristine Svinicki, a staffer for the Republican members of the Senate Armed Committee, to succeed Jeffrey Merrifield when his term expired in late June. Despite bipartisan backing for Svinicki, her nomination has languished because Reid and Senate Environment and Public Works Committee Chairman Barbara Boxer said they want Svinicki's nomination to be paired with NRC Commissioner Gregory Jaczko, whose term expires June 30, 2008.

Reid has been pressing for the White House to nominate Jaczko for a full, five-year term. Jaczko joined the agency in January 2005, right in the middle of the term for the seat to which he was assigned. So far, Svinicki has been the only NRC commissioner nominee from the White House.

Several industry officials said they believe Macfarlane is not qualified to serve because of her established views on Yucca Mountain, which is expected to be a major issue before the commission once the repository license review and hearing get under way, assurning DOE submits its application next June, as it is targeting. One industry source called her "technically shallow" and lacking the ability to address issues on a broad scope. However, she is well respected on Capitol Hill, said a congressional staffer, who called her technically and politically savvy.—*Jenny Weil, Washington*

NEI to propose alternative on safety-security interface

A draft regulatory guide on the interface of safety and security issues at NRC-licensed facilities is "severely lacking," and the industry is developing alternative guidance, the Nuclear Energy Institute said last month.

Douglas Walters, senior director of security at NEI, said in his September 25 comments on behalf of the industry that the draft guide, DG-5021, is "severely lacking in its articulation of existing plant programs and how they satisfy the intent of the safety/security assessment" contained in the proposed Part 73 security rule.

In an April 8, 2004 staff requirements memorandum, the commission welcomed the staff's creation of a joint working group with members from the Office of Nuclear Reactor Regulation and the Office of Nuclear Security and Incident Response "to review the safety-security interface. The working group should review NRR and NSIR processes, including license amendments and the 10 CFR 50.59 process, to ensure safety and security implications are appropriately addressed."

The finalization of a proposed rule implementing a comprehensive overhaul of NRC's security regulations, once scheduled to be completed this year, has been postponed until 2008, and the staff is now reviewing and resolving hundreds of public comments (INRC, 17 Sept., 14). Issued for public comment in July, DG-5021 says that the proposed rule would add a new Section 73.58 to NRC's security regulations which "requires licensees to assess and manage the potential for adverse effects between safety and security, including the site emergency plan, before implementing changes to plant configurations, facility conditions, or security."

When such "potential adverse interactions are identified, licensees must communicate them to the appropriate licensee personnel and take corrective or compensatory actions to maintain safety and security in accordance with applicable regulations, orders, license conditions, and requirements for nuclear operations and the protection of nuclear material," the draft regulatory guide said.

To meet these requirements, "licensees should establish and implement controls necessary to inform and coordinate safety and security activities ... to minimize the potential for unintended adverse impact on safety or security performances," DG-5021 said. If there is potential for an adverse effect, "licensees should take the appropriate compensatory or mitigating actions along with the implementation of the change," the draft reg guide said. "If the conclusion of the assessment is that the implementation would have an adverse effect on either safety or security, and no appropriate compensatory or mitigating action is possible, then it is the intent [of the proposed rule] that the proposed change should not be implemented, or it should be deferred until such a time when appropriate compensatory or mitigating actions are identified and can be implemented without degrading safety and security requirements," the draft reg guide said.

In NEI's comments, Walters said that the proposed rule and DG-5021 both state that "the NRC believes existing programs are in place that will satisfy the requirements" in the proposed rule, but NEI does not believe the draft reg guide "goes far enough in defining those programs such that it is clear how they assess changes for safety/security impacts."

Also, Walters said, "the guidance relies heavily on examples. An extrapolation of these examples will lead licensees to create programs much more encompassing and onerous than that which the staff publicly states is intended." As an "unintended consequence," he said, "confusion" will arise in inspection and enforcement actions "over what the examples say versus what was intended."

As a result, the industry is developing its own guidance "to capitalize on existing processes and controls already in place at our sites," because "we believe we are in a better position to assemble the necessary cross section of individuals who have the day-to-day experience with the existing programs," Walters said.

NEI expects to have the guidance completed in early January and will submit it to NRC for endorsement "as an alternative approach to satisfying the requirements" of the proposed rule, Walters said.

NEI also submitted numerous comments on specific elements of the draft reg guide. One of the comments was that language in DG-5021 "appears to suggest a new review process that is very comprehensive and one that would place a substantial administrative burden on plant management and plant security management. The intent of what is stated in the proposed language extends well beyond anything the licensees are currently doing in respect to reviewing the impact of security on safety and vice versa safety on security. Is this NRC's intent?" NRC said in a July 24 Federal Register notice that "the approach and examples described in [DG-5021] would provide reasonable assurance of adequate protection for the interface of safety and security, but are not intended to be all-inclusive, and licensees may ernploy alternative methods for implementing NRC regulations." Public comments "would be most helpful if

received by September 25, 2007," but "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," NRC said.

Timothy Reed of NRC's Office of Nuclear Reactor Regulation said last week that the proposed security rule, including the proposed requirements regarding the safety/security interface, are currently scheduled to be sent to the Executive Director for Operations for commission review in September 2008. Peter Lee of the Office of Nuclear Regulatory Research told Platts that the staff is reviewing comments received on DG-5021 and revising the draft reg guide, but the guide will not be issued unless and until the proposed rule is finalized.—*Steven Dolley, Washington*

Industry concerned MSPI results will lead to ROP double counting

A dispute that has been simmering between the industry and NRC staff on the newest performance indicator, the mitigating systems performance index, or MSPI, has been kicked up to senior agency management.

The disagreement involves the issue of "double counting," that is, whether a performance indicator, or PI, and inspection finding resulting from the same failure or event count against the licensee in the reactor oversight process, or ROP.

The Nuclear Energy Institute says double counting has occurred at one plant and is concerned the situation could be repeated at others. In a September 24 letter, released in NRC's electronic library Adams October 8, NEI's Anthony Pietrangelo said the staff should not cite the plant twice for the same issue. That is particularly true of the MSPI, which is risk-informed and has "more in common with riskinformed Significan[ce] Determination Process (SDP) results than any other indicator," Pietrangelo said.

Pietrangelo, NEI vice president of regulatory affairs, pointed to an NRC response in the agency's latest external survey on the ROP. The response notes that "it has been a basic tenet to not double count events/findings in the Action Matrix, when there are both a PI threshold crossing and a corresponding inspection finding." The response further states that the "greater significance of the two inputs would be the input used for assessment in the Action Matrix." NRC does say there could be deviations, though they are expected to be "rare." The action matrix considers both PI inputs and inspection findings to determine the level of NRC attention at each plant. NRC uses the SDP to determine the risk significance of inspection findings.

The NRC response said there could be instances where an MSPI input and inspection finding on the same system or failure will each be counted "because

the processes are fundamentally different in concept, thus have different meanings and each should stand on their own merit."

Pietrangelo said in his letter, addressed to NRC Office of Nuclear Reactor Regulation Director James Dyer, that the industry considers that view to be "inconsistent" with its general approach of not double counting in the ROP. In particular, he said, NRC is considering whether to double count a failure that was "common to both the white performance indicator result and a white SDP finding" at Dominion's Kewaunee.

White indicators and findings have a low to moderate safety significance in the four-color ROP scheme. Green is the lowest category, and above that, in increasing safety significance, are white, yellow and red. Two white inputs in a single cornerstone would move a plant into a higher level of NRC oversight.

Dominion appealed the staff's determination on the unavailability of an emergency diesel generator at Kewaunee last summer. The appeal of the staff's interpretation of MSPI guidance, which it said would turn the indicator white, was heard in early August by Elmo Collins, then NRC's director of the division of inspection and regional support (INRC, 17 Sept., 6). Collins has since become the Region IV adrninistrator. The new division director, Frederick Brown, has not yet issued a decision.—*Jenny Weil, Washington*

ACNW&M urges staff to eliminate unnecessary regulatory guides

Members of the NRC's Advisory Committee on Nuclear Waste and Materials urged NRC staff last month to eliminate regulatory guides when possible during its comprehensive effort to review and update the agency's reg guides. But NRC staff said that eliminating existing reg guides may not be easy.

Staff briefed the committee on the status of its effort to review the agency's reg guides, some of which date back to the 1970s. In all, about 500 guides need to be reviewed and dispositioned in some way, said Andrea Valentin of NRC's Office of Nuclear Regulatory Research, or RES. The first batch was updated prior to March 2007 to support new reactor licensing activities. NRC staff divided the remaining reg guides into three additional groups, each with a different target date for completion, officials told the committee September 19. The next group of reg guides are to be completed by Decernber 2008. Those in the third phase, which require more time for technical development, are to be completed by December 2009. The staff has added a fourth phase for guides that cannot be updated in that timeframe, and hopes to complete those remaining guides by December 2010.

But in some cases, Valentin said, the allotted timeframes do not allow staff to address everything that needs updating. She cited the example of the Gaseous and Liquid Effluent code, one of the technical bases for Reg Guide 1.112 on

calculating radioactive material releases from LWRs that was updated last March. She noted ACNW&M had urged the staff to update the outdated code, but said that could not be done by the March 2007 target date. In this case, and others, she said, there remain issues in the guide that still require the staff's attention. She added that the updating process "doesn't just quit" when this round is finished "because there will always be new standards."

Valentine said the staff has identified 35 to 40 reg guides that could be withdrawn entirely, and is preparing a Federal Register notice to take public comment on their proposed withdrawal.

The committee, which is preparing a letter to NRC commissioners on the reg guide update project, also reviewed the existing guides for technical content and currency, committee Chairman Michael Ryan told the staff. Noting the enormity of the staff's task, he said a lot of guides he looked at refer to technology that is out-of-date. He cited the example of an occupational radiation dose assessment for LWRs published in 1979 that appears to require manual entry of slide rule calculations. Others refer to standards that are more than 15 years old. He also asked whether, if a sufficient industry standard exists, NRC would even need to publish a reg guide.

Committee member William Hinze suggested some reg guides should be withdrawn altogether, since "modifying them is just going to confuse things." Vice Chairman Allen Croff suggested some closely-related guides could be consolidated, something that could prevent consistency problems in the future. He further pointed out that a number of older reg guides specify how to design a specific component of a reprocessing plant, noting NRC might not want to "be in the business of trying to specify how to design" facilities. Sher Bahadur, deputy director for radiation protection, environmental risk and waste management in RES, pointed out that some reg guides form the basis of license conditions or could be part of NRC inspection procedures. Still, he said the committee's comments would be incorporated into the staff's review process.—*Maureen Conley, Washington*

Rule on plane crash assessment out for 75-day comment period

NRC published October 3 a proposed rule requiring reactor designers and license applicants to assess whether the design features of a new nuclear power plant could blunt or mitigate the impact of a large commercial aircraft if it struck the facility.

The rule, posted in the Federal Register, requests that all public comments be submitted by December 17. The aircraft crash would be considered a beyond-designbasis event. But the intent of the rule is to determine what additional features of a plant could deter the effects of the blow from the plane, with as little reliance as possible on operator actions. Applicants would have to look at core

cooling capability, containment integrity and spent fuel pool integrity. NRC said the rule is aimed at making new reactors "more inherently robust" by having a level of protection that goes beyond the existing adequate protection requirements that the current US fleet must meet.

The existing fleet of reactors and applicants planning to use the four NRC-approved design certifications would not need to meet the aircraft impact rule, although the agency said it would encourage a "voluntary enhancement" of the design.

Commissioner Gregory Jaczko, whose internal proposal (Comgbj-07-01) spurred the commission to move forward with a rulemaking on aircraft crash impact assessments for future reactors, said he believes the final rule needs to contain clear criteria for determining whether applicants are in compliance with the intent of the regulation. "We need to be clear in our regulations about what it means to be successful here, and the rule out lacks that," he told Platts October 11. "That's really the weakness in the rule, but I think that's something we can change as we go forward. I hope the comments will show that we need clear-cut criteria."

He said there needs to be a straightforward approach for measuring the acceptability of the aircraft analysis, such as Commissioner Peter Lyons' suggestion of tying acceptance criteria to the 10 CFR Part 100 site requirements for a whole body radiation dose limit of 25 rem at the site boundary. Lyons alternately has suggested that the analysis could demonstrate the core remains cooled or that the containment remains intact and spent fuel cooling is maintained.

NRC estimates that there would be a one-time cost of about $420,000 for an applicant, including the assessment preparation and review expenses.—*Jenny Weil, Washington*

PTS rule released for comment

NRC is seeking comments on a proposed rule to update reactor vessel fracture toughness requirements for PWRs, the agency said in an October 3 Federal Register notice. The proposed rule would provide new requirements to protect against pressurized thermal shock events "based on updated analysis methods," NRC said. The newer methods are "desirable because the existing requirements are based on unnecessarily conservative probabilistic fracture mechanics analyses," NRC said. "These new requirements would be voluntarily utilized by any PWR licensee as an alternative to complying with the existing requirements," NRC said. Comments may be submitted until December 17 by e-mail to secy@nrc.gov.

Inside NRC

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STP first company to step forward in decades seeking new reactor license

Eighteen years after NRC adopted a more streamlined licensing process, the first new plant application has been submitted for the agency's review. The South Texas Project Nuclear Operating Co. filed September 24 a combined construction permit-operating license, or COL, application, seeking approval to build two 1,350-MW ABWRs at the company's existing plant site near Bay City, Texas. The filing was the first full new plant license application in about 29 years. UniStar Nuclear submitted a partial COL application in mid-July, but the agency has not yet decided whether it will accept it for review.

Meantime, the NRC Office of New Reactors, or NRO, staff will begin October 1 its acceptance review of the South Texas Project COL application to determine whether it is complete and technically sufficient for a more detailed review. The NRC recently extended the period for making a determination on the acceptability of docketing an application from 30 days to 60 days. The agency said that during the expanded, initial assessment, the staff will develop a customized review schedule.

While STP's filing last week was hailed as the kickoff for an expected revival of US nuclear plant construction, NRG Energy President and CEO David Crane said he believes a more important milestone will be when NRC makes a decision on whether a formal review can begin.

"The big deal is getting the application docketed," Crane told financial analysts September 26 at the Merrill Lynch Global Power and Gas Leaders Conference in New York. That decision is expected around late November or early December, he said. "That's when we'll have the first glass of Boone's Farm" wine, he joked.

NRG owns a 44% majority stake in the existing two STP units and plans to hold a similar interest in the future units 3 and 4. It has not yet announced its other partners but has said its current co-owners — the city of San Antonio (40%) and city of Austin (16%) — are considering whether to participate in the estimated $5.5 billion expansion project. Now that the application has been submitted, Crane said, "a lot of the burden shifts to the NRC." The application filing struck a jubilant chord in the industry and among lawmakers who have long anticipated a second wave of reactor building. Republican Senator Pete Domenici of New Mexico organized a news conference September 25 in Washington, DC,

attended by six other lawmakers, Deputy Energy Secretary Clay Sell, and a local elected official from Matagorda County, which is home to the two existing STP units.

Domenici, who chaired the Senate Energy and Natural Resources Committee and Energy and Water Development Appropriations Subcommittee when the Republicans were in power, received an extended ovation from industry officials and congressional staffers as he accepted a black leatherbound binder containing two DVDs of STP's COL application. "Is this it?" he said, expressing amazement at the lack of heft for such an undertaking.

NRG's Crane responded that the DVDs were a "modern age" equivalent of a 20,000-page document. However, the entire document is really contained on one DVD, because the second DVD is the public version, with the confidential and business sensitive information removed. Also expressing support for the STP project at last week's news conference were Senators James Inhofe, an Oklahoma Republican; Kay Bailey Hutchinson, a Texas Republican; George Voinovich, an Ohio Republican; Tom Carper, a Delaware Democrat; Mary Landrieu, a Louisiana Democrat; and Representative Charles Gonzalez, a Texas Democrat. DOE's Sell and Matagorda County Judge Nate McDonald said they, too, embraced the proposed new units. The judge is an elected official and serves as something akin to a commissioner in the Texas county he represents.

NRC's role

No one from the NRC attended the news conference, and NRC Chairman Dale Klein told NRO staffers the following day that the agency's absence was deliberate. He said NRC does not have a promotional role in the commercial nuclear industry and shouldn't be perceived as such. While NRC must stay focused on its mission of protecting public health and safety, it also has an obligation to do its job in a timely manner, he said.

He emphasized the need for staffers who are reviewing new plant license applications to elevate issues they find — particularly if they are generic to a review — to their supervisor. "Don't save them," he said. Klein said he believed the agency staff was ready to take on the task of processing the crush of applications expected. "Thank you for your excellent work I know you're going to do," he said.

Following up on Klein's message, Mohammed Shuaibi, chief of the ESBWR/ABWR projects, said the agency has been readying all of the tools it needs for the reviews. He said at the September 26 all-hands NRO meeting that the regulatory guide and standard review plans, or SRPs, have been updated and are available for use. But he also noted that this was the first time the staff would be relying on these documents and that there might be questions raised along the way.

Also being used for the first time is a sophisticated computer program, called the Enterprise Project Management, or EPM, which will help the staff manage a multitude of tasks involved in a license review. EPM has the applicable regulatory guide, SRPs and other office instructions and materials loaded into it for quick access. Shuaibi said it took the STP team 15 months and 220,000 staff-hours to prepare the COL application. For its part, NRC expects an estimated 130 people will work on the STP application and projects it will take 100,000 staff-hours to complete the review. The staff has scheduled a meeting October 11 with STP officials at NRC headquarters to discuss the format and content of the company's COL application.

First mover

Crane said his company has tried to minimize construction and financial risks for the project. He dismissed arguments that a merchant project, developed by a single nuclear asset player, could be accomplished. " I know there is a conventional wisdom within the nuclear world that fleet operations is the way to success" in the nuclear business, he told analysts last week. But, he said, STP has "a performance record [and] a cost record that are as good if not better than other fleet operators in the country." He also addressed another frequently raised issue. "A lot has been made of the fact that NRG is not itself a nuclear operating company," he said. "But in fact, we make no claim to being a nuclear operating company."

Taking on the naysayers, Crane said he believed building a nuclear power plant in a competitive market was not only possible, but made more sense from a business perspective than building one in a traditional regulated environment. He said "classic project financing" techniques are designed to put most of the risk on individuals that are "best able to bear it," rather than on ratepayers.

"I actually think a merchant plant is what's going to make it happen in this country, from the likes of Constellation and ourselves," Crane said.

Constellation, through its joint venture with Areva in UniStar Nuclear, also is considering building a merchant nuclear plant. "As a merchant, we have to be careful," Mayo Shattuck, Constellation Energy's chairman, president, and CEO, told analysts at the Merrill Lynch conference. "But also as a merchant, the return is at a much higher level than what would be received under a regulated regime." UniStar's first COL submittal will be for an EPR at Constellation's Calvert Cliffs station in Maryland. Although it cannot rely on a guaranteed rate of return from consumers if it builds another plant onsite, Constellation has already received a commitment from local county officials for $300 million worth of tax incentives, he said.

Crane says NRG believes that building on its existing 12,222-acre site in Texas has a "$500 million advantage" because it has an "enormous footprint," a 7,000-acre cooling pond, access to barge and rail, an existing transmission system, and a community that supports new units.

As a "first mover," NRG plans to take advantage of financial incentives provided in the 2005 Energy Policy Act for the initial few plants constructed, including production tax credits, loan guarantees and federal risk insurance for licensing delays. Crane said his company also will seek funding from the Japanese government, since it is working with Japanese vendors, including Toshiba and GE-Hitachi Nuclear Energy.

Crane said he believes NRC's estimated 42-month COL application review could be shortened. He said it might be possible to accelerate the approval process, pushing the completion from late 2010 to early 2010. The company has plans to bring STP-3 online in 2014, and for unit 4 to follow in 2015. But as a first step, he called the filing of the COL application a "watershed" event.

According to the Nuclear Energy Institute, Harris was the last plant to apply for a license. A construction permit for the plant was submitted in September 1971, and it received a construction permit from the NRC in January 1978. NRC's original plant licensing regulation had a two-step process — first the issuance of a construction permit, then an operating license.

The industry considers it to be the last plant ordered in the US, since a construction permit would have finalized the order. Harris received its full operating license in May 1987. *—Jenny Weil, Washington*

TVA approves plan to submit COL for two AP1000s at Bellefonte

The Tennessee Valley Authority's board of directors approved the submittal of a combined construction permitoperating license, or COL, application to NRC for two Westinghouse AP1000s at TVA's unfinished Bellefonte site in Alabama.

TVA is a member of the NuStart consortium, comprised of 10 electric companies and two vendors, which is developing the COL application for Bellefonte. The application is scheduled to be submitted to NRC this fall, with a license decision expected in 2011, TVA's Ashok Bhatnagar said at the board meeting. If a license is granted, TVA has several options, including doing nothing, he said. However, TVA could also decide to construct the units, either alone or with other companies, or it could sell the license, said Bhatnagar, senior vice president of nuclear generation development and construction.

If TVA does pursue building units or selling the license, it would have to repay the consortium members for what they have invested, he said. The license is expected to cost about $50 million, but the consortium members' expense is

shared 50-50 with DOE under a program aimed at demonstrating that NRC's new plant licensing process works.

Bellefonte-1 is about 88% complete, and unit 2 is about 58% finished. Each unit was to have been a 1,263-MW Babcock & Wilcox PWR. Units 1 and 2 have been in deferred status since 1988 and 1985, respectively. Several years ago, TVA looked at converting Bellefonte to a fossil-fuel fired plant.

Bellefonte is the so-called reference AP1000 plant, meaning its COL application to NRC will be the first for that design. But at a briefing of NRC commissioners in August, Commissioner Edward McGaffigan questioned whether the Bellefonte plant should be the lead application. McGaffigan suggested that Southern Nuclear Operating Co.'s Vogtle would be better suited to take the lead as the AP1000 reference plant. "It's certainly not Bellefonte because ... I think there's nobody who's going to build that," he said. McGaffigan died September 2.

TVA is seeking to meet growth in demand in its service area by adding new generating capacity and implementing energy efficiency measures. TVA brought Browns Ferry-1 in Alabama online earlier this year after a shutdown that lasted more than 22 years, which includes its five-year restart effort. In August, TVA announced plans to complete Watts Bar-2 in Tennessee and have it supplying power in 2013. At its meeting last week, TVA's board approved a fiscal 2008 budget that includes $1 billion for capital spending for new generation. Of that amount, $317 million is for beginning construction at Watts Bar-2, which was about 60% finished when TVA deferred construction in 1985 as it scaled back its nuclear program. —*Tom Harrison, Washington*

Klein offers US framework as basis for next stage of global licensing

NRC Chairman Dale Klein proposed this month that regulators from nuclear plant vendor countries begin collaboration to "harmonize" safety standards for advanced Generation IV reactors and associated fuel facilities to avoid the national disparities that impede full harmonization of requirements applying to today's LWR designs. In an address last month to the IAEA's Scientific Forum, Klein suggested that the "starting point" for the international standards be NRC's own proposed "technology-neutral" framework for licensing Gen IV reactor designs, issued last year, which takes a risk-informed, performance-based approach.

The initiative, Klein said September 19 in Vienna, would "take MDEP to a new level," to develop "multinational regulatory standards that would delineate the regulatory design requirements for innovative reactors and other fuel cycle facilities." He later confirmed to Platts that he was proposing the launch of Stage 3 of the Multinational Design Evaluation Program, or MDEP, under which regulators from 10 countries are seeking convergence on requirements for Generation III LWR designs. Stage 1 of MDEP involves only three regulatory

bodies — from the US, France and Finland — and is centered on the latter two sharing information about licensing Areva's EPR design with NRC. Stage 2, launched last year, adds seven participants to the original three: Japan, South Korea, China, Russia, the UK, Canada and South Africa (INRC, 10 July '06, 1). It aims at convergence of international practice on several levels, from codes and standards up to safety goals, for several Gen III reactor designs.

At the IAEA forum, and in a later interview, Klein said the NRC did not intend to "impose US standards on the world." Rather, he said, NRC thinks it is important that countries that have been developing new nuclear technology "for at least the last two decades" feed their experience into an international system of standards and requirements. Countries such as France, Japan and Russia have built and operated sodium-cooled fast breeder reactors, and France, among others, is working on a gas-cooled fast reactor design. The DOE-inspired Generation IV International Forum is coordinating research and development of six advanced reactor systems, five of them fast reactors and the other a very-high-temperature gas-cooled reactor.

The MDEP Stage 3 work should start now, as regulatory approaches to Gen IV reactors are still embryonic and thus can be more easily harmonized, Klein said.

Late last year, Klein indicated that because of its heavy near-term workload, NRC would likely not continue the proposed rulemaking for a technology-neutral licensing framework — meant to become the technical basis for a new rule, 10 CFR Part 53 — unless the agency receives more funding as well as some direction from DOE, which is responsible for developing Gen IV reactors in the US (INRC, 11 Dec. '06, 1). The NRC commissioners formally agreed last month to defer a rulemaking on developing a risk-informed and performance- based reactor licensing strategy but gave staff the go-ahead in a September 10 directive to publish the technology- neutral framework it had prepared.

Klein told the Vienna forum that NRC's draft framework represents a good basis for international harmonization "since it sets forth a comprehensive and rational set of principles that we can all use in licensing and regulating nuclear power plants."

Klein said having standardized designs for new products worldwide was desirable because "there will only be five reactor vendors selling reactors worldwide in the next 15 to 20 years, and it will be more difficult for vendors, regulators and operators if everything is different" from one country to the next.

In the interview, Klein said that NRC, for its part, needs "a consistent framework so we don't have a Part 52 for Gen III+, a Part 52.5 for [gas-cooled reactors], and a Part 52.75 for [liquid metal reactors]." Work so far on MDEP Stage 2 has shown that while designs, codes and quality assurance programs are similar among participating MDEP regulators, regulatory practices still differ significantly

(INRC, 28 May, 13). Klein acknowledged that even starting from a more basic level on Gen IV designs, it is unlikely that regulators will have exactly the same requirements worldwide. "There are going to be cultural differences," he said, "but the safety margins should be the same in the US, France and China."

Klein said that all the MDEP regulators "are supportive of the concept" of Stage 3 and that he expected the discussions to "branch out" from existing MDEP groups. Gary Holahan, deputy director of NRC's Office of New Reactors, chairs the MDEP Steering Technical Committee that has been analyzing differences among MDEP countries' regulatory requirements, programs and practices. A higher-level MDEP Policy Group will review that technical analysis, as well as the work of a second technical working group on component manufacture oversight, and set new MDEP goals next spring.

French regulatory chief Andre-Claude Lacoste said earlier this year that the technical analysis had shown that NRC's risk-informed and performance-based approach is not as different from the French approach as had been thought. Klein said, however, that in trying to reach standardized regulatory requirements, "the devil is in the details." He said the regulators would work out those details within MDEP as well as through the International Nuclear Regulators Association, a club of top regulators from the world's major nuclear power countries.—*Ann MacLachlan, Vienna*

Voluntary NEI guidance establishes treatment for heavy load lifts

NRC is embracing voluntary guidance the Nuclear Energy Institute proposed last month to address the agency's ongoing concerns regarding the interpretation and implementation of regulatory guidance associated with heavy load lifts. The initiative, which also includes an NEI task force to assist industry in implementing the guidance, arose out of several weeks of discussions between NEI and NRC regarding a lack of consistency in the licensing bases across the industry. A heavy load is anything heavier than 1,000 pounds, such as the reactor vessel head, and other large components like pumps, motors and valves, and dry spent fuel storage casks.

William Ruland, director of the division of safety systems in NRC's Office of Nuclear Reactor Regulation, or NRR, told Platts September 27 the initiative was "a positive step forward." While some details remain to be worked out, and NRC will continue to work with NEI on the matter, Ruland predicted the initiative would help clarify for the industry "what precisely is a load drop analysis and what should be in an FSAR," or final safety analysis report.

Some of NRC's concern owes to the widely varying calculational methodologies, assumptions, and predicted consequences for very similar load drop accident scenarios identi fied in a regulatory issue summary the agency published in May to clarify its guidelines for heavy lifts (Inside NRC, 11 June, 5). NRC published

the generic communication (RIS- 2005-25, Supplement 1) to address issues NRC identified as part of a survey published in 2003 that found a growing number of "below-the-hook events" that contributed to load drops utilities experienced between 1968 and 2002. Among the issues addressed in that supplement, NRC clarified its expectation that consequence analyses are to be reflected in updates to FSARs.

NRC said in the RIS that accurate load drop analyses are essential because they are used to determine the transport height restrictions in licensees' heavy load lift procedures. The analyses also help to determine locations where it is necessary to implement restrictions beyond the load height restrictions, including impact limiting devices, interlocks to prevent crane motion over certain areas, or employment of single-failure-proof handling systems. But the staff considered, and rejected, the need for establishing standardized calculational methodologies for heavy load drops after concluding that existing NRC guidance and an industry consensus standard provides adequate guidance for analyzing drops onto both steel and concrete structures.

The RIS supplement also discussed the requirement in 10 CFR Part 50.71(e) that a licensee update its FSAR to address changes to the facility or procedures described in the FSAR, all analyses of new safety issues requested by the commission, and all safety analyses and evaluations performed by the licensee to support either an approved license amendment or a conclusion under 10 CFR Part 50.59 that no license amendment is required to implement a change.

Part 50.59 allows licensees to make certain changes to the FSAR without NRC approval, as long as they meet certain conditions. According to the supplement, "changes to the procedures described in the FSAR governing load handling, such as changes to motion restrictions, maximum heights and material present under the loads to cushion drops," must be considered under Part 50.59 and could require a license amendment.

Some licensees addressed heavy load issues by installing single-failure-proof cranes prior to 2000 in conjunction with a license amendment request, NRC said, while others concluded that changes in their heavy load handling programs did not require a license amendment. Both categories of licensees are required to update their FSARs, according to the RIS supplement.

Some licensees instead evaluated the consequences of heavy load drops in areas that could damage spent fuel or the equipment required for safe reactor shutdown or decay heat removal. To support their evaluations, licensees had to perform site-specific analyses or reference relevant generic load drop analyses. Those analyses used parameter values and assumptions — for lift heights, load weights and the medium beneath the load — that NRC considers "material to the evaluation conclusion and [that] define restrictions on the motion of heavy loads necessary to demonstrate that the acceptance criteria were satisfied," according

to the document. Because these consequence evaluations were performed at the commission's request, they too must be incorporated into the FSAR, the staff said.

NEI proposes two-tiered strategy

NEI's Anthony Pietrangelo proposed the industry initiative in a September 14 letter to NRR Director James Dyer, in which he noted, "there have been no significant safety events associated with heavy load lifts." Ruland pointed out that while that may be true, the processes described under 10 CFR Parts 50.59 and 50.71(e) "are specifically designed to help us ensure the right safety reviews are done."

Pietrangelo said NEI had identified "a lack of consistency in plant licensing bases" related to heavy load lifts, leading to NEI's decision to launch "a formal initiative that specifies actions each plant will take to ensure that heavy load lifts continue to be conducted safely and that plant licensing bases accurately reflect plant practices." He added that NEI will maintain open communication with NRC staff "to ensure that all concerns are appropriately addressed and that the initiative achieves its intended outcome."

NEI is directing all plants to ensure, for all heavy load lifts, that plant procedures adequately reflect, and plants adequately implement, their regulatory commitments to safe load paths, loading handling procedures, crane operator training, use of special lifting devices and slings, crane design, and inspection testing and maintenance of the crane. All plants are also directed to ensure their administrative controls for maintenance activities include coordination of the movement of heavy loads.

The initiative provides separate guidance related to reactor head lifts for plants with outages beginning before July 1, 2008 and those with outages beginning after that date. By next July, according to NEI, all US nuclear plants will have either a single-failure-proof crane, (that is, a crane designed so that the load will not fall if a single cable were to break) or will have conducted a detailed load drop analysis.

For plants planning reactor head lifts before next July, NEI directs utilities with a single-failure-proof crane or a load drop analysis that bounds the planned lift with respect to load weight, load height, and medium present under the load, to ensure procedures for moving the head will reflect the plant's safety basis. "Load drop analyses can be based on realistic (i.e. best estimate) calculations," NEI said. Plants without a single-failure-proof crane or bounding analysis should conduct their head lift "wet," or fill the cavity that houses the reactor vessel and the vessel itself as the head is lifted. NEI says this precaution would limit damage to the reactor head and vessel and provide shielding from radioactivity if the load were to drop.

Plants that plan outages to begin after July 1 should, in their next FSAR update, provide a summary description of their basis for conducting safe heavy load movements, including their regulatory commitments. "If the safety basis includes reliance on a load drop analysis, then that fact should be included in the summary description within the FSAR," NEI said.—*Maureen Conley, Washington*

Better international reporting surfaces as a new push for Insag

The international nuclear community needs to do much more to collect, analyze and disseminate feedback from plant operating experience, lest failure to learn from past experience "derail" the "promise of nuclear power," Richard Meserve, the chairman of the International Nuclear Safety Group, or Insag, warned last month.

Regulators are not reporting enough incidents to the IAEA/Nuclear Energy Agency Incident Reporting System, IRS, nor are they providing enough information on how they have used others' operating experience, he said. The need for a "feedback loop" on event analysis has been "underappreciated," Meserve said.

Meserve's comments, made to the Insag Forum during the IAEA general conference in Vienna September 17, reiterated a point he made in an August 28 letter to IAEA Director General Mohamed ElBaradei. Those thoughts also were echoed in remarks to the World Association of Nuclear Operators' Biennial General Meeting in Chicago September 25 by WANO Chairman William Cavanaugh III (Nucleonics Week, 27 Sept., 1).

WANO's members — utilities worldwide — report incidents to the WANO central organization, while IRS is fed by regulatory bodies. Meserve lamented that IRS receives only 80 reports a year, whereas WANO received, for example, close to 1,000 in 2006. But even that many isn't enough to correctly represent the spectrum of operators worldwide, since the distribution of reports among WANO member organizations is highly skewed, and operators aren't learning enough from one another, Cavanaugh and WANO Managing Director Luc Mampaey said last week. Moreover, Meserve and IAEA's Miroslav Lipar said in Vienna, WANO's detailed information is confidential, and the utility organization will share only "trends" with the IAEA. Lipar heads the Vienna agency's operational safety section.

Meserve criticized this situation, saying there was "a serious disconnect between the two systems" and "a need to make data available to international regulators." Like the WANO officials, Meserve and Lipar said that while some countries participate actively in sending event reports, there are some that never report an incident, leaving gaping holes in the international community's information. At the Vienna forum and in an interview with Platts, Meserve said Insag — a group of

nuclear safety experts that advises the international community, and specifically ElBaradei — was discussing the formation of a "high-level steering group" whose remit would be to "chart a course" for improving the international experience feedback process. He said he personally believes the IAEA's capabilities for analysis and synthesis of operating experienced should be "beefed up" so the agency can disseminate lessons-learned to all countries and push them to report back on actions taken.

Under the existing system, he said, there is "very little feedback on what other countries are doing" with operating experience they receive.

Meserve, now president of the Carnegie Institution of Washington, is a former chairman of the US NRC. He has headed Insag for the past three years and has been asked by ElBaradei to continue for another term when Insag's membership is renewed, preceding the next meeting of the group in November.

Meserve told Platts that improving the use of operational experience feedback would "certainly" be a subject for discussion at that meeting. He said it is applicable not only to today's reactor fleet, but also to helping "new entrants" in the nuclear power world not to repeat the mistakes made by their predecessors.

He said the reflection is part of the "2020 initiative" launched by ElBaradei to seek priority areas for the IAEA's work over the next decade.

In the letter to ElBaradei, Meserve expressed some alarm over the low percentage of the IAEA's total resources devoted to safety and security, only 8%. He told Platts Insag believes this is "insufficient" in light of the coming nuclear "renaissance," because "the IAEA has got to be the vehicle for providing assistance" to new nuclear countries.

No ownership

IRS reports are not the only vehicle for collecting operating experience, Lipar said. The agency maintains an operational safety mission data base, with information gleaned from safety assessment missions to plants worldwide as well as from international meetings, he said. But there is no "overall ownership" among IAEA members of the operating experience feedback, or OEF, process, he said. The IRS was started by the OECD Nuclear Energy Agency and extended to encompass the IAEA in 1983. Thirty-one countries operating nuclear power plants, plus Italy, which has decommissioned its power reactors, currently participate, Lipar said.

IRS reporting guidelines were reviewed at a consultants' meeting convened by the IAEA in August, he said. Among the actions recommended is that the agency "push" national IRS coordinators "to send us information (on events) we see in the press," Lipar said.

Lipar, like WANO's Cavanaugh and Mampaey, said "the recurrence of events whose root causes have been identified and shared throughout the nuclear community is a major challenge."

He said the international Convention on Nuclear Safety requires member states to report operating experience and use experience from other operators. States should report to the CNS on how they take OEF into account and how they deal with recurrent events, he said.

As a case study at the Vienna forum, Lennart Carlsson of the Swedish Nuclear Power Inspectorate, SKI, reviewed the July 25, 2006 generator failure event at Forsmark-1 and how information about the incident was communicated and used internationally.

In that event, failure of a breaker in the switchyard led to loss of offsite power supply and disruption of onsite supply, handicapping control room functions and depriving operators of control room information, making it much more difficult to bring the BWR to cold shutdown.

In retrospect, he told the Insag Forum, the initial information SKI issued on July 27 was "probably not completely correct," but reflected what SKI knew at the time. Under an unexpectedly heavy barrage of media requests, especially from Germany — following a press report August 2 that the plant had narrowly missed a core melt — SKI had to "go into our emergency plan" to handle the task, he said. At the same time, SKI asked other Swedish units to investigate whether their plants had weaknesses similar to those that precipitated the Forsmark-1 event. He emphasized that the event itself caused "no external harm" and that there were "still two meters of water above the core" of the reactor. Carlsson said SKI established separate bilateral information contacts "rather quickly" with Finland — which operates a Swedish-design BWR plant — Germany and Switzerland; but stressed that "the information (on the event) was still incomplete" at the time.

A preliminary report was filed to IRS on August 6, 2006 and a final one on September 4, 2006. Full information was provided to the international community in August of this year, when SKI held a seminar on "defense-in-depth of electrical systems important to safety," or Didelsys, in Stockholm.

Carlsson said feedback from Forsmark-1 had resulted in design changes for Oskarshamn-1, Sweden's oldest BWR and its "most modernized plant."

The event showed, he said, that "deficiencies had been designed into" the modifications for Oskarshamn-1. He added that, to SKI's knowledge, design modifications based on lessons from the Forsmark event have also been introduced for Olkiluoto-3, the EPR unit being built by Areva in Finland.

These changes, he said, point to "weaknesses in the underlying design and review processes" for electrical systems in both existing and new plants.

He said the seminar in Stockholm had shown that "modern power supply equipment is sensitive to grid disturbances and they are cornplex," and that digital instrumentation and control systems are also sensitive to power supply disturbances. IRS, he said, "can provide some insights" into this problem, but in fact the system "wasn't designed to show the frequency" of events. It turns out, he said, that loss of offsite power [LOOP] and other power transient events "are relatively frequent precursors" and SKI and reactor designers probably hadn't taken them sufficiently into account. Carlsson said precursor analysis of LOOP events showed a conditional core damage frequency for Forsmark-1 "very significantly above 10-2." While most of the aspects important to the Forsmark event had been reported before to IRS, Carlsson said, the Forsmark-1 event sequence "seems to be unique."

The SKI analysis, he said, showed that aspects connected with the electric generator and power supply system, such as circuit breakers and use of house load, were much more important to safety than had been thought.

"The generator, which we did not consider as a safety system, had a dramatic impact on other safety systems, but it was out of the scope of the protection systems," he said. "That was what we didn't realize, and I don't know that any other country" had done so either, Carlsson said. He said that in light of the Swedish experience, "reporting is good, but the combination of reporting and analysis is the key" to learning from past mistakes. —*Ann MacLachlan, Vienna*

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ACRS MEETING HANDOUT

Meeting No.	Agenda Item	Handout No.:
547th	10	10.1

Title: PLANNING & PROCEDURES/ FUTURE ACRS ACTIVITIES

Authors:
Sam Duraiswamy

List of Documents Attached

10

Instructions to Preparer	From Staff Person
1. Paginate Attachments 2. Punch holes 3. Place Copy in file box	Sam Duraiswamy

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SUMMARY/MINUTES OF THE
ACRS PLANNING AND PROCEDURES SUBCOMMITTEE MEETING
October 31, 2007

The ACRS Subcommittee on Planning and Procedures held a meeting on October 31, 2007, in Room T-2B1, Two White Flint North Building, Rockville, Maryland. The purpose of the meeting was to discuss matters related to the conduct of ACRS business. The meeting was convened at 2:20 pm and adjourned at 3:40 pm.

ATTENDEES
W. Shack
M. Bonaca
S. Abdel-Khalik

ACRS STAFF
F. Gillespie
S. Duraiswamy
H. Nourbakhsh
D. Fischer
C. Santos
M. Afshar-Tous
Z. Abdullahi
M. Banerjee
G. Shukla
D. Bessette
J. Flack

1) Review of the Member Assignments and Priorities for ACRS Reports and Letters for the November ACRS Meeting

Member assignments and priorities for ACRS reports and letters for the November ACRS meeting are attached (pp. 6). Reports and letters that would benefit from additional consideration at a future ACRS meeting were discussed.

RECOMMENDATION

The Subcommittee recommends that the assignments and priorities for the November ACRS meeting be as shown in the attachment (pp. 6).

2) Anticipated Workload for ACRS Members

The anticipated workload for ACRS members through February 2008 is attached (pp. 7-8). The objectives are to:

- Review the reasons for the scheduling of each activity and the expected work product and to make changes, as appropriate

- Manage the members' workload for these meetings
- Plan and schedule items for ACRS discussion of topical and emerging issues

During this session, the Subcommittee also discussed and developed recommendations on items requiring Committee action (pp. 9).

RECOMMENDATION

The Subcommittee recommends that the members provide comments on the anticipated workload. Changes will be made, as appropriate.

3) ACRS/ACNW&M Operating Plan, Self-Assessment, and Letter Matrix

The ACRS/ACNW&M operating plans, self-assessments, and letter matrices were sent to the Commission on October 25, 2007. Comments received from the members were incorporated into the final version.

RECOMMENDATION

The Subcommittee recommends that the ACRS Executive Director keep the Committee informed of any feedback from the Commissioners.

4) Election of Officers for CY 2008

During its December meeting, the Committee will elect Chairman and Vice Chairman for the ACRS and Member-at-Large for the Planning and Procedures Subcommittee. Section 8.4 of the ACRS Bylaws state "A member may withdraw his name from consideration by written notice to the Executive Director, no later than two weeks before the scheduled election." Accordingly, those members who do not wish to be considered for all or any of the Offices should notify the ACRS Executive Director in writing by November 23, 2007.

RECOMMENDATION

The Subcommittee recommends that those members who do not want to be considered for all or any of the Offices for FY 2008 inform the ACRS Executive Director in writing on or before November 23, 2007.

5) ACRS Retreat in 2008

The Committee held its last retreat on January 26-27, 2006. During that retreat the Committee, among other items, discussed a proposed response to the Commission request, noted below, in the December 20, 2005 SRM.

> Following its retreat in January 2006, the ACRS should inform the Commission how the Committee plans to manage the increased workload resulting from the anticipated receipt of new reactor designs and combined license applications.

The Committee decided not to have a retreat in 2007. The Committee needs to decide whether it wants to hold a retreat in 2008.

RECOMMENDATION

The Subcommittee recommends that the Committee decide whether to hold a retreat in 2008; if yes, then it should decide on the topics, dates, and location.

6) Proposed Revisions to ACRS Subcommittee Structure

The ACRS Subcommittee structure is being revised. This will include changes to member/staff assignments. A revised Subcommittee structure will be sent to the members following the November ACRS meeting for review and comment. During the December meeting a revised version, incorporating the members' comments, will be provided to the Committee for endorsement.

RECOMMEDATION

The Subcommittee recommends that the ACRS staff send the revised Subcommittee structure to the members after the November ACRS meeting. The members should provide their comments by November 26, 2007.

7) Quadripartite Working Group Meeting

The Quadripartite Working Group (WG) meeting on Sump Screen Blockage was held in Germany on October 17-18, 2007. An agenda for this meeting is attached. (pp.10-12) . Drs. Banerjee and Wallis along with Zena Abdullahi and Mugeh Afshar-Tous attended this meeting. ACRS had the lead on: Overview of U.S. Investigations/Analyses; and Downstream and Chemical Effects on Sump Screen Blockage. Dr. Banerjee should provide a summary of the highlights of this meeting along with actions, agreements, assignments, and follow-up items resulting from this meeting.

France's Groupe Permanent Réacteurs (GPR) will host the second Quadripartite WG meeting in Paris, France on the general topic of "EPR." The ACRS members attending this working group meeting are Dr. Powers, Dr. Bonaca, and Mr. Stetkar. Dr. Powers, Chairman of the EPR Subcommittee, proposed the following topics:

- PRA
- Digital I&C
- Fire Risk
- Quality Assurance

GPR will not be able to host this meeting on October 9-10, 2008 and the other three Quadripartite Meeting member countries have suggested October 16-17, 2008, which is not suitable for ACRS.

GPR is unable to host a Digital I&C WG meeting in October 2008 because the analysis of the detailed I&C for EPR will be presented to the GPR at the end of 2008. Therefore, Japan's Nuclear Safety Commission (NSC) will host the third Quadripartite WG meeting in Japan on the general topic of "Digital I&C" in October 2009.

RECOMMENDATION

The Subcommittee recommends that Dr. Banerjee provide a brief summary of the highlights of the WG meeting on Sump Screen Blockage during the November ACRS meeting. A detailed foreign trip report, summarizing the issues discussed during this meeting should be prepared by Dr. Banerjee, in coordination with the ACRS staff and consultant who attended this meeting, for transmittal to the Commission and the members.

The ACRS members attending the EPR WG meeting in 2008 should do the following:

- Propose dates for the 2008 WG meeting
- Select two topics from the four proposed by Dr. Powers

8) Christmas Party

The members have been sponsoring a Christmas party to the ACRS/ACNW&M Office staff in December of each year. The Committee should decide whether it wants to keep up with this tradition.

RECOMENDATION

The Subcommittee recommends that the members sponsor a Christmas party to the ACRS/ACNW&M Office staff during the December ACRS meeting.

9) Interview of a Candidate for Membership on the ACRS

The members are scheduled to interview a candidate with expertise in the Digital I&C area during the November ACRS meeting. The ACRS Member Candidate Screening Panel interviewed this candidate on October 24, 2007. Subsequent to the interview, the ACRS Chairman should provide feedback to the Screening Panel through the ACRS Executive Director.
RECOMMENDATION

The Subcommittee recommends that following the interview the members provide their views to the ACRS Chairman and that the ACRS Chairman convey the members' views to the ACRS Member Candidate Screening Panel through the ACRS Executive Director.

10) Revised EPRI Guidance on Long-term Storage of LLW at NPPs

NEI is supporting an update of EPRI's 1995 voluntary guidance to its members concerning the long-term storage of LLW at nuclear powerplants. NEI has been coordinating this activity with the NRC Office of Federal and State Materials Environmental Management programs (FSME). Following internal NRC review and comment, NEI would like the staff to issue an Information Notice acknowledging NRC endorsement/acceptance of this voluntary guidance. In parallel to the NEI/EPRI initiative, FSME also has an effort under way to update its LLW storage guidance to its materials licensees. It is assumed that the timetable for completion of both of these efforts will take place before closure of the Barnwell LLW disposal facility to out-of-compact waste in June 2008.

Consistent with its other LLW activities, and because the ACNW&M will be reviewing the FSME LLW storage guidance, it is being proposed that the ACNW&M comment on the revised EPRI guidance on behalf of both the ACRS and the ACNW&M.

RECOMMENDATION

The Subcommittee recommends that the ACNW&M review and comment on this matter.

11) Member Issue

April 2008 ACRS Meeting Dates

Dr. Powers requests that the April 2008 ACRS meeting currently scheduled for April 3-5, 2008 be changed to April 10-12, 2008.

RECOMMENDATION

The Subcommittee recommends that the Committee decide whether to change the April 2008 meeting dates as requested by Dr. Powers.

ANTICIPATED WORKLOAD
NOVEMBER 1-3, 2007

LEAD MEMBER	BACKUP	LEAD ENGINEER/ BACKUP	ISSUE	PRIORITY	BASIS FOR REPORT PRIORITY	SUB. COMM. MTG. DATES
Banerjee	—	Abdullahi	Extended Power Uprate Application for the Susquehanna Nuclear Plant	—	Report to be completed in December	**10/9-10/07**
Bonaca	—	Banerjee	Assessment of Robustness of New Plants **[CLOSED]**	—	Report to be completed in December	—
Corradini	—	Hammer	Selected Chapters of the draft SER Associated with the ESBWR Design Certification	A	To support staff schedule	**10/2-3/07 10/25/07**
Powers	—	Fischer	Vogtle Early Site Permit Application and the Associated SER	A	To support staff schedule	**10/24/07**
	—	Fischer	Response to November 8, 2006 SRM that as Licensing Under Part 52 Continues, the Committee Should Advise the Commission on the Effectiveness and Efficiency of Staff's Implementation of Lessons Leaned in Areas it has Reviewed, for Example, the Development of Guidance Documents for Early Site Permits	A	To respond to commission SRM. Due Date 11/30/07	—
	—	Nourbakhsh	Draft Report on the NRC Safety Research Program	—	Report to be completed in December	—
Shack	—	Shukla	Meeting with Commissioner Lyons to Discuss Items of Mutual Interest **[POSTPONED]**	—	—	—

ANTICIPATED WORKLOAD
DECEMBER 6-8, 2007

LEAD MEMBER	BACKUP	LEAD ENGINEER/ BACKUP	ISSUE	PRIORITY	BASIS FOR REPORT PRIORITY	SUB. COMM. MTG. DATES
Apostolakis	—	Shukla	Draft Final NUREG-1829, "Estimating Loss-of-Coolant Accident (LOCA) Frequencies Through the Elicitation Process," and Draft NUREG on Seismically Induced LOCA Frequencies	A	To support staff schedule	**11/27/07**
Abdel-Khalik	—	Abdullahi	AREVA Enhanced Option III Long Term Stability Solution (Topical Report ANP-10262)	B	To support staff schedule	**11/14/07**
Banerjee	—	Abdullahi	Extended Power Uprate Application for the Susquehanna Nuclear Plant	A	To support staff schedule	**10/9-10/07 11/14/07**
Bonaca	—	Banerjee	Assessment of the Robustness of New Plants **[CLOSED] [PRESENTATION COMPLETED IN NOVEMBER]**	A	To provide Committee's views	—
Corradini	—	Hammer	Selected Chapters of the Draft SER Associated with the ESBWR Design Certification	Report as needed	—	**11/15/07**
Powers	—	Nourbakhsh	Draft Final ACRS Report on the NRC Safety Research Program	A	To provide advance copy to the Commission	—
Shack	—	Nourbakhsh/ Bessette	State-of-the-Art Reactor Consequence Analysis (SOARCA)	A	To support staff schedule	**11/16/07**

ANTICIPATED WORKLOAD
FEBRUARY 7-9, 2008

LEAD MEMBER	BACKUP	LEAD ENGINEER/ BACKUP	ISSUE	PRIORITY	BASIS FOR REPORT PRIORITY	SUB. COMM. MTG. DATES
Apostolakis	—	Nourbakhsh	Draft NUREG-1855, Guidance on the Treatment of Uncertainty in Risk-Informed Decisionmaking	A	To support staff schedule	**12/19/07**
Banerjee	—	TBD	Cable Response to Live Fire (CAROLFIRE) Testing Program **[TENTATIVE]**	B	To support staff schedule	—
		Bessette	Draft Safety Evaluation for Topical Report WCAP-16793-NP, "Evaluation of Long Term Cooling Considering Particulate, Fibrous, and Chemical Debris in the Recirculating Fluid."	A	To support staff schedule	—
Bonaca	—	Banerjee	License Renewal Program Status Briefing **[TENTATIVE]**	Report as needed	—	—
	—	Hammer	Final Review of the License Renewal Application and Final SER for the Vermont Yankee Nuclear Power Station	A	To support staff schedule	6/5/07
Corradini	—	Banerjee	Licensing Strategy for the Next Generation Nuclear Plants (NGNP)	A	To provide ACRS views	2/6/08
	—	Hammer	Selected Chapters of the Draft SER Associated with the ESBWR Design Certification **[TENTATIVE]**	Report as needed	—	—
Maynard	—	Shukla	Draft Regulatory Guide DG-1132, "Qualification of Safety-Related Cables and Field Splices for Nuclear Power Plants" **[TENTATIVE]**	A	To support staff schedule	—
Powers	—	TBD	Pre-application Review of the EPR Design	—	—	—
	—	Nourbakhsh	Draft Final ACRS Report on the NRC Safety Research Program	A	To provide advance copy to the Commission	—

ACRS Items Requiring Committee Action

1 **Notification of Update in SE Regarding GE Topical Report NEDC-33173p Revision1, "Applicability of GE Methods to Expanded Operating Domain"**

Member: Sanjoy Banerjee **Engineer:** Hossein Nourbakhsh

Estimated Time:

Purpose: Determine a Course of Action

Priority: High

Requested by: NRR Tony Nakanishi

In an ACRS letter to EDO, dated June 22, 2007, regarding GE Licensing Topical Reports NEDC-33006P, Revision 2, "General Electric Boiling Water Reactor Maximum Extended Load Line Limit Analysis Plus," and NEDC-33173P, "Applicability of GE Methods to Expanded Operating Domains.," the Committee stated that it would also like to have the opportunity to review any significant changes in the final Safety Evaluations including any changes to the limitations.

The Staff has notified the ACRS that the safety evaluation regarding General Electric (GE) Topical Report NEDC-33173P Revision 1, "Applicability of GE Methods to Expanded Operating Domain," has been updated. This update was driven by a question arising from the ACRS subcommittee meeting on Susquehanna Extended Power Uprate regarding the impact of bypass voiding on instability instrumentation. The Planning and Procedures Subcommittee recommends that Dr. Sanjoy Banerjee propose a course of action.

Quadripartite Working Group Meeting
On
"Sump Screen Blockage"
October 17- 18, 2007
Erlangen, Germany

Tentative Agenda

October 17th, 8:30 a. m.

Welcome and Opening Remarks	Bandholz (RSK-chairman) Waas (RSK/AST)
Introduction to Sump Screen Blockage Issues	RSK/AST Bandholz

1 Overview of Investigations/Analyses On Sump Screen Blockage

Overview on GPR Investigations/Analyses	GPR Vial
Germany	RSK/AST Kersting/Waas
Overview on Investigations/Analyses in Japan	NSC/JNES
Overview of U. S. Investigations/Analyses	ACRS Banerjee

2 Parameters influencing Sump Screen Blockage

Investigation of the Behavior of Mineral Wool in the Reactor Sump	RSK/AST Weiss
Generation, Transport and Retention of Insulation Material Including Corrosion Products - Findings from Large and Small Scale Strainer Tests	RSK/AST Waas
Downstream and Chemical Effects on Sump Screen Blockage	ACRS Wallis

Experimental Program on Head Loss at PWR Sump Screen - Test Plan and Debris Configuration Test - Chemical Effect Test	NSC/JNES/CRIEPI
Analysis and Evaluation on Sump Screen Blockage Issue in Japan	NSC/JNES
Detection and Removal of Sump Screen Blockage	RSK/AST Paulus

Dinner 7:00 p.m.
(on invitation of RSK)

October 18th, 9:00 a. m.

VISIT to test facilities (AREVA NP)

3 Parameters Influencing Core Cooling Capability

Penetration Through Sump-Screen and Entrainment into Core Including Thermal-Hydraulic Behavior During Small LOCA's	RSK/AST Kersting/Waas
Concept and Criteria for Long-Term Core Cooling	RSK/AST Waas

4 Current Status of Technical Modifications in NPPs

Current Status of Technical Modifications in NPPs (France)	GPR Vial
Backfitting Measures in Germany	RSK/AST Huber
Procedures and Changes in NPP's in Japan	NSC/JNES

5 Summary of Working Group Meeting

- General Conclusions
- Recommendations

6 Other Issues related to Quadripartite Activities

- Technical Topics of Interest since the Last Quadripartite Meeting — NSC

- Preparation of a Working Group Meeting on EPR (and other new generation reactors) — GPR(NSC)
  9./10., 16./17. or 23./24.10.2008

  Preparation of a Working Group Meeting on Digital I&C-Systems — RSK

7 Miscellaneous

End of Meeting - 5:00 p.m.

Abbreviations:
AST: RSK committee "Plant and Systems Engineering"
CRIEPI: Central Research Institute of Electrical Power Industry (Japan)
IRSN: Institut de Radioprotection et de Sûreté Nucléaire
JNES: Japan Nuclear Energy Safety Organization