

ArevaEPRDCPEm Resource

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See attached lists from 2013.

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**Meeting with AREVA to Discuss
Technical Gaps in the US EPR DC Technical Review**

Tuesday, February 26, 2013

<u>Time</u>	<u>Topic</u>
1:00 p.m.	Introductions, purpose, introductory remarks
1:15 p.m.	1. Seismic/Structural
	2. Seismic Margin Analysis
	3. NAB II/I- approach
	4. Severe Accidents
	5. Updated PRA
2:00 p.m.	6. Fuel Seismic
	7. SBLOCA Boron Dilution
	8. ATWS
	9. GSI-191- Open Items
	10. Single Failure of Self-Powered Neutron Detector)
2:45 p.m.	11. Digital I&C
	12. I&C Technical Specifications
	13. Spent Fuel Cask Transfer Facility
	14. Design Specifications
	15. Blast Wave Effect Methodology
	16. Fukushima
3:30 p.m.	Rulemaking
3:45 p.m.	Recap
3:55 p.m.	Opportunity for Public Comment
4:00 p.m.	Adjourn Meeting

EPR Design Certification Key Technical Issues

1. **STRUCTURAL REVIEW: - Critical Path** - Critical Section Designs, Nuclear Island Seismic Interaction (II/I), and Seismic Margin Analysis (SMA)

Critical Section Designs (Behind Schedule)

- Only 8 of 37 critical sections (less than 25%) have been audited.
- Critical Section audit review schedule has been impacted by AREVA's delay in completing the designs and more significantly by a new challenge that AREVA recently communicated affecting the design of 7 critical sections. Staff has not reviewed and approved the new methodology. Public meeting conducted on June 18, 2013.
- Supplemental Request for Additional Information (RAI) responses in Chapter 3 of the Final Safety Analysis Report (FSAR) received due to other RAI responses or revised methodology has increased work for staff and is impacting the review schedule.

Nuclear Island Seismic Interaction (NAB II/I) (Technical Issues Essentially Resolved)

- Although underlying technical issues are resolved, the final RAI responses contain several errors which need be corrected. In addition, proposed changes to Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) items 3.1 and 3.2 in Table 2.1.3-1 of FSAR Tier 1 were found to be substantially different in two separate RAI responses.
- AREVA agreed to supplement the RAI responses to make the ITAAC consistent.

Seismic Margin Analysis - (See item 13 below)

- Spent Fuel Pool Wall SMA is impacted by delay in completion of design for one of the seven critical sections discussed above. Resolution of critical section design issue by end of August is uncertain at this time.

2. **FUEL SEISMIC - (Behind Schedule)**

- AREVA has bypassed the advanced response stage and has submitted all (except two RAI responses) documents as final at the end of May 2013. Staff is evaluating these recent submittals. In these new submittals, AREVA's analysis has taken the credit of flow induced damping which is being questioned and evaluated by staff.
- Supplemental RAI responses in Chapter 4 received due to revised methodology has increased work/scope for staff.
- AREVA disclosed that several condition reports have led to the incorporation of new information requiring additional staff resources to review.
- Staff is planning an audit for early July

3. DIGITAL INSTRUMENTATION AND CONTROLS (I&C) - Critical Path (Behind Schedule, Portions of Review Suspended)

- AREVA submitted its final RAI 555, Question 7.1-53 response on May 31, 2013 instead of as scheduled on May 5, 2013 (3 week slip). Staff has evaluated this response and provided feedback to AREVA on the June 17, 2013 public meeting/teleconference.
- The staff has continued to find the same concerns with the final response to Question 7.1-53 as communicated to AREVA in an audit that covered the advanced response to the RAI. This part of the review has been suspended.
- Staff continues to work on other portions of the review unaffected by this RAI.
- NRC plans on issuing a letter.

4. I&C TECHNICAL SPECIFICATIONS (Behind Schedule)

- AREVA submitted its bases pages for the Technical Specifications (TS) in March; staff found them to reflect lack of quality checking of response
- Staff communicated to AREVA that its response on the TS bases was incomplete and inaccurate. Detailed feedback to be provided to AREVA in teleconference/public meeting June 20, 2013.

5. GENERIC SAFETY ISSUE (GSI)-191 (On Schedule)

- The staff presented GSI-191 safety evaluation (SE) with Open Items to the Advisory Committee on Reactor Safeguards subcommittee on May 7, 2013 and obtained verbal feedback from the subcommittee.
- AREVA plans to submit RAI response and update to an associated Technical Report by July 19, 2013.

6. Emergency Core Cooling System (ECCS) net positive suction head (NPSH) Analysis (Schedule Indeterminate)

- AREVA plans to revise 4 RAIs (supplemental RAI responses) and submit 1 technical report by the end of July 2013.
- Advanced responses were evaluated by staff at the end of May. Staff found them to be unacceptable. Public teleconference/meeting conducted on June 10, 2013. AREVA is to provide a date for a final revised response.
- Staff expects applicants to use TS values as inputs to safety analysis. The final RAI response received on NPSH uses a value greater than the TS minimum. AREVA's analysis uses an In-containment Refueling Water Storage Tank (IRWST) level greater than TS minimum, by ~ 0.3 feet. If the TS minimum level is applied, the IRWST level would be less than what is assumed in the NPSH analysis and the medium head safety injection (MHSI) pump would operate with negative NPSH margin for 1.2 hours.

7. UPDATED PROBABILISTIC RISK ASSESSMENT (PRA) (On Schedule)

- PRA level 1 audit scheduled June 17- 20, 2013 (in progress)
- As a result of AREVA MAAP code errors, an inability to provide the FSAR markups and advanced RAI responses early, and AREVA staff's availability to support an audit, an audit of the Level 2 PRA has been delayed. It is currently scheduled for July 15-18, 2013.
- Staff issued a new follow-up RAI based on AREVA's recent Human Factors Technical Report submittal that relates to PRA. (RAI 586 issued as draft on June 14, 2013).
- Staff awaits response to RAI on failure to model use of safety injection bypass switch at shutdown in the PRA. Draft response expected prior to July 15, 2013 audit.

8. SPENT FUEL CASK TRANSFER FACILITY (On Schedule)

- Staff is developing a position for control of the gates that reflects their safety significance, such as adding to Tier 1 the requirements of maintaining two closed barriers while no cask is attached to the spent fuel cask transfer facility (SFCTF) and periodic position verification to minimize the risk for drain-down. AREVA's final RAI response proposes technical specification (TS) controls for the SFCTF barriers/gates in response to this staff concern. The staff is writing a followup RAI.
- Other staff comments on the Advanced RAI responses are related to seismic, interlocks, and wall thickness discussed with AREVA.
- Staff is concerned about the capability of the SFCTF design to be able to withstand seismic event. All final RAI responses were submitted by the end of May 2013 and staff is evaluating them.

9. SMALL BREAK LOSS-OF- COOLANT (LOCA) (On Schedule)

- AREVA's advanced responses to current RAIs are due in early June and final RAI response due by July 30, 2013.
- Staff may need to perform an audit.

10. DESIGN SPECIFICATIONS (On Schedule)

- Staff is planning an Audit for the week of July 8, 2013.
- Upcoming audit to confirm AREVA's incorporation of earlier staff feedback on the design specifications, seismic classification, and system quality group classifications.

11. FUKUSHIMA (On Schedule)

- AREVA submitted its related advanced response to RAI 563 for Mitigation Strategies response on 5/13/13 (approx a 2 weeks late) and its Fukushima Technical Report 5/6/13 (1 week slip)
- Staff is evaluating and will provide feedback to AREVA during a public meeting on June 25, 2013.

12. SINGLE FAILURE OF SELF-POWERED NEUTRON DETECTOR (On Schedule)

- Draft RAI issued in April 2013.
- Public meeting held on May 30, 2013. AREVA presented its method and plans to address the RAI and incorporate a single failure proof design into the Topical Report.
- AREVA to submit its final RAI response by July 30, 2013.

13 SEVERE ACCIDENTS – 10 CFR50.44 compliance and Seismic Margin Assessment

10 CFR 50.44 compliance (Hydrogen) (On Schedule)

- Public meetings being held for AREVA to discuss its revised methodology.
- RAIs (515) on design basis PAR recombination rate and (RAI 574) PAR qualification tests advance responses received and found acceptable.
- The revised design-basis accident hydrogen calculations (RAI 566) were due April 29, 2013 but have been delayed until June 28, 2013. Current plan is to conduct an audit of this material leveraging a July 15, 2013 audit on the Level 2 PRA audit.
- Severe accident hydrogen generation analysis (RAIs 553 and 532) has been received and are under review.

Seismic Margin Analysis - Critical Path (Behind Schedule)

- AREVA is assessing whether it can send its completed calculations earlier than planned. If it can, staff will review them and setup a public meeting, as needed.
- AREVA has uploaded structural and fragility calculations in the reading room.
- A SMA audit is scheduled for the week of July 8, 2013.

14. BLAST WAVE EFFECTS (Schedule Indeterminate)

- On May 21, 2013, AREVA discussed its recent computational fluid dynamics calculations for three simple and non-design- specific cases. The staff reemphasized that a more complex example with geometry-representative of an EPR postulated pipe break scenario is needed to demonstrate the acceptability of the AREVA's blast wave effects evaluation. The staff emphasized the importance for AREVA to include, in its advanced final response, a representative demonstration of its blast wave assessment capability on an EPR plant design configuration.
- The staff requested AREVA submit the boundary conditions by June 1, 2013 in order for staff to complete its confirmatory analysis by the original date of July 16, 2013 that AREVA proposed for NRC feedback; some information was provided to the technical staff on June 3, 2013 and work is proceeding on the confirmatory analyses.
- AREVA now intends to submit one final response and technical report on July 30, 2013, without the advanced response previously expected on June 11, 2013 (later slipped to June 28, 2013). AREVA has proposed a public meeting in advance of the final response date to discuss both its analyses and the staff's, with AREVA's analysis results posted to an electronic reading room before the date of the meeting.
- Delaying the receipt of final docketed information until July 30, 2013 will challenge the staff's ability to meet the currently established schedule. In addition, the staff would be unable to discuss the results of their confirmatory calculations in a public

meeting until the results of the AREVA calculation that is being confirmed is formally docketed and reviewed by the NRC staff.

15. AIRCRAFT IMPACT ANALYSIS (AIA) INSPECTION (On Schedule)

- Pre trip planned for June 25, 2013 and pending a positive outcome the Team inspection is planned for the week of July 22, 2013.

16. ANTICIPATED TRANSIENT WITHOUT SCRAM (ATWS) (On Schedule)

- RAI 582 issued defining the staff's position on ATWS to bring issue to closure.
- Conference call with AREVA on proposed scope and schedule for its response held on May 30, 2013. AREVA provided its method. Staff provided feedback that approach will meet the rule.
- Staff awaits AREVA's RAI response - late June or early July 2013

17. Bulletin 2012-01, Design Vulnerability in Electric Power System (On Schedule)

- Staff held an internal meeting with NRR on this subject to discuss path forward for the US EPR Design Center. To maintain the current schedule, a decision for the US EPR Design Center will need to be made by the end of December 2013.
- AREVA will make a presentation regarding staff's feedback on this issue at the June 19, 2013 US EPR Design Centered Working Group meeting. A final response on this item is scheduled for June 28, 2013.
- AREVA requested a public meeting to review the EPR design path forward be scheduled some time after the Nuclear Energy Institute (NEI) meeting on June 27, 2013.

18. Quality of Chapter 11 and 12 Responses to Staff RAIs

- Staff received several RAI responses (from May 20 to 31, 2013) and were requested to conduct expedited reviews.
- Staff conducted a preliminary review and identified numerous quality issues, inconsistent presentation of technical information within and among response packages, and development of totally new technical information.
- On June 5, 2013, DNRL management called AREVA and conveyed that the review has been stopped until the quality issues are resolved and that the review will also take longer based on the context of technical changes within the RAI responses.
- On June 17, 2013, a public teleconference was conducted with AREVA to discuss several examples of quality related issues. AREVA took the action as a result of the teleconference to internally discuss staff's quality related concerns and will resubmit the response after they have resolved the quality issues.