

April 11, 2011

MEMORANDUM FOR: Joseph Colaccino, Chief
U.S. EPR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

FROM: Edward, Roach, Chief */RA/*
Health Physics Branch
Division of Construction, Inspection
& Operational Programs
Office of New Reactors

SUBJECT: U.S. EPR FSAR CHAPTER 11 CHPB AUDIT OF APRIL 6, 2011

The Health Physics Branch (CHPB) has conducted an audit of information and documents presented by Areva staff on April 6, 2011. The information was made available to support the staff's review of Areva's U.S. EPR Design Control Document (DCD) Revision 2, FSAR Sections 11.2 through 11.5 and other supporting FSAR sections. The attached enclosure presents the report documenting the conduct of the audit and materials addressed in discussions with Areva's staff.

Should there be any questions, please do not hesitate to contact me or Mr. Jean-Claude Dehmel.

Enclosure: Audit report

cc: Getachew Tesfaye, Phyllis Clark, and Michael Miernicki

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**U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NEW REACTORS
DESIGN CERTIFICATION AUDIT**

Report No: 05200020-2011-010

Organization: AREVA NP Inc.

Applicant Contacts: Mr. Russell Wells
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
3315 Old Forest Road
P.O. Box 10935
Lynchburg, VA, 24506-0935

Nuclear Industry: AREVA NP Inc., designs, builds, and starts up nuclear steam supply systems, and supplies fuel, engineering services, and replacement components to U.S. nuclear utilities. AREVA NP Inc. is one of the three major business entities under AREVA NP. The other major business entities are located in France (AREVA NP SAS) and Germany (AREVA NP GmbH).

Date: April 6, 2011

NRC Staff: Phyllis Clark, U.S. EPR FSAR Chapter 11 Project Manager, DNRL/NRO
Jean-Claude Dehmel, Senior Health Physicist, DCIP/NRO

AREVA Staff: Pedro Perez
David Noxon
Carole Naugle
Darrell Gardner

NRC Contractors: N/A

NRC Management: N/A

1.0 SUMMARY

U.S. Nuclear Regulatory Commission (NRC) staff audited documents supporting the information presented in FSAR Rev. 2, Chapter 11 of the AREVA NP Inc. (AREVA) U.S. EPR design certification (DC) application at AREVA's facility, located in Rockville, Maryland. Also, the audit addressed supporting technical information contained in other FSAR Chapters, including Sections 1.8, 5.2.5, 7.5, 9.2, 9.3, 9.4, 10.4.8, 12.3, 14.2.12, and 19. The purpose of this audit was to review open items addressed in the Safety Evaluation Report (SER), which has been prepared by the staff. The SER identifies open technical issues related to this subject area. The audit consisted of going over AREVA responses submitted to staff requests for additional information (RAI). This information and material necessary to support the audits are contained in the SER (identified as open items), in RAI responses submitted to the NRC, and notes generated by the staff during its technical review.

This information was used during the conduct of the audit. The audit provides the staff an opportunity to gain a better understanding of the technical basis underlying the application and identify areas where additional information should be submitted in RAI responses and/or included in the FSAR to allow a licensing decision on the application.

The regulatory basis for the audit is listed in the SER for the U.S. EPR, FSAR Chapter 11 for each system evaluated in the SER and subject to the audit. No new regulatory requirements were introduced during the conduct of this audit. The key regulatory requirements forming the technical bases of the audit are contained in:

- Title 10 of the *Code of Federal Regulations* (10 CFR 20), "Standards for Protection Against Radiation"
- 10 CFR 50.34a, "Design Objectives for Equipment to Control Releases of Radioactive Material in Effluents - Nuclear Power Reactors"
- 10 CFR 50.36a, "Technical Specifications on Effluents from Nuclear Power Reactors"
- 10 CFR Part 50, "Appendix I to Part 50 - Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low As is Reasonably achievable" (ALARA) for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents.
- 10 CFR 52.47(a), "Contents of Applications; Technical Information"
- Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," Section C.I.11, "Radioactive Waste Management"
- NUREG-0800, "Standard Review Plan," Section 11 "Radioactive Waste Management"

As a result of the staff's ongoing review of RAI responses and information and clarifications obtained during the audit, the staff may submit supplemental RAIs, as necessary, to ensure that information needed for the staff's safety decision is properly included in the U.S. EPR docket. The staff will refer to the FSAR, RAI responses, and the enclosed report, but not to the detailed documents reviewed at AREVA's site in its safety evaluation of the U.S. EPR.

2.0 STATUS OF PREVIOUS AUDITS

N/A

3.0 RESULTS OF AUDIT

3.1 Documents Audited

The audit consisted of going over AREVA responses submitted to staff RAIs, supporting system design basis information, and information presented or referenced in prior draft and final RAI responses. The audit did not involve the review of proprietary calculation packages or design information.

The information necessary to support the audit is contained in the SER (identified as open items), in RAI responses submitted to the NRC, and as notes generated by the staff during its technical review. Besides the information presented in FSAR Chapter 11, the audit also addressed system interface with other FSAR Chapters, including Sections 1.8, 5.2.5, 7.5, 9.2, 9.3, 9.4, 10.4.8, 12.3, 14.2.12, and 19. Attachment A to this report presents the listing of Open Items and staff interim notes which were used as topics of discussion during the audit.

The documents that were used as points of discussion during the audit were interim draft and final AREVA responses to staff RAIs identified in Attachment A. AREVA staff presented technical details using draft and final RAI responses to address specific discussion topics. No documents were submitted to NRC staff by AREVA staff during the audit.

3.2 Interaction with AREVA Staff

Besides the conduct of the audit, no other meetings concerning the audited materials were held with AREVA staff at the Rockville, Maryland, facility. AREVA's staff was present during the entire audit of April 6, 2011. As part of the audit, entrance and exit briefings were held.

3.3 Issue Resolution

As a result of the audit, the staff identified various issues with information already provided in current AREVA responses to NRC staff RAIs, clarified information already contained in RAI responses as well as that contained in FSAR Chapter 11 of the U.S. EPR DC, and information useful for the staff in completing its technical evaluation of open RAIs. Based on the staff evaluation of the information presented by AREVA during this audit, no new or supplemental RAIs will be issued by the staff as the technical and regulatory topics discussed are already included in the scope of the still currently opened RAIs. The staff will refer to the FSAR, final RAI responses and FSAR revisions, and this report, but not to draft RAI responses and draft FSAR mark-ups reviewed during this audit in its safety evaluation of the U.S. EPR DC application.

3.4 Conclusions

The audit of proposed RAI responses and FSAR revisions for U.S. EPR Chapter 11 allowed the staff to conduct its review of the U.S. EPR FSAR more efficiently. The audit also addressed technical system interface with other FSAR Chapters, including Sections 1.8, 5.2.5, 7.5, 9.2, 9.3, 9.4, 10.4.8, 12.3, 14.2.12, and 19. Specifically, the staff gained a better understanding of the basis underlying the application and identified areas where additional information should be submitted to allow a licensing decision on the application. The information reviewed by the staff will facilitate the evaluations of formal RAI responses and final FSAR revisions in confirming that the technical and regulatory conclusions presented in FSAR Chapter 11 of the U.S. EPR design certification application comply with NRC regulations and guidance.

4.0 APPLICANT STAFF PARTICIPATING IN SUBSTANTIVE DISCUSSIONS

None

Attachment A

NRC Audit of April 6, 2011 U.S. EPR FSAR Tier 2, Sections 11.2 to 11.5, Rev. 2 Summary of RAI Open Items Used as Topics for Discussion

A. FSAR Chapter 11.2:

RAI 273, Supp. 1, Q11.02-14: Confirmed the FSAR status of the RAI on the cost-benefit analysis for the LWMS and related COL information item.

Other than a proposed revision to Figure 11.2-1 given the update associated with information presented in FSAR Table 11.5-1, no further revisions are envisioned for FSAR Chapter 11.2.

B. FSAR Chapter 11.3:

RAI 273, Supp. 1, Q11.03-12: Confirmed the FSAR status of the RAI on the cost-benefit analysis for the GWMS and related COL information item.

Other than a proposed revision to Figure 11.3-1 given the update associated with information presented in FSAR Table 11.5-1, no further revisions are envisioned for FSAR Chapter 11.3.

C. SER Chapter 11.4:

No open RAI items.

Other than a proposed revision to Figure 11.4-1 given the update associated with information presented in FSAR Table 11.5-1, no further revisions are envisioned for FSAR Chapter 11.4.

D. SER Chapter 11.5:

Proposed responses for the following RAIs were reviewed: RAI 273, Q11.05-2; RAI 273, Q11.05-5; RAI 273, Q11.05-7; RAI 273, Q11.05-8; RAI 273, Q11.05-9; RAI 273, Q11.05-10; and RAI 405, Q11.05-24. These RAIs address the description and functions of the radiation monitoring and sampling equipment described in FSAR Chapter 11.5 with technical details presented in FSAR Table 11.5-1 and Figure 11.5-1. In addition, the discussions addressed technical system descriptions and interface with other supporting FSAR Chapters, including Sections 1.8, 5.2.5, 7.5, 9.2, 9.3, 9.4, 10.4.8, 12.3, 14.2.12, and 19. As currently envisioned by AREVA, the draft RAI responses involve numerous revisions not only in FSAR Chapter 11.5, but also in other FSAR chapters that present supporting technical information and details. Also, AREVA will address the closure of open RAIs on the initial test plan and test acceptance criteria for individual test abstracts (RAI 386, Questions No. 14.02-151, 14.02-152, 14.02-156, 14.02-158, and 14.02-159) given the proposed update of FSAR Table 11.5-1. Based on the preliminary information presented during the audit, the staff concurs with the scope and details of proposed FSAR revisions. As part of its evaluation process, the staff will confirm the adequacy of all proposed FSAR revisions once all RAI responses are formally submitted to the NRC.