May 13, 2010

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 AUDITS OF APRIL 13, 20, and 22, and MAY 6, 2010

The Health Physics Branch (CHPB) has conducted successive audits of information and documents presented or made available by Areva staff on April 13, 20 and 22 and May 6, 2010. The information was made available to support the staff's review of Areva's U.S. EPR Design Control Document (DCD) Revision 1, FSAR Sections 11.2 through 11.5. The attached enclosure presents the report documenting the conduct of the audits 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: Jason Jennings, Tarun Roy, Getachew Tesfaye

Contact: Jean-Claude Dehmel CHPB/DCIP/NRO
301-415-6619

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DATE	05/12/10	05/13/10

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

Report No: 05200020-2010-(EPR Project Branch to insert report no.)

Organization: AREVA NP Inc.

Applicant Contacts: Mr. Martin Bryan
Deputy Licensing Manager
AREVA NP Inc.
3315 Old Forrest 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 13, 20, and 22 and May 6, 2010

NRC Staff: Jason Jennings and Tarun Roy, U.S. EPR FSAR Chapter 11 Project Managers, DNRL/NRO
Jean-Claude Dehmel, Senior Health Physicist, DCIP/NRO

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 Chapter 11 of the AREVA NP Inc. (AREVA) U.S. EPR design certification (DC) application at AREVA's facility, located in Rockville, Maryland. The purpose of this audit was to review the open items addressed in the Safety Evaluation Report with Open Items which has been prepared by the staff and resolve 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 audits. The audits provide the staff an opportunity to gain a better understanding of the basis underlying the application and identify areas where additional information should be submitted to allow a licensing decision on the application.

The regulatory basis for the audits is listed in the SER for the U.S. EPR, FSAR Chapter 11 for each system evaluated in the SER and subject to the audits. 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 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(b)(1), "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 ongoing review of RAI responses and information and clarifications obtained during the audits, the staff will 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 file. 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 audits consisted of going over AREVA responses submitted to staff RAIs, supporting system design information, calculations included or referenced in RAI responses, and assumptions and parameters used in computer code calculations also described in RAI responses. The proprietary calculation packages that were reviewed included:

- U.S. EPR Particulate Radiation Monitor Sensitivity Requirements for RCS Leakage (Document No. 32-7001512-000, 11/6/2009)
- U.S. EPR Main Steam Line Radiation Monitor Sensitivity Requirements for Steam Generator Tube Leakage Detection (Document No. 32-7003827-000, 3/22/2010)
- U.S. EPR Calculation of the Annual Offsite Dose to Individuals from Liquid Effluent Releases (Document No. 32-9042395-001, 6/13/2007)
- U.S. EPR Calculation of the Annual Offsite Dose to Individuals from Gaseous Releases (Document No. 32-9042398-002, 3/2/2010)

This information 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. Attachment A to this report presents the listing of Open Items and staff interim notes which were used as topics of discussion during the audits. The documents that were used as points of discussion during the audits were interim draft and final AREVA responses to staff RAIs identified in Attachment A. AREVA staff presented technical details using internal documents in both final and draft forms to address specific discussion topics. No documents were submitted to NRC staff by AREVA staff during the audits.

3.2 Interaction with AREVA Staff

Besides the conduct of the audits, no other meetings concerning the audited materials were held with AREVA staff at the Rockville, Maryland, facility. AREVA's staff was present only during the audit of April 22, 2010. For the other audits, AREVA made arrangements for the NRC staff to access the information separately. Because the audits process was similar to that of previous ones, no formal entrance or exit briefings were held.

3.3 Issue Resolution

As a result of the audits, 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, and information useful for the staff in completing its technical evaluation of open RAIs. In ensuring that the docketed material supporting the U.S. EPR DC application is complete, the staff will prepare supplemental RAIs using results of staff technical reviews completed to date, and clarifications provided during the conduct of the audits. The staff will refer to the FSAR, RAI responses, and this report, but not to the draft and final documents viewed at AREVA's site, in its safety evaluation of the U.S. EPR.

3.4 Conclusions

The audits of supporting documents for the U.S. EPR Chapter 11 allowed the staff to conduct its review of the U.S. EPR FSAR more efficiently. Specifically, the staff gained a better understanding of the basis underlying the application, identified areas where additional information should be submitted to allow a licensing decision on the application, and used the information to conduct independent evaluations in confirming results and conclusions presented in FSAR Chapter 11 of the U.S. EPR design certification application.

4.0 APPLICANT STAFF PARTICIPATING IN SUBSTANTIVE DISCUSSIONS

None

Attachment A

NRC Audits of April 13, 20, and 22 and May 6, 2010
U.S. EPR FSAR Tier 2, Sections 11.2 to 11.5, Rev. 1
RAI Open Items Used as Topics for Discussion

A. FSAR Chapter 11.2:

RAI 273, Supp. 1, Q11.02-5: Uploaded supplemental RAI 387/4591, Q11.02-19, 3/30.
RAI 273, Supp. 1, Q11.02-15: Uploaded supplemental RAI 387/4591, Q11.02-20, 3/30.
RAI 299, Q11.02-16a, c, d, f, g, h, and k: Uploaded supplemental RAI 387/4591, Q11.02-21, 4/21.
RAI 273, Supp. 1, Q11.02-14: Email of March 31 requests an extension to May 19 for the full response. For parts of Item a, open pending resolution of RAI 290, Q11.05-15 - see below.
RAI 299, Q11.02-16j: Email of March 31 presents new information on the NG source term and offsite doses. Staff confirmed revised NG source term and doses to public. Uploaded supplemental RAI 4705, Q17824, 5/4 for inclusion of unity rule in tabulation.
RAI 301, Q11.02-17: Email of March 31 requests an extension to May 19 for the full response. Staff evaluated first half of response and uploaded supplemental RAI 4723, Q17858, 5/6. Awaiting decision from Areva on whether population doses will be evaluated to update a CBA for the LWMS.
RAI 301, Q11.02-17(5): Email of March 31 requests an extension to May 19 for the full response. Preliminary staff review done and uploaded supplemental RAI 4691, Q17810, 5/3.
RAI 359, Supp. 1, Q11.02-18: Email of April 5 requests an extension to May 7 for the initial response. Response provided and under staff evaluation.

B. FSAR Chapter 11.3:

RAI 273, Supp. 1, Q11.03-13: Email of March 31 presents new information. Staff analyses required in confirming revised doses to public and GWMS system failure analysis. CHPB and BOP reviews done. Uploaded supplemental RAI 391/4643, Q11.03-17, 4/15.
RAI 299, Q11.03-14d: Uploaded supplemental RAI 391/4595, Q11.03-16, 3/31.
RAI 273, Supp. 1, Q11.03-12: Email of March 31 requests an extension to May 19 for the full response.
RAI 301, Q11.03-15: Email of March 31 requests an extension to May 19 for the full response. Staff evaluated first half of response and uploaded supplemental RAI 4724, Q17859, 5/6. Awaiting decision from Areva on whether population doses will be evaluated to update a CBA for the GWMS.

C. SER Chapter 11.4:

RAI 273, Supp. 1, Q11.04-10: Confirmatory item Q11.04-10, 3/31.
RAI 273, Supp. 1 Q11.04-12: Confirmatory item Q11.04-2 after issuance of SER.
RAI 273, Supp. 1, Q11.04-13: Confirmatory item Q11.04-13 after issuance of SER.
RAI 273, Supp. 1, Q11.04-8: Uploaded supplemental RAI 391/4598, Q11.04-16, 3/31.
RAI 273, Q11.04-11: Uploaded supplemental via RAI 391/4598, Q11.04-16, 3/31.
RAI 273, Q11.04-15: Email of March 31 requests an extension to May 19 for the full response.

D. SER Chapter 11.5:

RAI 273, Q11.05-1: Email of March 31 presents confirmatory information - revised scope of design basis. Confirmatory item Q11.05-1.
RAI 273, Q11.05-4: Email of March 31 presents confirmatory information - removal of TB roof vents as a source of radioactivity. Confirmatory item Q11.05-4.
RAI 273, Q11.05-6: Email of March 31 presents confirmatory information - revision of FBVS rad monitor auto control features. Confirmatory item Q11.05-6.
RAI 290, Supp. 2, Q11.05-15: Email of March 31 presents new information - description of liquid effluent discharge path. Preliminary staff review done and uploaded supplemental RAI 4591, Q17469, 4/21.
RAI 3466, Supp. 1, Q11.05-20: Email of March 31 presents new information - basis for SG leak rate rad monitor sensitivity. Staff evaluated and uploaded supplemental RAI 4674, Q17726, 4/2I.
RAI 273, Q11.05-2: Email of March 31 requests an extension to May 19 for the full response. Preliminary staff review done and uploaded supplemental RAI 4699, Q17818, 5/3.
RAI 273, Q11.05-5: Email of March 31 requests an extension to May 19 for the full response.
RAI 273, Q11.05-7: Email of March 31 requests an extension to May 19 for the full response.
RAI 273, Q11.05-8: Email of March 31 requests an extension to May 19 for the full response.
RAI 273, Q11.05-9: Email of March 31 requests an extension to May 19 for the full response.
RAI 273, Q11.05-10: Email of March 31 requests an extension to May 19 for the full response.
RAI 276, Supp. 2, Q11.05-13: Email of March 31 requests an extension to May 19 for the full response. Preliminary staff review done and uploaded supplemental RAI 4650, Q17678, 4/16.
RAI 276, Supp. 1, Q11.05-14: Email of March 31 requests an extension to May 19 for the full response. Preliminary staff review done and uploaded supplemental RAI 4703, Q17822, 5/3.
RAI 290, Supp. 1, Q11.05-16: Email of March 31 requests an extension to May 19 for the full response.
RAI 290, Supp. 1, Q11.05-19: Email of March 31 requests an extension to May 19 for the full response.