ArevaEPRDCPEm Resource

From: BRYAN Martin (EXTERNAL AREVA) [Martin.Bryan.ext@areva.com]
Sent: Friday, August 13, 2010 10:53 AM
To: Tesfaye, Getachew
Cc: DELANO Karen (AREVA); ROMINE Judy (AREVA); BENNETT Kathy (AREVA); WELLS Russell (AREVA); RYAN Tom (AREVA); NOXON David (AREVA); WILLIFORD Dennis (AREVA); COLEMAN Sue (AREVA); SANDERS Harris (AREVA); CORNELL Veronica (EXTERNAL AREVA); BREDEL Daniel (AREVA); SLAY Lysa (AREVA)
Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No. 384, FSAR Ch. 3, Question 3.10-31
Attachments: RAI 384 Supplement 4 Response US EPR DC (DRAFT).pdf

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for responses to 9 of the 9 questions of RAI No. 384 on June 22, 2010. AREVA NP submitted Supplement 1 to the response on July 29, 2010, to provide a FINAL response to 1 of the remaining 9 questions (i.e., Question 03.03.02-5). AREVA NP submitted Supplement 2 to the response on July 29, 2010, to provide an INTERIM response to Question 03.04.02-13. AREVA NP submitted Supplement 3 to the response on August 12, 2010, to provide a technically correct and complete FINAL response to 1 of the remaining 8 questions (i.e., Question 03.04.02-14).

The attached file, "RAI 384 Supplement 4 Response US EPR DC- Draft.pdf" provides a DRAFT response to 1 of the 7 remaining Open Item questions (i.e., Question 03.10-31).

The following table indicates the respective pages in the response document, "RAI 384 Supplement 4 Response US EPR DC (DRAFT).pdf," that contains AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 384 — 03.10-31	2	3

The schedule for technically correct and complete FINAL responses to the remaining 7 questions is unchanged and provided below:

Question #	Interim Response Date	Response Date
RAI 384 — 03.04.02-13	July 29, 2010 (Actual)	January 17, 2011
RAI 384 — 03.08.04-11	N/A	August 30, 2010
RAI 384 — 03.08.04-12	N/A	August 30, 2010
RAI 384 — 03.08.04-13	N/A	August 30, 2010
RAI 384 — 03.08.04-14	N/A	August 30, 2010
RAI 384 — 03.09.02-68	N/A	August 30, 2010
RAI 384 — 03.10-31	N/A	September 7, 2010

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Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No. 384, FSAR Ch. 3, Question 3.10-31
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MESSAGE	1851	8/13/2010 10:53:16 AM
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Options
Priority: Standard
Return Notification: No
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Response to

Request for Additional Information No. 384 (4350, 4351, 4469, 4498, 4527), Supplement 4

5/20/10

U.S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 03.03.02 - Tornado Loads
SRP Section: 03.04.02 - Analysis Procedures
SRP Section: 03.08.04 - Other Seismic Category I Structures
SRP Section: 03.09.02 - Dynamic Testing and Analysis of Systems Structures and Components
SRP Section: 03.10 - Seismic and Dynamic Qualification of Mechanical and Electrical Equipment

Application Section: FSAR Chapter 3

QUESTIONS for Structural Engineering Branch 2 (ESBWR/ABWR Projects) (SEB2)
QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects) (EMB2)

DRAFT

Question 03.10-31:

Follow-up to Question 03.10-29

In its response to Question 03.10-29 dated February 12th, 2010, AREVA did not properly respond to Items I and II in the question.

a. The applicant is requested to address the potential effect of equipment directional coupling as described in Item I of the Question 03.10-29. As discussed in Question 03.10-29, the applicant is requested to submit the seismic qualification report (by Siemens) including the criteria and descriptions of the test procedures together with the detailed seismic test results, and provide the justification, as required by the criteria delineated in Subsection E.5.1.1 of Appendix 3D, Attachment E of the EPR FSAR Tier 2, for using the single-axis testing one at a time for three times.

b. The applicant stated in the response that the COL applicant/licensee will demonstrate that the generic qualification bounds the plant-specific condition. However, the staff is questioning whether the tested spectrum (from 5 to 35 Hz) would envelop the EPR certified seismic design response spectra (CSDRS). As indicated in SRP 3.10, (1)(A)(iv), the tested response spectrum (TRS) should closely resemble and envelop the required response spectrum (RRS) over the critical frequency range. In the response to Question 03.07.02-44, AREVA indicated that the EPR CSDRS will be revised to include the Bell Bend Nuclear Power Plant (BBNPP). Figure 03.07.02-44-1 was provided to show the new CSDRS including the higher frequency content of the BBNPP curve. According to Figure 03.07.02-44-1, the staff found this new CSDRS has significant frequency content exceeding 35Hz.. Thus, the staff requests the applicant to address the issue of high frequency input excitation exceedance over the tested limit of 35Hz in the Topical Report, EMF-2110(NP)(A), Revision 1, "TELEPERM XS: A Digital Reactor Protection System" and accompanying proprietary documents.

The staff considers the resolutions to the above two concerns are necessary to make the safety determination in the staff's Safety Evaluation Report.

Response to Question 03.10-31:

a. AREVA NP (AREVA) does not use the European single axis seismic qualification test for U.S. seismic qualification of TXS. Seismic qualification of TXS uses random multi-frequency, tri-axial testing. This testing is performed to meet U.S. standards. AREVA NP will perform hardware qualification for each generation of TXS used in a U.S. EPR. This qualification will be performed in accordance with the process described by the U.S. EPR FSAR. The requirements for this process include seismic qualification using RRS that envelop the specific U.S. EPR unit under consideration as well as enveloping spectra for multiple sites and includes frequencies beyond 35 Hz. This process will conform to IEEE 344-2006 requirements, as stated in U.S. EPR FSAR Tier 2, Section 3.10.

b. The generic qualification documented in Topical Report EMF-2110(NP)(A) does not bound the U.S. EPR-specific conditions for seismic qualification. Plant-specific action item 1 (specified in the SER for EMF-2110) will be satisfied by seismic qualification testing using U.S. EPR-specific CSDRS, not by demonstrating that the generic qualification bounds EPR-specific conditions.

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FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

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