

ArevaEPRDCPEm Resource

From: BRYAN Martin (EXTERNAL AREVA) [Martin.Bryan.ext@areva.com]
Sent: Tuesday, January 25, 2011 4:48 PM
To: Tesfaye, Getachew
Cc: DELANO Karen (AREVA); ROMINE Judy (AREVA); BENNETT Kathy (AREVA); NOXON David (AREVA)
Subject: Response to U.S. EPR Design Certification Application RAI No. 455, FSARCh. 19, OPEN ITEM
Attachments: RAI 455 Response US EPR DC.pdf

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 455 Response US EPR DC.pdf," provides the schedule for technically correct and complete responses to these questions.

The following table indicates the respective pages in the response document, "RAI 455 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 455 — 19-341	2	3

The schedule for technically correct and complete response to the one question is provided below.

Question #	Response Date
RAI 455 — 19-341	April 21, 2011

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
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From: Tesfaye, Getachew [<mailto:Getachew.Tesfaye@nrc.gov>]
Sent: Tuesday, December 21, 2010 4:44 PM
To: ZZ-DL-A-USEPR-DL
Cc: Xu, Jim; Hawkins, Kimberly; Ford, Tanya; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 455(4911), FSARCh. 19, OPEN ITEM

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on October 29, 2010, and discussed with your staff in December 2010. No change is made to the Draft RAI as a result of that discussion. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs, excluding the time period of **December 24, 2010 thru January 3, 2011, to account for the holiday season** as discussed with AREVA NP Inc. For any RAIs that cannot be answered **within 45 days**, it is expected that a date for receipt of this information will be provided to the staff within the 40-day period so that the staff can assess how this information will impact the published schedule.

Thanks,
Getachew Tesfaye
Sr. Project Manager
NRO/DNRL/NARP
(301) 415-3361

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 2954

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Subject: Response to U.S. EPR Design Certification Application RAI No. 455, FSARCh.
19, OPEN ITEM
Sent Date: 1/25/2011 4:47:50 PM
Received Date: 1/25/2011 4:48:45 PM
From: BRYAN Martin (EXTERNAL AREVA)

Created By: Martin.Bryan.ext@areva.com

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Files	Size	Date & Time
MESSAGE	2153	1/25/2011 4:48:45 PM
RAI 455 Response US EPR DC.pdf		14981

Options

Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Response to

Request for Additional Information No. 455(4911), Revision 0

12/21/2010

U. S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 19 - Probabilistic Risk Assessment and Severe Accident Evaluation

Application Section: FSAR Chapter 19

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

Question 19-341:**OPEN ITEM****Follow-up to Open Item RAI No 234, Question 19-304**

In 10 CFR 52.47, "Contents of applications; technical information," there is a requirement that each application for design certification (DC) must include a "description of the design-specific probabilistic risk assessment (PRA) and its results" (§ 52.47(a)(27)).

To address the seismic risk for the standard design, the staff proposed a position in SECY-93-087, which the Commission approved, as modified, in a Staff Requirements Memorandum (SRM) dated July 21, 1995, the use of a PRA-based seismic margins analysis for assessing the seismic risk for the design. As stated in the SRM, the seismic margins analysis should use a plant-level seismic margin of 1.67 times the design-basis safe shut earthquakes (SSE). To provide detailed guidance on this analysis, the staff developed Interim Staff Guidance (ISG-20), "Implementation of a Probabilistic Risk Assessment-Based Seismic Margin Analysis (SMA) for New Reactors." ISG-20 provides an implementation process acceptable to the staff for performing the PRA-based SMA and identifies the information to be included in an application needed to support the staff's review and safety findings. The staff needs this information to confirm that adequate seismic margin has been demonstrated or will be established for the standard design.

Tier 2, Chapter 19 of the Final Safety Analysis Report (FSAR) provides a description and results of the PRA-based SMA for the U.S. EPR design certification. Revision 2, of the FSAR Section 19.1.5.1.1.4 provides a description of the system and accident analysis, which includes both the full-power and lower-power shutdown modes. However, with respect to seismic initiating events, the staff noticed that only the small Loss-of-Coolant Accident (LOCA) was included in the seismic initiating events as opposed to various sizes of LOCAs as indicated in ASME/ANS RA-Sa-2009, Table 5-2.3-2(a), SPR-A1 Note (1)(b). Revise Section 19.1.5.1.1.4 of the FSAR to provide a description of the design-specific plant system and sequence analysis consistent with the guidance of ISG-20, Section 5.1.1. It is important that key assumptions utilized are highlighted such that a respective COL applicant can verify their applicability with respect to its site- and plant-specific features.

Revision 2, of the FSAR Section 19.1.5.1.1.5 provides a description of the seismic fragility analysis which, according to AREVA's response to RAI No. 234, Supplement 2, Question 19-304, was performed using the EPR Certified Seismic Design Response Spectra (CSDRS). The staff noticed that Figure 19.1-31 of Revision 2, of the FSAR Section 19 did not include the high-frequency hard rock spectra, which were added to the CSDRS. Revise Section 19.1.5.1.1.5 of the FSAR to provide a description of the seismic fragility evaluation consistent with the guidance of ISG-20, Section 5.1.2. Given that traditional fragility calculations are performed with respect to a single spectrum shape, the FSAR description should discuss the approach utilized to determine the fragility of an SSC for multiple spectral shapes as in the EPR CSDRS. In addition, for active SSCs identified in the cutsets, the FSAR description should discuss the use of generic data for fragility of active components qualified by tests consistent with the guidance given in the 3rd paragraph of Section 5.1.2 of ISG-20. Also, revise the FSAR to include the results of the fragility evaluation in terms of the median capacity and uncertainties.

To ensure that the COL applicants are able to meet Section 52.79(a)(46) and §52.79(d)(1), revise the COL information items 19.1-6 and 19.1-7 to require: 1) COL applicants to update the DC's PRA-based SMA to address plant- and site-specific features, and 2) COL holders (licensees) to perform as-built verifications of the plant level HCLPF capacities. The COL applicants should identify plant-specific vulnerabilities and confirm the key assumptions and bases of the DC's SMA applicable to the site. If the plant-level HCLPF is less than the target value of 1.67 times the site-specific GMRS, the applicant should perform a full convolution of sequence fragility for all sequences with a potential to lead to core damage to demonstrate that the seismic risk is acceptably low for the licensed plant. ISG-20 provides guidance on this process in Section 5.1.4, and the detailed guidance for COL updating is provided in Section 5.2.

ISG-20, Section 5.4, "Position on Documentation," provides a list of information regarding the documentation in the FSAR that would be sufficient to allow the staff to confirm the acceptability of the PRA-based SMA.

Response to Question 19-341:

A response to this question will be provided by April 21, 2011.