ArevaEPRDCPEm Resource

From: Pederson Ronda M (AREVA NP INC) [Ronda.Pederson@areva.com]
Sent: Wednesday, July 08, 2009 5:08 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); VAN NOY Mark (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 239, FSARCh. 3
Attachments: Batch 239 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 239 Response US EPR DC.pdf" provides technically correct and complete responses to 2 of the 2 questions.

The following table indicates the respective pages in the response document, "RAI 239 Response US EPR DC.pdf" that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 239 — 03.04.02-10	2	2
RAI 239 — 03.04.02-11	3	3

This concludes the formal AREVA NP response to RAI 239 and there are no questions from this RAI for which AREVA NP has not provided responses.

Sincerely,

Ronda Pederson
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Licensing Manager, U.S. EPR Design Certification
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From: Getachew Tesfaye [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Friday, June 05, 2009 5:55 PM
To: ZZ-DL-A-USEPR-DL
Cc: Hernando Candra; Jim Xu; Michael Miernicki; Jay Patel; Joseph Colaccino; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 239 (2921), FSARCh. 3

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on May 21, 2009, and on May 28, 2009, you informed us that the RAI is clear and no further clarification is needed. As a result, no change is made to the draft RAI. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be

provided to the staff within the 30 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: 630

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Subject: Response to U.S. EPR Design Certification Application RAI No. 239, FSARCh. 3
Sent Date: 7/8/2009 5:07:57 PM
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From: Pederson Ronda M (AREVA NP INC)

Created By: Ronda.Pederson@areva.com

Recipients:
"BENNETT Kathy A (OFR) (AREVA NP INC)" <Kathy.Bennett@areva.com>
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Tracking Status: None

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MESSAGE	2116	7/8/2009 5:08:00 PM
Batch 239 Response US EPR DC.pdf	63627	

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

Response to

Request for Additional Information No. 239

6/05/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 03.04.02 - Analysis Procedures
Application Section: SRP 3.4.2

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

Question 03.04.02-10:

Follow-up to RAI 162 Question 03.04.02 (914, Question #2970)

The staff finds the response to be unacceptable as it is not clear what the function of the waterproofing and waterstops are in providing protection to seismic Category I structures from groundwater or flood. Is the waterproofing or are the waterstops necessary features that enable these structures to perform their required safety functions? If they are, than they need to be classified as Category I materials. The applicant is requested to provide the QA Category under which the waterproofing or waterstops are procured and if Category I to provide the codes and standards that these materials must meet in carrying out their safety-related function. If not, than the applicant should describe how seismic Category I structures are otherwise protected below grade from the effects of flood or from the long term effects of groundwater including in seepage of water and deterioration of the concrete.

Response to Question 03.04.02-10:

U.S. EPR Seismic Category I structures do not depend on use or effectiveness of waterstops or waterproofing membranes to perform their safety-related design basis functions. Protection of safety-related structures, systems, and components (SSC) from ground water or flooding effects is provided by engineered Seismic Category I concrete structures.

When waterstops or waterproofing membranes are installed, they act as sacrificial barriers to mitigate potential erosion of below grade external structural surfaces that may be caused by unbuffered contact with aggressive groundwater. Waterstops and waterproofing membranes are not installed to protect SSC against external flooding. Marginal protection against external flooding that may be afforded by waterstops or waterproofing membranes is coincidental to their purpose. Waterproofing membrane and waterstop leakage is expected to occur during the life of the plant. This long-term degradation does not significantly impair or adversely affect the structural integrity of Seismic Category I structures or their safety-related design basis function. Consequently, waterproofing membranes and waterstops that may be installed to mitigate erosion of external below grade structural surfaces due to exposure to aggressive groundwater are not safety related and are not classified as Seismic Category I materials.

Seismic Category I structural concrete is designed, mixed, placed, and inspected in accordance with codes and standards listed in U.S. EPR Tier 2, Sections 3.8.1.2.1, 3.8.3.2.1, and 3.8.4.2.1. Adherence to requirements and specifications of these codes and standards produces concrete that is resistant to deterioration and is suitable for use in non-aggressive groundwater without installing waterproofing membranes or waterstops. ACI 349-01, Chapter 4 “Durability Requirements” and ASME, Section III, Division 2, Article CC-2231.7 “Durability” requirements include provisions for protection against aggressive soil and groundwater. In aggressive soil and groundwater conditions, various protective measures may be taken in accordance with site-specific conditions, including use of epoxy coated reinforcing steel as described in U.S. EPR FSAR Tier 2, Section 3.8.5.6.1.

FSAR Impact:

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

Question 03.04.02-11:

Follow-up to RAI 162, Question 03.05.03-2 (RAI 938, Question 2972)

The response provided by the applicant regarding the shape factor for external missiles is acceptable. However, the staff is still seeking information on how shape factors are determined for internal missiles. For the internal missiles considered in the AREVA design, the applicant should provide the type of missile and the basis of the shape factors used in missile barrier calculations.

Response to Question 03.04.02-11:

U.S. EPR missile barrier design employs the same methodology for both internally and externally generated missiles, although their respective sources and geometry are appropriate to the missiles postulated for each. Internally generated missiles from equipment like pressurized components, high-energy piping, and rotating equipment that possess a statistically significant probability of damaging a safety related target are evaluated. Based on the internal missile under consideration and its corresponding geometry, the appropriate flat nosed, blunt, sharp nosed, etc., shape factor is selected for use in missile barrier design calculations.

FSAR Impact:

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