

ArevaEPRDCPEm Resource

From: WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]
Sent: Friday, July 08, 2011 3:31 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA)
Subject: Response to U.S. EPR Design Certification Application RAI No. 283, FSAR Ch. 3, Supplement 8
Attachments: RAI 283 Supplement 8 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for responses to questions of RAI No. 283 on October 2, 2009. AREVA NP submitted Supplement 1 to the response on November 12, 2009, to address 3 of the remaining 4 questions. AREVA NP submitted Supplement 2 to the response on November 30, 2009, to provide a new schedule for responding to the remaining question. AREVA NP submitted Supplement 3 to the response on February 22, 2010, to provide a new schedule for responding to the remaining question. AREVA NP submitted Supplement 4 to the response on March 25, 2010, to provide a new schedule for responding to the remaining question. On May 27, 2010, AREVA NP provided a revised schedule for RAI 283 Supplement 5 to allow time to interact with the NRC on the DRAFT response. On June 30, 2010, a revised schedule for Question 03.08.01-37 was provided in Supplement 6. On October 5, 2010, a final response to the remaining question was provided in Supplement 7.

The response to Question 03.08.01-38 is superseded by the response to RAI 320 Question 03.07.02-63. The attached file, "RAI 283 Supplement 8 Response US EPR DC.pdf" provides a revised response to this question.

The following table indicates the respective pages in the response document, RAI 283 Supplement 8 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 283 - 03.08.01-38	2	3

This completes the formal AREVA NP response to RAI 283, and there are no questions from this RAI for which AREVA NP has not provided responses.

Sincerely,

Dennis Williford, P.E.
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.

7207 IBM Drive, Mail Code CLT 2B
Charlotte, NC 28262
Phone: 704-805-2223
Email: Dennis.Williford@areva.com

From: BRYAN Martin (External RS/NB)
Sent: Tuesday, October 05, 2010 4:06 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); CORNELL Veronica (External RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 283, FSAR Ch. 3, Supplement 7

.Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for responses to questions of RAI No. 283 on October 2, 2009. AREVA NP submitted Supplement 1 to the response on November 12, 2009, to address 3 of the remaining 4 questions. AREVA NP submitted Supplement 2 to the response on November 30, 2009, to provide a new schedule for responding to the remaining question. AREVA NP submitted Supplement 3 to the response on February 22, 2010, to provide a new schedule for responding to the remaining question. AREVA NP submitted Supplement 4 to the response on March 25, 2010, to provide a new schedule for responding to the remaining question. On May 27, 2010, AREVA NP provided a revised schedule for RAI 283 Supplement 5 to allow time to interact with the NRC on the DRAFT response. On August 31, 2010, a revised schedule for Question 03.08.01-37 was provided in Supplement 6.

The attached file, "RAI 283 Supplement 7 Response US EPR DC.pdf" provides a technically correct and complete FINAL response to Question 03.08.01-37, as committed.

The following table indicates the respective pages in the response document, RAI 283 Supplement 7 Response US EPR DC.pdf," that contains AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 283 - 03.08.01-37	2	3

This completes the formal AREVA NP response to RAI 283. There are no additional questions associated with this RAI.

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
Tel: (434) 832-3016
702 561-3528 cell
Martin.Bryan.ext@areva.com

From: BRYAN Martin (EXT)
Sent: Wednesday, June 30, 2010 7:08 PM
To: 'Tefaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); CORNELL Veronica (EXT); VAN NOY Mark (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 283, FSAR Ch. 3, Supplement 6

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for responses to questions of RAI No. 283 on October 2, 2009. AREVA NP submitted Supplement 1 to the response on November 12, 2009, to address 3 of the remaining 4 questions. AREVA NP submitted Supplement 2 to the response on November 30, 2009, to provide a new schedule for responding to the remaining question. AREVA NP submitted Supplement 3 to the response on February 22, 2010, to provide a new schedule for responding to the remaining question. AREVA NP submitted Supplement 4 to the response on March 25, 2010, to provide a new schedule for responding to the remaining question. On May 27, 2010, AREVA NP provided a revised schedule for RAI 283 Supplement 5 to allow time to interact with the NRC on the DRAFT response.

Based upon NRC comments, a revised schedule for RAI 283 Supplement 6 is required to allow sufficient time for AREVA NP to develop a revised response and interact with the NRC on the new DRAFT response.

The schedule for technically correct and complete responses to the remaining question has been changed and is provided below:

Question #	Response Date
RAI 283 — 03.08.01-37	October 5, 2010

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
Tel: (434) 832-3016
702 561-3528 cell
Martin.Bryan.ext@areva.com

From: BRYAN Martin (EXT)
Sent: Thursday, May 27, 2010 1:00 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); VAN NOY Mark (EXT); CORNELL Veronica (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 283, FSAR Ch. 3, Supplement 5

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for responses to questions of RAI No. 283 on October 2, 2009. AREVA NP submitted Supplement 1 to the response on November 12, 2009, to address 3 of the remaining 4 questions. AREVA NP submitted Supplement 2 to the response on November 30, 2009, to provide a new schedule for responding to the remaining question. AREVA NP submitted Supplement 3 to the response on February 22, 2010, to provide a new schedule for responding to the remaining question. AREVA NP submitted Supplement 4 to the response on March 25, 2010, to provide a new schedule for responding to the remaining question.

As agreed with NRC, AREVA NP is providing a revised date for RAI 283 Supplement 5 to allow time to interact with the NRC on the response.

The schedule for technically correct and complete responses to the remaining question has been changed and is provided below:

Question #	Response Date
RAI 283 — 03.08.01-37	June 30, 2010

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
Tel: (434) 832-3016
702 561-3528 cell
Martin.Bryan.ext@areva.com

From: BRYAN Martin (EXT)
Sent: Thursday, March 25, 2010 12:26 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); ROMINE Judy (AREVA NP INC); VAN NOY Mark (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 283, FSAR Ch. 3, Supplement 4

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for responses to questions of RAI No. 283 on October 2, 2009. AREVA NP submitted Supplement 1 to the response on November 12, 2009, to address 3 of the remaining 4 questions. AREVA NP submitted Supplement 2 to the response on November 30, 2009, to provide a new schedule for responding to the remaining question. AREVA NP submitted Supplement 3 to the response on February 22, 2010, to provide a new schedule for responding to the remaining question.

AREVA NP Inc. (AREVA NP) is unable to provide a response for RAI 283 Supplement 3 at this time. The response to Question 03.08.01-37 is dependent upon completion of the new embedded Finite Element Model (FEM) seismic analysis and verification of these results. AREVA will be prepared to discuss this response with the NRC during the U.S. EPR FSAR Section 3.7 and Section 3.8 audit scheduled for April 26 thru April 30, 2010, after which NRC comments will be incorporated and the final response submitted.

The schedule for technically correct and complete responses to the remaining question has been changed and is provided below:

Question #	Response Date
RAI 283 — 03.08.01-37	May 27, 2010

Sincerely,

Martin (Marty) C. Bryan
Licensing Advisory Engineer
AREVA NP Inc.
Tel: (434) 832-3016
Martin.Bryan.ext@areva.com

From: DUNCAN Leslie E (AREVA NP INC)
Sent: Monday, February 22, 2010 2:48 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); ROMINE Judy (AREVA NP INC); VAN NOY Mark (EXT); BRYAN Martin (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 283, FSAR Ch. 3, Supplement 3

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for responses to questions of RAI No. 283 on October 2, 2009. AREVA NP submitted Supplement 1 to the response on November 12, 2009, to address 3 of the remaining 4 questions. AREVA NP submitted Supplement 2 to the response on November 30, 2009, to provide a new schedule for responding to the remaining question.

AREVA NP is unable to provide a response for RAI 283 question 03.08.01-37 at this time. This RAI response addresses questions related to structural stability as discussed in U.S. EPR FSAR Tier 2, Section 3.8.1 and is interdependent with AREVA NP's response to RAI 190 Question 03.08.01-29. Additional time is required in order to evaluate potential embedded Finite Element Model (FEM) effect on In Structure Response Spectra (ISRS) for the Reactor Building Internal Structure (RBIS) and verify consistent results in answering interrelated RAI questions.

The schedule for technically correct and complete responses to the remaining question has been changed and is provided below:

Question #	Response Date
RAI 283 — 03.08.01-37	March 25, 2010

Sincerely,

Les Duncan
Licensing Engineer
AREVA NP Inc.
An AREVA and Siemens Company
Tel: (434) 832-2849
Leslie.Duncan@areva.com

From: Pederson Ronda M (AREVA NP INC)
Sent: Monday, November 30, 2009 8:01 PM
To: 'Getachew Tesfaye'; 'Miernicki, Michael'
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. 283, FSAR Ch. 3, Supplement 2

Getachew,

AREVA NP Inc. (AREVA NP) is unable to provide a response for RAI 283 Supplement 2 at this time. This RAI response addresses questions related to structural stability as discussed in U.S. EPR FSAR Tier 2, Section 3.8.1 and is interdependent with AREVA NP's response to RAI 190 Question 03.08.01-29. AREVA NP committed to respond to this related question by February 25, 2010.

The revised schedule for technically correct and complete responses to the remaining 1 question is provided below:

Question #	Response Date
RAI 283 — 03.08.01-37	February 25, 2010

Sincerely,

Ronda Pederson
ronda.pederson@areva.com
Licensing Manager, U.S. EPR Design Certification
AREVA NP Inc.
An AREVA and Siemens company
3315 Old Forest Road
Lynchburg, VA 24506-0935

Phone: 434-832-3694
Cell: 434-841-8788

From: Pederson Ronda M (AREVA NP INC)
Sent: Thursday, November 12, 2009 5:59 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. 283, FSAR Ch. 3, Supplement 1

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for responses to the 4 questions of RAI No. 283 on October 2, 2009. The attached file, "RAI 283 Supplement 1 Response US EPR DC.pdf" provides technically correct and complete responses to 3 of the remaining 4 questions, as committed.

Appended to this file are the affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 283 Questions 03.03.02-4, 03.08.01-38, and 03.08.03-20.

The following table indicates the respective page(s) in the response document, "RAI 283 Supplement 1 Response US EPR DC.pdf" that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 283 — 03.03.02-4	2	2
RAI 283 — 03.08.01-38	3	4
RAI 283 — 03.08.03-20	5	6

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

Question #	Response Date
RAI 283 — 03.08.01-37	December 10, 2009

Sincerely,

Ronda Pederson

ronda.pederson@areva.com

Licensing Manager, U.S. EPR Design Certification

AREVA NP Inc.

An AREVA and Siemens company

3315 Old Forest Road

Lynchburg, VA 24506-0935

Phone: 434-832-3694

Cell: 434-841-8788

From: Pederson Ronda M (AREVA NP INC)
Sent: Friday, October 02, 2009 4:55 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. 283, FSAR Ch. 3

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 283 Response US EPR DC.pdf" provides a schedule since a technically correct and complete response to the 4 questions cannot be provided at this time.

The following table indicates the respective page(s) in the response document, "RAI 283 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 283 — 03.03.02-4	2	2
RAI 283 — 03.08.01-37	3	3
RAI 283 — 03.08.01-38	4	4
RAI 283 — 03.08.03-20	5	5

A complete answer is not provided for 4 of the 4 questions. The schedule for a technically correct and complete response to each of these questions is provided below.

Question #	Response Date
RAI 283 — 03.03.02-4	November 12, 2009
RAI 283 — 03.08.01-37	December 10, 2009
RAI 283 — 03.08.01-38	November 12, 2009
RAI 283 — 03.08.03-20	November 12, 2009

Sincerely,

Ronda Pederson

ronda.pederson@areva.com

Licensing Manager, U.S. EPR Design Certification

AREVA NP Inc.

An AREVA and Siemens company

3315 Old Forest Road

Lynchburg, VA 24506-0935

Phone: 434-832-3694

Cell: 434-841-8788

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]

Sent: Wednesday, September 02, 2009 6:44 PM

To: ZZ-DL-A-USEPR-DL

Cc: Jeng, David; Xu, Jim; Samaddar, Sujit; Miernicki, Michael; Patel, Jay; Colaccino, Joseph; ArevaEPRDCPEm Resource

Subject: U.S. EPR Design Certification Application RAI No. 283 (2718, 3611,3614), FSAR Ch. 3

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on August 25, 2009, and on September 2, 31, 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: 3205

Mail Envelope Properties (2FBE1051AEB2E748A0F98DF9EEE5A5D47EBA63)

Subject: Response to U.S. EPR Design Certification Application RAI No. 283, FSAR Ch. 3, Supplement 8
Sent Date: 7/8/2011 3:30:34 PM
Received Date: 7/8/2011 3:30:38 PM
From: WILLIFORD Dennis (AREVA)

Created By: Dennis.Williford@areva.com

Recipients:
"BENNETT Kathy (AREVA)" <Kathy.Bennett@areva.com>
Tracking Status: None
"DELANO Karen (AREVA)" <Karen.Delano@areva.com>
Tracking Status: None
"ROMINE Judy (AREVA)" <Judy.Romine@areva.com>
Tracking Status: None
"RYAN Tom (AREVA)" <Tom.Ryan@areva.com>
Tracking Status: None
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: auscharm02.adom.ad.corp

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MESSAGE	16703	7/8/2011 3:30:38 PM
RAI 283 Supplement 8 Response US EPR DC.pdf		57904

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

Response to

Request for Additional Information No. 283, Supplement 8

9/02/2009

U.S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 03.03.02 - Tornado Loads

SRP Section: 03.08.01 - Concrete Containment

**SRP Section: 03.08.03 - Concrete and Steel Internal Structures of Steel or
Concrete Containments**

Application Section: FSAR Ch 3

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

Question 03.08.01-38:**Follow-up to RAI Question Number 3.8.1-4**

In response to item (1) of this RAI, the applicant indicates that the jurisdictional boundary selected for the U.S. EPR, as applicable to the common basemat, is a cylinder aligned with the outside face of the reactor containment building wall (Figure 03.08.01-4-1 Jurisdictional Boundaries).

In response to item (2) of this RAI, the applicant acknowledges that ASCE/SEI 4-98 is not a code and indicates that the reference will be removed from the list of codes in EPR FSAR Sections 3.8.1.2.1 and 3.8.2.2.1. The staff notes that the markup in the RAI deleted references to ASCE/SEI 4-98 from U.S. EPR FSAR, Tier 2, Sections 3.8.3.2.1 and 3.8.4.2.1 in addition to Sections 3.8.1.2.1 and 3.8.2.2.1. However, ASCE 4-98 is still generally referred to for seismic analysis and design in FSAR Sections 3.8.3.4.4 and 3.8.4.4.1. Furthermore, the applicant lists three specific provisions of ASCE/SEI 4-98 (items 2-a, 2-b, and 2-c) utilized in the analysis and provides the technical basis for the use of two of the three provisions (items 2-b and 2-c). Regarding item 2-b, the staff understands that passive resistance of the soil is relied upon for the stability evaluation of plant structures. Therefore, the soil pressures to be used for design of foundations should consider both seismic induced soil pressure loads and soil passive pressures.

The following additional information is needed to resolve this RAI:

Regarding item (1) of this RAI, the staff notes that Interpretation No. 12 (III-2-83-01) of the ASME Code, Section III, states that when the containment foundation is integral with other building foundations: "The portion of the common foundation directly beneath the containment vessel, including any additional peripheral volume for anchoring of the containment shell reinforcing, shall be constructed in accordance with the rules of Section III, Division 2, when required by the Design Specification." Therefore, to complete the response to item (1) of this RAI, the applicant is requested to confirm that an additional peripheral volume for anchoring of the containment shell reinforcing is included within the jurisdictional boundary of the ASME Code Section III, Division 2 basemat. This additional peripheral volume should also be indicated in Figure 03.08.01-4-1 Jurisdictional Boundaries. In addition, the description of the jurisdictional boundary and loading considerations between the ASME containment and the other non-ASME structures, which are discussed in the RAI response, needs to be summarized in the appropriate locations in the EPR FSAR Section 3.8.

Regarding item (2) of this RAI, the applicant is requested to confirm that the foundations of all Seismic Category I structures have been designed for the envelope of seismic induced soil loads and soil passive pressures. In addition, the applicant is requested to delete all discussions and references to ASCE 4-98 (wherever they appear in the FSAR including Sections 3.8.3.4.4 and 3.8.4.4.1) when no technical basis has been provided for their use.

Response to Question 03.08.01-38:

1. Common basemat jurisdictional boundary for the U.S. EPR is aligned with the outside of the Reactor Shield Building wall. This is indicated in Figure 03.08.01-38-1 (Note 2). This figure will be added to U.S. EPR FSAR Tier 2 as Figure 3.8-118. A discussion of loading considerations with respect to structure-to-structure effects is provided in U.S. EPR FSAR Tier 2, Section 3.8.1.3.2, Section 3.8.3.3.2, Section 3.8.4.3.2 and Section 3.8.5.3. This information will be revised to include a reference to Figure 3.8-118 regarding jurisdictional boundaries.
2. Where no technical justification has been provided for their use, references to ASCE 4-98 have been removed from U.S. EPR FSAR Tier 2, Section 3. Remaining U.S. EPR FSAR Tier 2, Section 3.8 references to ASCE 4-98 are technically justified.

The Response to RAI 376, Question 3.8.5-28 addresses the design of the embedded structure to seismically induced soil pressures.

FSAR Impact:

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