

ArevaEPRDCPEm Resource

From: WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]
Sent: Thursday, June 23, 2011 1:52 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); CORNELL Veronica (EXTERNAL AREVA)
Subject: Response to U.S. EPR Design Certification Application RAI No. 248, FSAR Ch 3, Supplement 12
Attachments: RAI 248 Supplement 12 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009, to address 5 of the remaining 23 questions. AREVA NP submitted Supplement 2 to the response on November 18, 2009, to address 8 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on December 18, 2009, to address 8 of the remaining 10 questions. AREVA NP submitted Supplement 4 to the response on February 25, 2010, to address 1 of the remaining 2 questions. AREVA NP submitted Supplement 5 to the response on June 24, 2010, to provide a revised schedule for responding to Question 03.07.02-51. AREVA NP submitted Supplement 6 on July 15, 2010, to provide an INTERIM response to Question 03.07.02-51. AREVA NP submitted Supplement 7 on July 30, 2010, to provide a revised response to Question 03.07.02-55. On January 19, 2011, AREVA NP submitted Supplement 8 to provide a final response to Question 03.07.02-51. On March 7, 2011, AREVA submitted Supplement 9 to provide a revised response to Question 03.08.01-33. AREVA NP submitted Supplement 10 on March 24, 2011, to provide a revised response to Question 03.08.01-33 and a schedule for the revised response to Question 03.08.01-35. On March 30, 2011, AREVA submitted Supplement 11 to provide a revised response to Question 03.08.01-35.

The responses to Question 03.07.02-44 and Question 03.07.02-46 are superseded by the response to RAI 320 Question 03.07.02-63. The attached file, "RAI 248 Supplement 12 Response US EPR DC.pdf" provides a revised response to these questions.

The following table indicates the respective pages in the response document, "RAI 248 Supplement 12 Response US EPR DC.pdf," that contains AREVA NP's revised responses to the subject questions.

Question #	Start Page	End Page
RAI 248 — 03.07.02-44	2	2
RAI 248 — 03.07.02-46	3	4

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: WELLS Russell (RS/NB)
Sent: Wednesday, March 30, 2011 12:53 PM
To: 'Tesfaye, Getachew'
Cc: CORNELL Veronica (External RS/NB); BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 248, FSAR Ch 3, Supplement 11

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009, to address 5 of the remaining 23 questions. AREVA NP submitted Supplement 2 to the response on November 18, 2009, to address 8 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on December 18, 2009, to address 8 of the remaining 10 questions. AREVA NP submitted Supplement 4 to the response on February 25, 2010, to address 1 of the remaining 2 questions. AREVA NP submitted Supplement 5 to the response on June 24, 2010, to provide a revised schedule for responding to Question 03.07.02-51. AREVA NP submitted Supplement 6 on July 15, 2010, to provide an INTERIM response to Question 03.07.02-51. AREVA NP submitted Supplement 7 on July 30, 2010, to provide a revised response to Question 03.07.02-55. On January 19, 2011, AREVA NP submitted Supplement 8 to provide a final response to Question 03.07.02-51. On March 7, 2011, AREVA submitted Supplement 9 to provide a revised response to Question 03.08.01-33. AREVA NP submitted Supplement 10 on March 24, 2011, to provide a revised response to Question 03.08.01-33 and a schedule for the revised response to Question 03.08.01-35.

The attached file, "RAI 248 Supplement 11 Response US EPR DC.pdf" provides a technically correct and complete FINAL response to Question 03.08.01-35, as committed.

The following table indicates the respective page in the response document, "RAI 248 Supplement 11 Response US EPR DC.pdf," that contains AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 248 — 03.08.01-35	2	2

This concludes the formal AREVA NP response to RAI 248, and there are no questions from this RAI for which AREVA NP has not provided responses.

Sincerely,

Russ Wells

U.S. EPR Design Certification Licensing Manager

AREVA NP, Inc.

3315 Old Forest Road, P.O. Box 10935

Mail Stop OF-57

Lynchburg, VA 24506-0935

Phone: 434-832-3884 (work)

434-942-6375 (cell)

Fax: 434-382-3884

Russell.Wells@Areva.com

From: WELLS Russell (RS/NB)

Sent: Thursday, March 24, 2011 1:36 PM

To: 'Tesfaye, Getachew'

Cc: CORNELL Veronica (External RS/NB); BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB)

Subject: Response to U.S. EPR Design Certification Application RAI No. 248, FSAR Ch 3, Supplement 10

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009, to address 5 of the remaining 23 questions. AREVA NP submitted Supplement 2 to the response on November 18, 2009, to address 8 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on December 18, 2009, to address 8 of the remaining 10 questions. AREVA NP submitted Supplement 4 to the response on February 25, 2010, to address 1 of the remaining 2 questions. AREVA NP submitted Supplement 5 to the response on June 24, 2010, to provide a revised schedule for responding to Question 03.07.02-51. AREVA NP submitted Supplement 6 on July 15, 2010, to provide an INTERIM response to Question 03.07.02-51. AREVA NP submitted Supplement 7 on July 30, 2010, to provide a revised response to Question 03.07.02-55. On January 19, 2011, AREVA NP submitted Supplement 8 to provide a final response to Question 03.07.02-51. On March 7, 2011, AREVA submitted Supplement 9 to provide a revised response to Question 03.08.01-33.

The attached file, "RAI 248 Supplement 9 Response US EPR DC.pdf" provides a technically correct and complete response to question 03.08.01-33, as committed.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 248 Question 03.08.01-33.

The following table indicates the respective pages in the response document, "RAI 248 Supplement 9 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 248 — 03.08.01-33	2	3

The final response to Question 03.08.01-35 was submitted in RAI 248 Supplement 1 on September 29, 2009. To address NRC comments received during the U.S. EPR FSAR Section 3.8 audit held February 14 – 17, 2011, the response to Question 03.08.01-35 is being revised.

The schedule for the revised response to Question 03.08.01-35 is provided below:

Question #	Response Date
RAI 248 — 03.08.01-35	April 26, 2011

Sincerely,

Russ Wells

U.S. EPR Design Certification Licensing Manager

AREVA NP, Inc.

3315 Old Forest Road, P.O. Box 10935

Mail Stop OF-57

Lynchburg, VA 24506-0935

Phone: 434-832-3884 (work)

434-942-6375 (cell)

Fax: 434-382-3884

Russell.Wells@Areva.com

From: WELLS Russell (RS/NB)

Sent: Monday, March 07, 2011 6:19 PM

To: 'Tefaye, 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. 248, FSAR Ch 3, Supplement 9

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009, to address 5 of the remaining 23 questions. AREVA NP submitted Supplement 2 to the response on November 18, 2009, to address 8 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on December 18, 2009, to address 8 of the remaining 10 questions. AREVA NP submitted Supplement 4 to the response on February 25, 2010, to address 1 of the remaining 2 questions. AREVA NP submitted Supplement 5 to the response on June 24, 2010, to provide a revised schedule for responding to Question 03.07.02-51. AREVA NP submitted Supplement 6 on July 15, 2010, to provide an INTERIM response to Question 03.07.02-51. AREVA NP submitted Supplement 7 on July 30, 2010, to provide a revised response to Question 03.07.02-55. On January 19, 2011, AREVA NP submitted Supplement 8 to provide a final response to Question 03.07.02-51.

The final response to Question 03.08.01-33 was submitted in RAI 248 Supplement 1, September 29, 2009. To address NRC comments received during the U.S. EPR FSAR Section 3.8 audit held February 14 – 17, 2011, the response to Question 03.08.01-33 is being revised.

The schedule for the revised response to Question 03.08.01-33 is provided below:

Question #	Response Date
RAI 248 — 03.08.01-33	April 26, 2011

Sincerely,

Russ Wells

U.S. EPR Design Certification Licensing Manager

AREVA NP, Inc.

3315 Old Forest Road, P.O. Box 10935

Mail Stop OF-57

Lynchburg, VA 24506-0935

Phone: 434-832-3884 (work)

434-942-6375 (cell)

Fax: 434-382-3884

Russell.Wells@Areva.com

From: BRYAN Martin (External RS/NB)

Sent: Wednesday, January 19, 2011 1:19 PM

To: 'Tefaye, 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. 248, FSAR Ch 3, Supplement 8

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009, to address 5 of the remaining 23 questions. AREVA NP submitted Supplement 2 to the response on November 18, 2009, to address 8 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on December 18, 2009, to address 8 of the remaining 10 questions. AREVA NP submitted Supplement 4 to the response on February 25, 2010, to address 1 of the remaining 2 questions. AREVA NP submitted Supplement 5 to the response on June 24, 2010, to provide a revised schedule for responding to Question 03.07.02-51. AREVA NP submitted

Supplement 6 on July 15, 2010, to provide an INTERIM response to Question 03.07.02-51. AREVA NP submitted Supplement 7 on July 30, 2010, to provide a revised response to Question 03.07.02-55.

The attached file, "RAI 248 Supplement 8 Response US EPR DC.pdf" provides a technically correct and complete response to the remaining question, as committed.

The following table indicates the respective pages in the response document, "RAI 248 Supplement 8 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 248 — 03.07.02-51	2	3

This concludes the formal AREVA NP response to RAI 248, and there are no questions from this RAI for which AREVA NP has not provided responses.

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: Friday, July 30, 2010 4:50 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); CORNELL Veronica (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 248, FSAR Ch 3, Supplement 7

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009, to address 5 of the remaining 23 questions. AREVA NP submitted Supplement 2 to the response on November 18, 2009, to address 8 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on December 18, 2009, to address 8 of the remaining 10 questions. AREVA NP submitted Supplement 4 to the response on February 25, 2010, to address 1 of the remaining 2 questions. AREVA NP submitted Supplement 5 to the response on June 24, 2010, to provide a revised schedule for responding to Question 03.07.02-51. AREVA NP submitted Supplement 6 on July 15, 2010, to provide an INTERIM response to Question 03.07.02-51.

As a result of the civil/structural re-planning activities, the attached file, "RAI 248 Supplement 7 Response US EPR DC.pdf" provides a revised response to Question 03.07.02-55.

The following table indicates the respective pages in the response document, "RAI 248 Supplement 7 Response US EPR DC.pdf," that contain AREVA NP's revised response to the subject question.

Question #	Start Page	End Page
RAI 248 — 03.07.02-55	2	2

The schedule for technically correct and complete FINAL response to the remaining 1 question is unchanged and provided below:

Question #	Response Date
RAI 248 — 03.07.02-51	January 20, 2011

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, July 15, 2010 11:31 AM
To: 'Tefaye, 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. 248, FSAR Ch 3, Supplement 6

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009, to address 5 of the remaining 23 questions. AREVA NP submitted Supplement 2 to the response on November 18, 2009, to address 8 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on December 18, 2009, to address 8 of the remaining 10 questions. AREVA NP submitted Supplement 4 to the response on February 25, 2010, to address 1 of the remaining 2 questions. AREVA NP submitted Supplement 5 to the response on June 24, 2010, to provide a revised schedule for responding to this question based on the June 9, 2020, NRC public meeting with AREVA but this response addressed 0 of the remaining 1 remaining questions. The attached file, "RAI 248 Question 03.07.02-51 Response US EPR DC – INTERIM.pdf" provides technically correct and complete INTERIM response to the remaining 1 question, as committed.

The following table indicates the respective pages in the response document, "RAI 248 Question 03.07.02-51 Response US EPR DC – INTERIM.pdf," that contain AREVA NP's INTERIM response to the subject question.

Question #	Start Page	End Page
RAI 248 — 03.07.02-51	2	2

The schedule for technically correct and complete FINAL response to the remaining 1 question is unchanged and provided below:

Question #	Response Date
RAI 248 — 03.07.02-51	January 20, 2011

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, June 24, 2010 12:24 PM
To: 'Tesfaye, 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); RYAN Tom (AREVA NP INC); GARDNER George Darrell (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 248, FSAR Ch 3, Supplement 5

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009 to address 5 of the remaining 23 questions. AREVA NP submitted Supplement 2 to the response on November 18, 2009 to address 8 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on December 18, 2009 to address 8 of the remaining 10 questions. AREVA NP submitted Supplement 4 to the response on February 25, 2010 to address 1 of the remaining 2 questions.

Based upon the civil/structural re-planning activities and revised RAI response schedule presented to the NRC during the June 9, 2010, Public Meeting, and to allow time to interact with the NRC on the responses, the schedule for the remaining question has been changed.

Prior to submittal of the final RAI response, AREVA NP will provide an interim RAI response that includes:

- (1) a description of the technical work (e.g., methodology)
- (2) U.S. EPR FSAR revised pages, as applicable

The revised schedule for an interim response and the technically correct and complete response to these questions is provided below.

Question #	Interim Response Date	Final Response Date
RAI 248 — 03.07.02-51	July 16, 2010	January 20, 2011

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, February 25, 2010 5:58 PM

To: 'Tefaye, Getachew'

Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); ROMINE Judy (AREVA NP INC); VAN NOY Mark (EXT); DUNCAN Leslie E (AREVA NP INC)

Subject: Response to U.S. EPR Design Certification Application RAI No. 248, FSAR Ch 3, Supplement 4

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009 to address 5 of the remaining 23 questions. AREVA NP submitted Supplement 2 to the response on November 18, 2009 to address 8 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on December 18, 2009 to address 8 of the remaining 10 questions. The attached file, "RAI 248 Supplement 4 Response US EPR DC.pdf" provides technically correct and complete responses to 1 of the remaining 2 questions.

One response, RAI 248 Question 03.07.02-51, has been deferred because supporting analysis work remains in progress. The seismic analysis associated with an embedded finite element model (FEM) that includes detailed modeling of walls and floors is being evaluated for potential cracked concrete effects and is interdependent with other RAI responses.

The following table indicates the respective pages in the response document, "RAI 248 Supplement 4 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 248 — 03.07.02-50	2	2

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

Question #	Response Date
RAI 248 — 03.07.02-51	August 13, 2010

Sincerely,

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

From: Pederson Ronda M (AREVA NP INC)

Sent: Friday, December 18, 2009 4:23 PM

To: 'Tefaye, 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. 248, FSAR Ch 3, Supplement 3

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009 to address 5 of the remaining 23 questions. AREVA NP submitted Supplement 2 to the response on November 18, 2009 to address 8 of the remaining 18 questions. The attached file, "RAI 248 Supplement 3 Response US EPR DC.pdf" provides technically correct and complete responses to 8 of the remaining 10 questions, as committed. Two responses, RAI 248, Questions 03.07.02-50 and 03.08.01-51, have been deferred because supporting analysis work remains in progress.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 248 Questions 03.07.01-25, 03.07.02-48 and 03.08.01-36.

The following table indicates the respective pages in the response document, "RAI 248 Supplement 3 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 248 – 03.07.01-25	2	8
RAI 248 – 03.07.02-43	9	24
RAI 248 – 03.07.02-44	25	26
RAI 248 – 03.07.02-46	27	28
RAI 248 – 03.07.02-47	29	30
RAI 248 – 03.07.02-48	31	31
RAI 248 – 03.07.02-54	32	32
RAI 248 – 03.08.01-36	33	34

The schedule for technically correct and complete responses to the remaining 2 questions has been changed and is provided below:

Question #	Response Date
RAI 248 – 03.07.02-50	March 2, 2010
RAI 248 – 03.07.02-51	March 2, 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: WELLS Russell D (AREVA NP INC)

Sent: Wednesday, November 18, 2009 7:25 PM

To: 'Getachew Tesfaye'

Cc: Pederson Ronda M (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC)

Subject: Response to U.S. EPR Design Certification Application RAI No. 248, FSAR Ch 3, Supplement 2

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. AREVA NP submitted Supplement 1 to the response on September 29, 2009 to address 5 of the remaining 23 questions. The attached file, "RAI 248 Supplement 2 Response US EPR DC.pdf" provides technically correct and complete responses to 8 of the remaining 18 questions, as committed. Two responses, RAI 248, Questions 03.07.02-44 and 03.08.01-36, have been deferred because supporting analysis work remains in progress.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 248 Questions 03.04.02-12, 03.07.02-53, 03.07.02-56, and 03.07.02-57.

The following table indicates the respective pages in the response document, "RAI 248 Supplement 2 Response US EPR DC.pdf" that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 03.04.02-12	2	2
RAI 03.07.02-45	3	3
RAI 03.07.02-49	4	4
RAI 03.07.02-52	5	5
RAI 03.07.02-53	6	8
RAI 03.07.02-56	9	12
RAI 03.07.02-57	13	14
RAI 03.08.04-7	15	15

The schedule for technically correct and complete responses to the remaining 10 questions has been changed and provided below:

Question #	Response Date
RAI 03.07.01-25	December 18, 2009
RAI 03.07.02-43	December 18, 2009
RAI 03.07.02-44	January 28, 2010
RAI 03.07.02-46	December 18, 2009
RAI 03.07.02-47	December 18, 2009
RAI 03.07.02-48	December 18, 2009
RAI 03.07.02-50	December 18, 2009
RAI 03.07.02-51	December 18, 2009
RAI 03.07.02-54	December 18, 2009
RAI 03.08.01-36	January 28, 2010

Sincerely,

(Russ Wells on behalf of)

Ronda Pederson

ronda.pederson@areva.com

Licensing Manager, U.S. EPR Design Certification

New Plants Deployment

AREVA NP, Inc.

An AREVA and Siemens company

3315 Old Forest Road

Lynchburg, VA 24506-0935

From: Pederson Ronda M (AREVA NP INC)
Sent: Tuesday, September 29, 2009 7:16 PM
To: 'Tefaye, 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. 248, Ch. 3, Supplement 1

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 2 of the 25 questions of RAI No. 248 on August 14, 2009. The attached file, "RAI 248 Supplement 1 Response US EPR DC.pdf" provides technically correct and complete responses to 5 of the remaining 23 questions. One response, RAI 248, Question 03.08.04-7, has been deferred because a supporting FSAR change remains in progress.

The following table indicates the respective pages in the response document, "RAI 248 Supplement 1 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 03.07.02-58	2	7
RAI 03.08.01-33	8	9
RAI 03.08.01-34	10	15
RAI 03.08.01-35	16	16
RAI 03.08.03-19	17	18

The schedule for technically correct and complete responses to the remaining 18 questions has been changed and is provided below:

Question #	Response Date
RAI 03.04.02-12	November 18, 2009
RAI 03.07.01-25	December 18, 2009
RAI 03.07.02-43	December 18, 2009
RAI 03.07.02-44	November 18, 2009
RAI 03.07.02-45	November 18, 2009
RAI 03.07.02-46	December 18, 2009
RAI 03.07.02-47	December 18, 2009
RAI 03.07.02-48	December 18, 2009
RAI 03.07.02-49	November 18, 2009
RAI 03.07.02-50	December 18, 2009
RAI 03.07.02-51	December 18, 2009
RAI 03.07.02-52	November 18, 2009
RAI 03.07.02-53	November 18, 2009
RAI 03.07.02-54	December 18, 2009
RAI 03.07.02-56	November 18, 2009
RAI 03.07.02-57	November 18, 2009
RAI 03.08.01-36	November 18, 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, August 14, 2009 5:05 PM

To: 'Tsfaye, 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. 248, Ch. 3

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 248 Response US EPR DC.pdf" provides technically correct and complete responses to 2 of the 25 questions.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 248 Question 03.07.02-55.

The following table indicates the respective pages in the response document, "RAI 248 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 03.04.02-12	2	2
RAI 03.07.01-25	3	3
RAI 03.07.02-43	4	4
RAI 03.07.02-44	5	5
RAI 03.07.02-45	6	6
RAI 03.07.02-46	7	7
RAI 03.07.02-47	8	9
RAI 03.07.02-48	10	10
RAI 03.07.02-49	11	11
RAI 03.07.02-50	12	12
RAI 03.07.02-51	13	13
RAI 03.07.02-52	14	14
RAI 03.07.02-53	15	16
RAI 03.07.02-54	17	17
RAI 03.07.02-55	18	20
RAI 03.07.02-56	21	22

RAI 03.07.02-57	23	23
RAI 03.07.02-58	24	24
RAI 03.08.01-32	25	25
RAI 03.08.01-33	26	26
RAI 03.08.01-34	27	27
RAI 03.08.01-35	28	28
RAI 03.08.01-36	29	29
RAI 03.08.03-19	30	30
RAI 03.08.04-7	31	31

A complete answer is not provided for 23 of the 25 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 03.04.02-12	November 18, 2009
RAI 03.07.01-25	December 18, 2009
RAI 03.07.02-43	December 18, 2009
RAI 03.07.02-44	November 18, 2009
RAI 03.07.02-45	November 18, 2009
RAI 03.07.02-46	December 18, 2009
RAI 03.07.02-47	December 18, 2009
RAI 03.07.02-48	December 18, 2009
RAI 03.07.02-49	November 18, 2009
RAI 03.07.02-50	December 18, 2009
RAI 03.07.02-51	December 18, 2009
RAI 03.07.02-52	November 18, 2009
RAI 03.07.02-53	November 18, 2009
RAI 03.07.02-54	December 18, 2009
RAI 03.07.02-56	November 18, 2009
RAI 03.07.02-57	November 18, 2009
RAI 03.07.02-58	September 29, 2009
RAI 03.08.01-33	September 29, 2009
RAI 03.08.01-34	September 29, 2009
RAI 03.08.01-35	September 29, 2009
RAI 03.08.01-36	November 18, 2009
RAI 03.08.03-19	September 29, 2009
RAI 03.08.04-7	September 29, 2009

Sincerely,

Ronda Pederson

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Licensing Manager, U.S. EPR Design Certification

AREVA NP Inc.

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

Sent: Tuesday, July 14, 2009 7:50 PM

To: ZZ-DL-A-USEPR-DL

Cc: Candra, Hernando; Chakravorty, Manas; Xu, Jim; Patel, Jay; Miernicki, Michael; Colaccino, Joseph; ArevaEPRDCPEm Resource

Subject: U.S. EPR Design Certification Application RAI No. 248(2934,3030,3034,3098,3099,3100), Ch. 3

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on June 18, 2009, and discussed with your staff on July 14, 2009. No changes were made to the draft RAI questions 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. 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: 3147

Mail Envelope Properties (2FBE1051AEB2E748A0F98DF9EEE5A5D47AEE1A)

Subject: Response to U.S. EPR Design Certification Application RAI No. 248, FSAR Ch 3, Supplement 12
Sent Date: 6/23/2011 1:51:38 PM
Received Date: 6/23/2011 1:53:33 PM
From: WILLIFORD Dennis (AREVA)

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MESSAGE	31813	6/23/2011 1:53:33 PM
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Priority: Standard

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Sensitivity: Normal

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Response to
Request for Additional Information No. 248, Supplement 12

7/14/2009

U.S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 03.04.02 - Analysis Procedures
SRP Section: 03.07.01 - Seismic Design Parameters
SRP Section: 03.07.02 - Seismic System Analysis
SRP Section: 03.08.01 - Concrete Containment
SRP Section: 03.08.03 - Concrete and Steel Internal Structures of Steel or
Concrete Containments
SRP Section: 03.08.04 - Other Seismic Category I Structures

Application Section: FSAR Ch 3

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

Question 03.07.02-44:

Follow-up to RAI Question 03.07.02-3

The response does not adequately address the question which asked for the frequency transmission characteristics of the stick model as well as the FEMs used for seismic analysis. In reviewing the modal frequencies of the stick models, it is noted that for the balance of NI Common Basemat Structures, the Reactor Containment Building, and the Reactor Building Internal Structure, the highest reported frequencies as reported in FSAR Tables 3.7.2-1, 3.7.2-2, and 3.7.2-3 are 28.65 Hz, 34.98 Hz, and 35.44 Hz, respectively. As such, these models may not be appropriate for many Eastern U.S. sites where earthquakes are characterized by high frequency input. The applicant is requested to add a COL information item that requires the COL applicant to determine if the U.S. EPR seismic models are appropriate for use at the COL applicant's site because of the limitation of the seismic models to transmit high frequency input.

Response to Question 03.07.02-44:

The response to this question is superseded by the Response to RAI 320, Question 03.07.02-63.

FSAR Impact:

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

Question 03.07.02-46:**Follow-up to RAI Question 03.07.02-05**

The stick model represents a significant structural condensation of the FEM and is expected to model the global response of the structure to seismic input. The applicant in its response states that additional amplification due to flexible walls and floors is captured by the finite element model and incorporated into the tuning process. The majority of the structural resistance will be provided by in-plane shear and axial forces. It is unlikely the stick model by itself will capture the out-of-plane response of flexible floors and walls from the tuning process with the FEM. In its response to Question 03.07.02-9, the applicant states that vertical floor frequencies are determined from the independent modal analysis of the FEM. These determine SDOF oscillators for the stick models. A SDOF model is generated with the slab properties modeled in the vertical direction considering cracked and un-cracked concrete conditions. These are seismically excited and the envelope of the responses of both sticks is used to obtain zero period accelerations used in slab design. For walls, out-of-plane vibrations are evaluated in the same way as for floor slabs. However, on page 3.7-73, the FSAR states that floor and roof slabs are assumed rigid when developing the stick models for the NI Common Basemat Structures except that out-of-plane flexibilities of the following slabs and walls are explicitly accounted for by SDOF oscillators in the stick models:

- ◆ The removable walls at the steam generator (SG) towers above elevation +63 ft, 11-1/2 inches of the RBIS.
- ◆ The walls and roof slab of the SBs 2 and 3 shield structure and FB shield structure.
- ◆ The two flexible slabs at elevation +26 ft, 7 inches of SBs 2 and 3.

The applicant's response to Question 03.07.02-9 suggests that the use of SDOF oscillators is a general practice applicable to all walls and slabs not just those listed on page 3.7-73. As the FSAR and the responses to Questions 03.07.02-5 and 03.07.02-9 do not provide a clear or consistent picture of the treatment for these structural elements the applicant is requested to provide for the NI Common Basemat Structures the step-by-step process that is used to determine the amplified response of flexible slabs and walls and the generation of their respective ISRS. As part of this response the applicant is requested to address the following:

- a. What are the criteria for decoupling flexible floors and walls from the main stick model?
- b. Why were the walls and slabs identified on page 3.7-73 included in the stick model?
- c. Identify any other flexible walls and slabs that are included in the stick model and provide the reasons they are included.
- d. Identify the flexible slabs and walls that are excluded from the seismic stick model and provide the reasons for not including them.

Describe the impact of the decoupling approach on the seismic response (displacement, acceleration, ISRS) of both the NI Common Basemat Structure stick model and on the seismic response of the decoupled walls and floors.

Response to Question 03.07.02-46:

The response to this question is superseded by the Response to RAI 320, Question 03.07.02-63.

FSAR Impact:

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