

ArevaEPRDCPEm Resource

From: WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]
Sent: Wednesday, February 06, 2013 4:15 PM
To: Snyder, Amy
Cc: Miernicki, Michael; DELANO Karen (AREVA); LEIGHLITER John (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); TOLLEY Tracey (AREVA); VANCE Brian (AREVA); WELLS Russell (AREVA); WILLS Tiffany (AREVA); HARRINGTON James (AREVA)
Subject: Advanced Revised Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Question 03.09.05-26
Attachments: Advance Response to RAI 291 Question 03.09.05-26 - US EPR DC.pdf

Amy,

Attached is an Advanced Revised Response to RAI 291, Question 03.09.05-26 in advance of the final response date of March 31, 2013.

To keep our commitment to send a final response to this question by the commitment date, we need to receive all NRC staff feedback and comments no later than **March 15, 2013**.

As noted in our response to RAI 547, Question 03.06.01-14, sent in Supplement 4 on January 31, 2013, the purpose of the Revised Response to RAI 291, Question 03.09.05-26 is to delete COL information item 3.9-14 in U.S. EPR FSAR Tier 2, Section 3.9.5.2.

Please let me know if NRC staff has any questions or if this response can be sent as final.

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: WILLIFORD Dennis (RS/NB)
Sent: Wednesday, February 06, 2013 3:47 PM
To: Amy.Snyder@nrc.gov
Cc: Michael.Miernicki@nrc.gov; DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); WILLS Tiffany (CORP/QP); WELLS Russell (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 9

Amy,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010, providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010, to address 1 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on February 11, 2010, to address 10 of the remaining 17 questions. AREVA NP submitted Supplement 4 to the response on March 11, 2010, to address 4 of the remaining 7 questions. AREVA NP submitted Supplement 5 to the response on March 19, 2010 to address 1 of the remaining 3 questions. AREVA NP submitted Supplement 6 to the response on May 12, 2010, to address the remaining 3 questions. On July 30, 2010, AREVA NP

submitted Supplement 7 to provide revised final responses to Question 03.07.02-61 and Question 03.07.02-62. AREVA NP submitted Supplement 8 to the response on June 23, 2011 to provide a revised final response to Question 03.07.01-26.

As described in our response to RAI 547, Question 03.06.01-14, sent in Supplement 4 on January 31, 2013, the response to RAI 291, Question 03.09.05-26 will be revised to delete COL information item 3.9-14 in U.S. EPR FSAR Tier 2, Section 3.9.5.2. This supplement provides a schedule for a revised final response to this question.

Question #	Response Date
RAI 291 — 03.09.05-26	March 31, 2013

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: WILLIFORD Dennis (RS/NB)
Sent: Thursday, June 23, 2011 1:53 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); CORNELL Veronica (External RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 8

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010, providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010, to address 1 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on February 11, 2010, to address 10 of the remaining 17 questions. AREVA NP submitted Supplement 4 to the response on March 11, 2010, to address 4 of the remaining 7 questions. AREVA NP submitted Supplement 5 to the response on March 19, 2010 to address 1 of the remaining 3 questions. AREVA NP submitted Supplement 6 to the response on May 12, 2010, to address the remaining 3 questions. On July 30, 2010, AREVA NP submitted Supplement 7 to provide revised final responses to Question 03.07.02-61 and Question 03.07.02-62.

The response to Question 03.07.01-26 is superseded by the response to RAI 320 Question 03.07.02-63. The attached file, "RAI 291 Supplement 8 Response US EPR DC.pdf" provides a revised response to Question 03.07.01-26.

The following table indicates the respective pages in the response document, "RAI 291 Supplement 8 Response US EPR DC.pdf," that contain AREVA NP's revised response to the subject question.

Question #	Start Page	End Page
RAI 291 — 03.07.01-26	2	2

This concludes the formal AREVA NP response to RAI 291, 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 (EXT)
Sent: Friday, July 30, 2010 4:56 PM
To: 'Tefsaye, 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. 291, FSAR Ch. 3, Supplement 7

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010, providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010, to address 1 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on February 11, 2010, to address 10 of the remaining 17 questions. AREVA NP submitted Supplement 4 to the response on March 11, 2010, to address 4 of the remaining 7 questions. AREVA NP submitted Supplement 5 to the response on March 19, 2010 to address 1 of the remaining 3 questions. AREVA NP submitted Supplement 6 to the response on May 12, 2010, to address the remaining 3 questions.

As a result of the civil/structural re-planning activities, the attached file, "RAI 291 Supplement 7 Response US EPR DC.pdf" provides revised responses to Question 03.07.02-61 and Question 03.07.02-62.

The following table indicates the respective pages in the response document, "RAI 291 Supplement 7 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 291 — 03.07.02-61	2	2
RAI 291 — 03.07.02-62	3	3

This concludes the formal AREVA NP response to RAI 291, 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: Wednesday, May 12, 2010 10:57 AM

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); GARDNER George Darrell (AREVA NP INC)

Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 6

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010 providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010 to address 1 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on February 11, 2010 to address 10 of the remaining 17 questions. AREVA NP submitted Supplement 4 to the response on March 11, 2010 to address 4 of the remaining 7 questions. AREVA NP submitted Supplement 5 to the response on March 19, 2010 to address 1 of the remaining 3 questions. The attached file, "RAI 291 Supplement 6 Response US EPR DC.pdf" provides technically correct and complete responses to 2 of the remaining 2 questions as committed.

The following table indicates the respective pages in the response document, "RAI 291 Supplement 6 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 291 — 03.10-24	2	2
RAI 291 — 03.10-26	3	3

This concludes the formal AREVA NP response to RAI 291, 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, March 19, 2010 3:55 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. 291, FSAR Ch. 3, Supplement 5

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010 providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010 to address 1 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on February 11, 2010 to address 10 of the remaining 17 questions. AREVA NP submitted Supplement 4 to the response on March 11, 2010 to address 4 of the remaining 7 questions. The attached file, "RAI 291 Supplement 5

Response US EPR DC.pdf” provides technically correct and complete responses to 1 of the remaining 3 questions as committed.

The following table indicates the respective pages in the response document, “RAI 291 Supplement 5 Response US EPR DC.pdf,” that contain AREVA NP’s response to the subject question.

Question #	Start Page	End Page
RAI 291 — 03.02.01-11	2	3

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

Question #	Response Date
RAI 291 — 03.10-24	May 12, 2010
RAI 291 — 03.10-26	May 12, 2010

Sincerely,

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

From: BRYAN Martin (EXT)
Sent: Thursday, March 11, 2010 6:40 PM
To: 'Tefsaye, 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. 291, FSAR Ch. 3, Supplement 4

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010 providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010 to address 1 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on February 11, 2010 to address 10 of the remaining 17 questions. The attached file, “RAI 291 Supplement 4 Response US EPR DC.pdf” provides technically correct and complete responses to 4 of the remaining 7 questions.

The commitment dates for responding to Questions 03.10-24 and 03.10-26 have been changed to May 12, 2010. Question 03.02.01-11 is deferred to allow additional time to finalize response. Question 03.10-24 is deferred to assess potential impact on other sections of the U.S. EPR FSAR. Question 03.10-25 is deferred to allow additional time to finalize response.

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 291 Questions 03.07.02-60, 03.09.05-24, 03.09.05-25, and 03.10-27.

The following table indicates the respective pages in the response document, “RAI 291 Supplement 4 Response US EPR DC.pdf,” that contain AREVA NP’s response to the subject questions.

Question #	Start Page	End Page
RAI 291 — 03.07.02-60	2	3
RAI 291 — 03.09.05-24	4	4
RAI 291 — 03.09.05-25	5	5
RAI 291 — 03.10-27	6	6

The schedule for technically correct and complete responses to the remaining 3 questions has been changed and is provided below:

Question #	Response Date
RAI 291 — 03.02.01-11	March 19, 2010
RAI 291 — 03.10-24	May 12, 2010
RAI 291 — 03.10-26	May 12, 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: Thursday, February 11, 2010 10:03 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)
Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 3

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010 providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010 to address 1 of the remaining 18 questions. The attached file, "RAI 291 Supplement 3 Response US EPR DC.pdf" provides technically correct and complete responses to 10 of the remaining 17 questions.

The commitment dates for responding to Questions 03.09.05-24, 03.09.05-25, 03.10-24, and 03.10-26 have been changed to March 11, 2010 because of interdependency with other design work. The response for Question 03.07.02-61, which had a commitment date of March 11, 2010, is being provided ahead of schedule in this supplement, Supplement 3.

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 291 Questions 03.07.02-62, 03.09.05-26, 03.10-28, and 03.10-30.

The following table indicates the respective pages in the response document, "RAI 291 Supplement 3 Response US EPR DC.pdf" that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
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RAI 291 — 03.07.01-26	2	2
RAI 291 — 03.07.02-61	3	3
RAI 291 — 03.07.02-62	4	5
RAI 291 — 03.09.05-23	6	6
RAI 291 — 03.09.05-26	7	7
RAI 291 — 03.09.05-27	8	8
RAI 291 — 03.10-25	9	9
RAI 291 — 03.10-28	10	10
RAI 291 — 03.10-29	11	11
RAI 291 — 03.10-30	12	13

The schedule for technically correct and complete responses to the remaining 7 questions has been changed and is provided below:

Question #	Response Date
RAI 291 — 03.02.01-11	March 11, 2010
RAI 291 — 03.07.02-60	March 11, 2010
RAI 291 — 03.09.05-24	March 11, 2010
RAI 291 — 03.09.05-25	March 11, 2010
RAI 291 — 03.10-24	March 11, 2010
RAI 291 — 03.10-26	March 11, 2010
RAI 291 — 03.10-27	March 11, 2010

Sincerely,

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

From: DUNCAN Leslie E (AREVA NP INC)
Sent: Tuesday, January 19, 2010 12:02 PM
To: 'Tefaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); VAN NOY Mark (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 2

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010 providing a schedule for the remaining 18 questions. The attached file, "RAI 291 Supplement 2 Response US EPR DC.pdf" provides a technically correct and complete response to 1 of the remaining 18 questions, as committed.

The following table indicates the respective pages in the response document, "RAI 291 Supplement 2 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 291 — 03.07.02-59	2	2

The schedule for technically correct and complete responses to the remaining 17 questions is unchanged and provided below:

Question #	Response Date
RAI 291 — 03.02.01-11	March 11, 2010
RAI 291 — 03.07.01-26	February 11, 2010
RAI 291 — 03.07.02-60	March 11, 2010
RAI 291 — 03.07.02-61	March 11, 2010
RAI 291 — 03.07.02-62	February 11, 2010
RAI 291 — 03.09.05-23	February 11, 2010
RAI 291 — 03.09.05-24	February 11, 2010
RAI 291 — 03.09.05-25	February 11, 2010
RAI 291 — 03.09.05-26	February 11, 2010
RAI 291 — 03.09.05-27	February 11, 2010
RAI 291 — 03.10-24	February 11, 2010
RAI 291 — 03.10-25	February 11, 2010
RAI 291 — 03.10-26	February 11, 2010
RAI 291 — 03.10-27	March 11, 2010
RAI 291 — 03.10-28	February 11, 2010
RAI 291 — 03.10-29	February 11, 2010
RAI 291 — 03.10-30	February 11, 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: Thursday, January 07, 2010 5:31 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. 291, FSAR Ch. 3, Supplement 1

Getachew,

AREVA NP Inc. (AREVA NP) provided a response to 1 of the 19 questions of RAI No. 291 on October 19, 2009.

Due to changes in engineering design approaches and supporting documents, holiday work schedules, and the volume of requests for additional information, responses for the remaining 18 questions are delayed.

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

Question #	Response Date
RAI 291 — 03.02.01-11	March 11, 2010

RAI 291 — 03.07.01-26	February 11, 2010
RAI 291 — 03.07.02-59	January 21, 2010
RAI 291 — 03.07.02-60	March 11, 2010
RAI 291 — 03.07.02-61	March 11, 2010
RAI 291 — 03.07.02-62	February 11, 2010
RAI 291 — 03.09.05-23	February 11, 2010
RAI 291 — 03.09.05-24	February 11, 2010
RAI 291 — 03.09.05-25	February 11, 2010
RAI 291 — 03.09.05-26	February 11, 2010
RAI 291 — 03.09.05-27	February 11, 2010
RAI 291 — 03.10-24	February 11, 2010
RAI 291 — 03.10-25	February 11, 2010
RAI 291 — 03.10-26	February 11, 2010
RAI 291 — 03.10-27	March 11, 2010
RAI 291 — 03.10-28	February 11, 2010
RAI 291 — 03.10-29	February 11, 2010
RAI 291 — 03.10-30	February 11, 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: Monday, October 19, 2009 6:54 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. 291, FSAR Ch. 3

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 291 Response US EPR DC.pdf," provides a technically correct and complete response to 1 of the 19 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 291 Question 03.07.03-36

The following table indicates the respective page in the response document, "RAI 291 Response US EPR DC.pdf," that contains AREVA NP's response to the subject questions.

Question #	Start Page	End Page
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RAI 291 — 03.02.01-11	2	2
RAI 291 — 03.07.01-26	3	3
RAI 291 — 03.07.02-59	4	4
RAI 291 — 03.07.02-60	5	5
RAI 291 — 03.07.02-61	6	6
RAI 291 — 03.07.02-62	7	7
RAI 291 — 03.07.03-36	8	9
RAI 291 — 03.09.05-23	10	10
RAI 291 — 03.09.05-24	11	11
RAI 291 — 03.09.05-25	12	12
RAI 291 — 03.09.05-26	13	13
RAI 291 — 03.09.05-27	14	14
RAI 291 — 03.10-24	15	15
RAI 291 — 03.10-25	16	16
RAI 291 — 03.10-26	17	17
RAI 291 — 03.10-27	18	18
RAI 291 — 03.10-28	19	19
RAI 291 — 03.10-29	20	20
RAI 291 — 03.10-30	21	21

A complete answer is not provided for 18 of the 19 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 291 — 03.02.01-11	January 7, 2010
RAI 291 — 03.07.01-26	January 7, 2010
RAI 291 — 03.07.02-59	January 7, 2010
RAI 291 — 03.07.02-60	January 7, 2010
RAI 291 — 03.07.02-61	January 7, 2010
RAI 291 — 03.07.02-62	January 7, 2010
RAI 291 — 03.09.05-23	January 7, 2010
RAI 291 — 03.09.05-24	January 7, 2010
RAI 291 — 03.09.05-25	January 7, 2010
RAI 291 — 03.09.05-26	January 7, 2010
RAI 291 — 03.09.05-27	January 7, 2010
RAI 291 — 03.10-24	January 7, 2010
RAI 291 — 03.10-25	January 7, 2010
RAI 291 — 03.10-26	January 7, 2010
RAI 291 — 03.10-27	January 7, 2010
RAI 291 — 03.10-28	January 7, 2010
RAI 291 — 03.10-29	January 7, 2010
RAI 291 — 03.10-30	January 7, 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: Tesfaye, Getachew [<mailto:Getachew.Tesfaye@nrc.gov>]

Sent: Thursday, September 17, 2009 7:43 AM

To: ZZ-DL-A-USEPR-DL

Cc: Wong, Yuken; Chakravorty, Manas; Chen, Pei-Ying; Dixon-Herrity, Jennifer; Samaddar, Sujit; Hawkins, Kimberly; Miernicki, Michael; Patel, Jay; Colaccino, Joseph; ArevaEPRDCPEm Resource

Subject: U.S. EPR Design Certification Application RAI No. 291(3616,3691,3706,3707,3685,3703), FSAR Ch. 3

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on September 10, 2009, and on September 16, 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: 4216

Mail Envelope Properties (554210743EFE354B8D5741BEB695E6560C353D)

Subject: Advanced Revised Response to U.S. EPR Design Certification Application RAI
No. 291, FSAR Ch. 3, Question 03.09.05-26
Sent Date: 2/6/2013 4:14:48 PM
Received Date: 2/6/2013 4:15:02 PM
From: WILLIFORD Dennis (AREVA)

Created By: Dennis.Williford@areva.com

Recipients:

"Miernicki, Michael" <Michael.Miernicki@nrc.gov>
Tracking Status: None
"DELANO Karen (AREVA)" <Karen.Delano@areva.com>
Tracking Status: None
"LEIGHLITER John (AREVA)" <John.Leighliter@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
"TOLLEY Tracey (AREVA)" <Tracey.Tollar@areva.com>
Tracking Status: None
"VANCE Brian (AREVA)" <Brian.Vance@areva.com>
Tracking Status: None
"WELLS Russell (AREVA)" <Russell.Wells@areva.com>
Tracking Status: None
"WILLS Tiffany (AREVA)" <Tiffany.Wills@areva.com>
Tracking Status: None
"HARRINGTON James (AREVA)" <James.Harrington@areva.com>
Tracking Status: None
"Snyder, Amy" <Amy.Snyder@nrc.gov>
Tracking Status: None

Post Office: FUSLYNCMX03.fdom.ad.corp

Files	Size	Date & Time	
MESSAGE	24547	2/6/2013 4:15:02 PM	
Advance Response to RAI 291 Question 03.09.05-26 - US EPR DC.pdf			521482

Options

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

Advanced Response to

**Request for Additional Information No. 291,
Revised Response to Question 03.09.05-26
9/10/2009**

U.S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 03.02.01 - Seismic Classification

SRP Section: 03.07.01 - Seismic Design Parameters

SRP Section: 03.07.02 - Seismic System Analysis

SRP Section: 03.07.03 - Seismic Subsystem Analysis

SRP Section: 03.09.05 - Reactor Pressure Vessel Internals

**SRP Section: 03.10 - Seismic and Dynamic Qualification of Mechanical and
Electrical Equipment**

Application Section: EPR FSAR Section 3.10

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

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

Question 03.09.05-26:

Follow-up to Question 03.09.05-11

In RAI 03.09.05-11, the staff requested the applicant to provide a tabular summary in the FSAR, including each component of the reactor internals and core support structures, listing the maximum calculated total stress, deformation, and cumulative usage factor for each designated design and service limit defined in ASME Section III, Subsection NG. In the response, the applicant stated that providing a summary of maximum total stress, deformation, and cumulative usage fact values is the responsibility of the COL Applicant. However, FSAR Tier 2, Table 1.8-2, COL Item 3.9-11 is only for ASME Code Class 1 components. The calculated total stress, deformation, cumulative usage factor values for reactor internals have not been addressed by the applicant.

Please provide the requested information, revise COL Item 3.9-11 to include reactor internal structures and core support structures, or add a separate COL item.

Response to Question 03.09.05-26:

This response to RAI 291, Question 03.09.05-26, supersedes in its entirety the response provided to RAI 291, Question 03.09.05-26, in Supplement 3.

U.S. EPR FSAR Tier 2, Section 3.9.5.2, will be revised to state that a summary of the reactor core support structure maximum total stress, deformation, and cumulative usage factor will be provided in a stress analysis report. This requirement will be verified through ITAAC (see U.S. EPR FSAR Tier 1, Table 2.2.1-5, item 3.15 which was added in the response to RAI 547, Supplement 4, Question 03.06.01-14). This is also consistent with the revision to U.S. EPR FSAR Tier 2, Section 3.9.3.1 which deleted COL information item 3.9-11 in the response to RAI 547, Supplement 4, Question 03.06.01-14. Accordingly, the COL Information Item 3.9-14 that was added in RAI 291, Supplement 3 (Accession Number ML100430004) will be deleted from U.S. EPR FSAR Tier 2, Table 1.8-2.

The only displacement limit of concern for the U.S EPR reactor internals is the relative lateral displacement between the Upper Core Plate and the Upper Support Plate as it relates to dropping of the control rods through the Control Rod Guide Assemblies during events requiring rod insertion. This displacement limit is addressed in U.S. EPR FSAR Tier 2, Section 3.9.5.3.2. There are no other scenarios which require limiting deformation of the core support structures to less than those associated with acceptance limits of ASME Section III for applicable service conditions.

FSAR Impact:

U.S. EPR FSAR Tier 2, Table 1.8-2 and Section 3.9.5.2 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups



Table 1.8-2—U.S. EPR Combined License Information Items
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Item No.	Description	Section
3.9-11	A COL applicant that references the U.S. EPR design certification will provide a summary of the maximum total stress, deformation (where applicable), and cumulative usage factor values for each of the component operating conditions for ASME Code Class 1 components. For those values that differ from the allowable limits by less than 10 percent, the COL applicant will provide the contribution of each of the loading categories (e.g., seismic, pipe rupture, dead weight, pressure, and thermal) to the total stress for each maximum stress value identified in this range. The COL applicant will also provide the maximum total stress and deformation values for each operating condition for Class 2 & 3 components required for safe shutdown of the reactor, or mitigation of consequences of a postulated piping failure without offsite power. Identification of those values that differ from the allowable limits by less than 10 percent will also be provided.	3.9.3.1
3.9-12	A COL applicant that references the U.S. EPR design certification will provide a table identifying the safety-related systems and components that use snubbers in their support systems, including the number of snubbers, type (hydraulic or mechanical), applicable standard, and function (shock, vibration, or dual-purpose snubber). For snubbers identified as either a dual-purpose or vibration arrester type, the COL applicant shall indicate whether the snubber or component was evaluated for fatigue strength.	3.9.6.4
3.9-13	A COL applicant that references the U.S. EPR design certification will identify the implementation milestones and applicable ASME OM Code for the preservice and inservice examination and testing programs. These programs will be consistent with the requirements in the latest edition and addenda of the OM Code incorporated by reference in 10 CFR 50.55a on the date 12 months before the date for initial fuel load.	3.9.6
3.9-14	A COL applicant that references the U.S. EPR design certification will provide a summary of reactor core support structure maximum total stress, deformation, and cumulative usage factor values for each component and each operating condition in conformance with ASME Section III Subsection NG.	3.9.5.2
3.10-1	A COL applicant that references the U.S. EPR design certification will create and maintain the SQDP file during the equipment selection and procurement phase.	3.10.4
3.10-2	A COL applicant that references the U.S. EPR design certification will identify any additional site specific components that need to be added to the equipment list in Table 3.10-1.	3.10.1.1



Component Classification lists the core support structures (CS) and internal structures (IS) for the RPV internals.

Evaluations of rupture locations, rupture loads, and dynamic effects of postulated rupture of piping are provided in Section 3.6.2. Evaluation of the adequacy of analysis methods for Seismic Category I RPV internals is provided in Section 3.9.1. The plant and system operating conditions and design-basis events that provide the basis for the design of the RPV internals are addressed in Section 3.9.3. The preoperational vibration test program for the RPV internals is consistent with the guidelines of RG 1.20 and is addressed in Section 3.9.2.

~~A COL applicant that references the U.S. EPR design certification will provide~~ A stress analysis report provides a summary of reactor core support structure maximum total stress, deformation (where applicable), and cumulative usage factor values for each ~~component and each~~ operating condition in conformance with ASME Section III Subsection NG. For those values that differ from the allowable limits by less than 10 percent, the stress analysis report provides the contribution of each of the loading categories (e.g., seismic, pipe rupture, dead weight, pressure, and thermal) to the total stress for each maximum stress value identified in this range.

3.9.5.3

Design Bases

Pursuant to GDC 10, the reactor internals are designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences.

The combinations of design and service loadings accounted for in the design of the RPV internals, and the method of combining loads for normal, upset, emergency, and faulted service conditions, are addressed in Section 3.9.3. The allowable design or service limits to be applied to the RPV internals and the effects of service environments, deflection, cycling, and fatigue limits are addressed in Section 3.9.3.1.

Evaluation of the adequacy of dynamic analyses under steady-state and operational flow transient conditions, and the proposed program for pre-operational and startup testing of flow-induced vibration and acoustic resonance for RPV internals, is addressed in Section 3.9.2. Evaluation of the adequacy of the structural integrity design of the RPV internals is provided in Section 3.9.3. Section 3.6.3 provides a description of the LBB methodology used to eliminate from the design basis the dynamic effects of the pipe ruptures postulated in Section 3.6.2.