

ArevaEPRDCPEm Resource

From: WELLS Russell (AREVA) [Russell.Wells@areva.com]
Sent: Wednesday, April 13, 2011 8:25 AM
To: Tesfaye, Getachew
Cc: LENTZ Tony (EXTERNAL AREVA); SHARPE Robert (AREVA); RANSOM James (AREVA); BENNETT Kathy (AREVA); DELANO Karen (AREVA); HALLINGER Pat (EXTERNAL AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); WILLIFORD Dennis (AREVA)
Subject: Draft Revised Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Question 14.03.02-50
Attachments: RAI 386 Response Q 14.03.02-50 US EPR DC - DRAFT.pdf

Getachew,

On August 27, 2010, AREVA NP provided a draft response for RAI 386 Question 14.03.02-50. Attached is a revised draft response for Question 14.03.02-50 in support of the final response date of April 22, 2011. The response is revised because a FSAR markup page was inadvertently omitted from the August 27th submittal.

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

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: Tuesday, March 22, 2011 10:15 AM
To: 'Tesfaye, Getachew'
Cc: LENTZ Tony (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. 386, FSAR Ch. 14, Supplement 11

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, and Supplement 5 responses to RAI No. 386 were sent on July 15, 2010, August 12, 2010, August 26, 2010, September 9, 2010, and September 22, 2010, respectively, to provide a revised schedule. Supplement 7 was submitted to NRC on November 10, 2010 which provided technically correct and complete responses to 9 of the 24 questions and provided a revised schedule for the remaining 15 questions. Supplement 8 was submitted to NRC on November 29, 2010 and Supplement 9 was submitted to NRC on January 21, 2011 to provide a revised schedule for the response to the remaining questions. Supplement 10 was submitted to NRC on February 9, 2011 which provided technically correct and complete response to 1 of the 15 questions and provided a revised schedule for the remaining 14 questions.

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

Question #	Response Date
RAI 386 — 14.02-149	April 22, 2011
RAI 386 — 14.02-150	April 22, 2011
RAI 386 — 14.02-151	April 22, 2011
RAI 386 — 14.02-152	April 22, 2011
RAI 386 — 14.02-156	April 22, 2011
RAI 386 — 14.02-158	April 22, 2011
RAI 386 — 14.02-159	April 22, 2011
RAI 386 — 14.03.02-44	April 22, 2011
RAI 386 — 14.03.02-45	April 22, 2011
RAI 386 — 14.03.02-49	April 22, 2011
RAI 386 — 14.03.02-50	April 22, 2011
RAI 386 — 14.03.02-51	April 22, 2011
RAI 386 — 14.03.03-46	April 22, 2011
RAI 386 — 14.03.08-2	April 22, 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, February 09, 2011 1:42 PM

To: Tesfaye, Getachew

Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); WELLS Russell (RS/NB)

Subject: Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 10

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, and Supplement 5 responses to RAI No. 386 were sent on July 15, 2010, August 12, 2010, August 26, 2010, September 9, 2010, and September 22, 2010, respectively, to provide a revised schedule. Supplement 7 was submitted to NRC on November 10, 2010 which provided technically correct and complete responses to 9 of the 24 questions and provided a revised schedule for the remaining 15 questions. Supplement 8 was submitted to NRC on November 29, 2010 and Supplement 9 was submitted to NRC on January 21, 2011 to provide a revised schedule for the response to the remaining questions.

The attached file, "RAI 386 Supplement 10 Response US EPR DC.pdf" provides technically correct and complete responses to 1 of the remaining 15 questions.

The following table indicates the respective pages in the response document, "RAI 386 Supplement 10 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 386 — 14.03.03-37	2	2

The schedule for the remaining 14 questions has not changed and is provided below.

Question #	Response Date
RAI 386 — 14.02-149	March 25, 2011
RAI 386 — 14.02-150	March 25, 2011
RAI 386 — 14.02-151	March 25, 2011
RAI 386 — 14.02-152	March 25, 2011
RAI 386 — 14.02-156	March 25, 2011
RAI 386 — 14.02-158	March 25, 2011
RAI 386 — 14.02-159	March 25, 2011
RAI 386 — 14.03.02-44	March 25, 2011
RAI 386 — 14.03.02-45	March 25, 2011
RAI 386 — 14.03.02-49	March 25, 2011
RAI 386 — 14.03.02-50	March 25, 2011
RAI 386 — 14.03.02-51	March 25, 2011
RAI 386 — 14.03.03-46	March 25, 2011
RAI 386 — 14.03.08-2	March 25, 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 (External RS/NB)
Sent: Friday, January 21, 2011 9:23 AM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); WELLS Russell (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 9

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, and Supplement 5 responses to RAI No. 386 were sent on July 15, 2010, August 12, 2010, August 26, 2010, September 9, 2010,

and September 22, 2010, respectively, to provide a revised schedule. Supplement 7 was submitted to NRC on November 10, 2010 which provided technically correct and complete responses to 9 of the 24 questions and provided a revised schedule for the remaining 15 questions. Supplement 8 was submitted to NRC on November 29, 2010 to provide a revised schedule for the response to the remaining questions. In order to allow time for interaction with the NRC, the schedule for a technically correct and complete FINAL response to the remaining questions has been revised and is provided below.

Question #	Response Date
RAI 386 — 14.02-149	March 25, 2011
RAI 386 — 14.02-150	March 25, 2011
RAI 386 — 14.02-151	March 25, 2011
RAI 386 — 14.02-152	March 25, 2011
RAI 386 — 14.02-156	March 25, 2011
RAI 386 — 14.02-158	March 25, 2011
RAI 386 — 14.02-159	March 25, 2011
RAI 386 — 14.03.02-44	March 25, 2011
RAI 386 — 14.03.02-45	March 25, 2011
RAI 386 — 14.03.02-49	March 25, 2011
RAI 386 — 14.03.02-50	March 25, 2011
RAI 386 — 14.03.02-51	March 25, 2011
RAI 386 — 14.03.03-37	March 25, 2011
RAI 386 — 14.03.03-46	March 25, 2011
RAI 386 — 14.03.08-2	March 25, 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 (External RS/NB)
Sent: Monday, November 29, 2010 6:55 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); WELLS Russell (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 8

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, and Supplement 5 responses to RAI No. 386 were sent on July 15, 2010, August 12, 2010, August 26, 2010, September 9, 2010, and September 22, 2010, respectively, to provide a revised schedule. Supplement 7 was submitted to NRC on November 10, 2010 which provided technically correct and complete responses to 9 of the 24 questions and provided a revised schedule for the remaining 15 questions. To provide additional time to interact with the NRC, a revised schedule is provided in this e-mail for the response to the remaining questions.

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

Question #	Response Date
RAI 386 — 14.02-149	January 27, 2011
RAI 386 — 14.02-150	January 27, 2011
RAI 386 — 14.02-151	January 27, 2011
RAI 386 — 14.02-152	January 27, 2011
RAI 386 — 14.02-156	January 27, 2011
RAI 386 — 14.02-158	January 27, 2011
RAI 386 — 14.02-159	January 27, 2011
RAI 386 — 14.03.02-44	January 27, 2011
RAI 386 — 14.03.02-45	January 27, 2011
RAI 386 — 14.03.02-49	January 27, 2011
RAI 386 — 14.03.02-50	January 27, 2011
RAI 386 — 14.03.02-51	January 27, 2011
RAI 386 — 14.03.03-37	January 27, 2011
RAI 386 — 14.03.03-46	January 27, 2011
RAI 386 — 14.03.08-2	January 27, 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 (External RS/NB)
Sent: Wednesday, November 10, 2010 2:10 PM
To: 'Tesyfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); LENTZ Tony (External RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 7

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, and Supplement 6 responses to RAI No. 386 were sent on July 15, 2010, August 12, 2010, August 26, 2010, September 9, 2010, September 22, 2010, and October 25, 2010, respectively, to provide a revised schedule.

The attached file, "RAI 386 Supplement 7 Response US EPR DC.pdf" provides technically correct and complete responses to nine questions.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which supports the response to RAI 345 Questions 14.02-157, 14.03.02-48, and 14.03.08-3.

The following table indicates the respective pages in the response document, "RAI 386 Supplement 7 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 386 — 14.02-153	2	2
RAI 386 — 14.02-154	3	3
RAI 386 — 14.02-155	4	4
RAI 386 — 14.02-157	5	5
RAI 386 — 14.02-160	6	6
RAI 386 — 14.03.02-46	7	7
RAI 386 — 14.03.02-47	8	8
RAI 386 — 14.03.02-48	9	10
RAI 386 — 14.03.08-3	11	11

The schedule for the remaining 15 questions has not changed and is provided below.

Question #	Response Date
RAI 386 — 14.02-149	December 7, 2010
RAI 386 — 14.02-150	December 7, 2010
RAI 386 — 14.02-151	December 7, 2010
RAI 386 — 14.02-152	December 7, 2010
RAI 386 — 14.02-156	December 7, 2010
RAI 386 — 14.02-158	December 7, 2010
RAI 386 — 14.02-159	December 7, 2010
RAI 386 — 14.03.02-44	December 7, 2010
RAI 386 — 14.03.02-45	December 7, 2010
RAI 386 — 14.03.02-49	December 7, 2010
RAI 386 — 14.03.02-50	December 7, 2010
RAI 386 — 14.03.02-51	December 7, 2010
RAI 386 — 14.03.03-37	December 7, 2010
RAI 386 — 14.03.03-46	December 7, 2010
RAI 386 — 14.03.08-2	December 7, 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 (External RS/NB)
Sent: Monday, October 25, 2010 1:22 PM
To: 'Getachew.Tesfaye@nrc.gov'

Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); LENTZ Tony (External RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 6

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, and Supplement 5 responses to RAI No. 386 were sent on July 15, 2010, August 12, 2010, August 26, 2010, September 9, 2010, and September 22, 2010, respectively, to provide a revised schedule.

To provide additional time to interact with the NRC, a revised schedule is provided in this e-mail for the response to the questions.

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

Question #	Response Date
RAI 386 — 14.02-149	December 7, 2010
RAI 386 — 14.02-150	December 7, 2010
RAI 386 — 14.02-151	December 7, 2010
RAI 386 — 14.02-152	December 7, 2010
RAI 386 — 14.02-153	December 7, 2010
RAI 386 — 14.02-154	December 7, 2010
RAI 386 — 14.02-155	December 7, 2010
RAI 386 — 14.02-156	December 7, 2010
RAI 386 — 14.02-157	December 7, 2010
RAI 386 — 14.02-158	December 7, 2010
RAI 386 — 14.02-159	December 7, 2010
RAI 386 — 14.02-160	December 7, 2010
RAI 386 — 14.03.02-44	December 7, 2010
RAI 386 — 14.03.02-45	December 7, 2010
RAI 386 — 14.03.02-46	December 7, 2010
RAI 386 — 14.03.02-47	December 7, 2010
RAI 386 — 14.03.02-48	December 7, 2010
RAI 386 — 14.03.02-49	December 7, 2010
RAI 386 — 14.03.02-50	December 7, 2010
RAI 386 — 14.03.02-51	December 7, 2010
RAI 386 — 14.03.03-37	December 7, 2010
RAI 386 — 14.03.03-46	December 7, 2010
RAI 386 — 14.03.08-2	December 7, 2010
RAI 386 — 14.03.08-3	December 7, 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 (External RS/NB)
Sent: Wednesday, September 22, 2010 12:31 PM
To: Tesfaye, Getachew
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); LENTZ Tony (External RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 5

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010. Supplement 1, Supplement 2, Supplement 3, and Supplement 4 responses to RAI No. 386 were sent on July 15, 2010, August 12, 2010, August 26, 2010, and September 9, 2010, respectively, to provide a revised schedule.

To provide additional time to interact with the NRC, a revised schedule is provided in this e-mail for the response to the questions.

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

Question #	Response Date
RAI 386 — 14.02-149	October 28, 2010
RAI 386 — 14.02-150	October 28, 2010
RAI 386 — 14.02-151	October 28, 2010
RAI 386 — 14.02-152	October 28, 2010
RAI 386 — 14.02-153	October 28, 2010
RAI 386 — 14.02-154	October 28, 2010
RAI 386 — 14.02-155	October 28, 2010
RAI 386 — 14.02-156	October 28, 2010
RAI 386 — 14.02-157	October 28, 2010
RAI 386 — 14.02-158	October 28, 2010
RAI 386 — 14.02-159	October 28, 2010
RAI 386 — 14.02-160	October 28, 2010
RAI 386 — 14.03.02-44	October 28, 2010
RAI 386 — 14.03.02-45	October 28, 2010
RAI 386 — 14.03.02-46	October 28, 2010
RAI 386 — 14.03.02-47	October 28, 2010
RAI 386 — 14.03.02-48	October 28, 2010
RAI 386 — 14.03.02-49	October 28, 2010
RAI 386 — 14.03.02-50	October 28, 2010
RAI 386 — 14.03.02-51	October 28, 2010
RAI 386 — 14.03.03-37	October 28, 2010
RAI 386 — 14.03.03-46	October 28, 2010
RAI 386 — 14.03.08-2	October 28, 2010
RAI 386 — 14.03.08-3	October 28, 2010

Sincerely,

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

From: BRYAN Martin (External RS/NB)
Sent: Thursday, September 09, 2010 2:30 PM
To: 'Tefaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); LENTZ Tony (External RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 4

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010.

AREVA NP Inc. provided technically correct and complete draft responses to 11 of the 24 questions in "RAI 386 Supplement 1 Response – DRAFT.pdf" on July 8, 2010. A revised schedule was provided in Supplement 1 on July 15, 2010, in Supplement 2 on August 12, 2010, and in Supplement 3 on August 26, 2010. To allow time for interaction between AREVA and the NRC staff, a revised schedule for submittal of final responses is provided in this e-mail.

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

Question #	Response Date
RAI 386 — 14.02-149	October 28, 2010
RAI 386 — 14.02-150	October 28, 2010
RAI 386 — 14.02-151	October 14, 2010
RAI 386 — 14.02-152	October 14, 2010
RAI 386 — 14.02-153	October 28, 2010
RAI 386 — 14.02-154	October 28, 2010
RAI 386 — 14.02-155	October 28, 2010
RAI 386 — 14.02-156	October 14, 2010
RAI 386 — 14.02-157	October 28, 2010
RAI 386 — 14.02-158	October 14, 2010
RAI 386 — 14.02-159	October 14, 2010
RAI 386 — 14.02-160	October 28, 2010
RAI 386 — 14.03.02-44	September 23, 2010
RAI 386 — 14.03.02-45	September 23, 2010
RAI 386 — 14.03.02-46	October 28, 2010
RAI 386 — 14.03.02-47	October 28, 2010
RAI 386 — 14.03.02-48	October 28, 2010
RAI 386 — 14.03.02-49	September 23, 2010
RAI 386 — 14.03.02-50	September 23, 2010
RAI 386 — 14.03.02-51	September 23, 2010
RAI 386 — 14.03.03-37	September 23, 2010
RAI 386 — 14.03.03-46	October 28, 2010
RAI 386 — 14.03.08-2	September 23, 2010
RAI 386 — 14.03.08-3	September 23, 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 (External RS/NB)
Sent: Thursday, August 26, 2010 8:27 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); LENTZ Tony (External RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 3

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010.

AREVA NP Inc. provided technically correct and complete draft responses to 11 of the 24 questions in "RAI 386 Supplement 1 Response – DRAFT.pdf" on July 8, 2010. A revised schedule was provided in Supplement 1 on July 15, 2010 and in Supplement 2 on August 12, 2010. To allow time for interaction between AREVA and the NRC staff, a revised schedule for submittal of final responses is provided in this e-mail.

The schedule for technically correct and complete responses has been revised and is provided below:

Question #	Response Date
RAI 386 — 14.02-149	September 9, 2010
RAI 386 — 14.02-150	September 9, 2010
RAI 386 — 14.02-151	October 14, 2010
RAI 386 — 14.02-152	October 14, 2010
RAI 386 — 14.02-153	September 9, 2010
RAI 386 — 14.02-154	September 9, 2010
RAI 386 — 14.02-155	September 9, 2010
RAI 386 — 14.02-156	October 14, 2010
RAI 386 — 14.02-157	September 9, 2010
RAI 386 — 14.02-158	October 14, 2010
RAI 386 — 14.02-159	October 14, 2010
RAI 386 — 14.02-160	September 9, 2010
RAI 386 — 14.03.02-44	September 23, 2010
RAI 386 — 14.03.02-45	September 23, 2010
RAI 386 — 14.03.02-46	September 9, 2010
RAI 386 — 14.03.02-47	September 9, 2010
RAI 386 — 14.03.02-48	September 9, 2010
RAI 386 — 14.03.02-49	September 23, 2010
RAI 386 — 14.03.02-50	September 23, 2010

RAI 386 — 14.03.02-51	September 23, 2010
RAI 386 — 14.03.03-37	September 23, 2010
RAI 386 — 14.03.03-46	September 9, 2010
RAI 386 — 14.03.08-2	September 23, 2010
RAI 386 — 14.03.08-3	September 23, 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, August 12, 2010 6:02 PM
To: 'Tefaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); LENTZ Tony F (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 2

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010. A revised schedule was provided in Supplement 1 on July 15, 2010.

AREVA NP Inc. provided technically correct and complete DRAFT responses to 7 of the 24 questions in "RAI 386 Supplement 1 Response – DRAFT.pdf" on July 8, 2010. To allow time for interaction between AREVA and the NRC staff, a revised schedule for submittal of final responses for these 7 questions is provided in this e-mail.

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

Question #	Response Date
RAI 386 — 14.02-149	September 9, 2010
RAI 386 — 14.02-150	September 9, 2010
RAI 386 — 14.02-151	August 26, 2010
RAI 386 — 14.02-152	August 26, 2010
RAI 386 — 14.02-153	September 9, 2010
RAI 386 — 14.02-154	September 9, 2010
RAI 386 — 14.02-155	September 9, 2010
RAI 386 — 14.02-156	August 26, 2010
RAI 386 — 14.02-157	September 9, 2010
RAI 386 — 14.02-158	August 26, 2010
RAI 386 — 14.02-159	August 26, 2010
RAI 386 — 14.02-160	September 9, 2010
RAI 386 — 14.03.02-44	August 26, 2010
RAI 386 — 14.03.02-45	August 26, 2010
RAI 386 — 14.03.02-46	August 26, 2010

RAI 386 — 14.03.02-47	August 26, 2010
RAI 386 — 14.03.02-48	August 26, 2010
RAI 386 — 14.03.02-49	August 26, 2010
RAI 386 — 14.03.02-50	August 26, 2010
RAI 386 — 14.03.02-51	August 26, 2010
RAI 386 — 14.03.03-37	August 26, 2010
RAI 386 — 14.03.03-46	August 26, 2010
RAI 386 — 14.03.08-2	August 26, 2010
RAI 386 — 14.03.08-3	August 26, 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, July 15, 2010 1:03 PM
To: 'Teshfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); LENTZ Tony F (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 1

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 24 questions in RAI No. 386 on June 3, 2010.

AREVA NP Inc. provided technically correct and complete DRAFT responses to 7 of the 24 questions in RAI No. 386 on July 8, 2010. To allow additional time for interaction between AREVA and the NRC staff, a revised schedule for submittal of final responses for these 7 questions is provided in this e-mail (386-14.02-149, 150, 153, 154, 155, 157 and 160).

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

Question #	Response Date
RAI 386 — 14.02-149	August 12, 2010
RAI 386 — 14.02-150	August 12, 2010
RAI 386 — 14.02-151	August 26, 2010
RAI 386 — 14.02-152	August 26, 2010
RAI 386 — 14.02-153	August 12, 2010
RAI 386 — 14.02-154	August 12, 2010
RAI 386 — 14.02-155	August 12, 2010
RAI 386 — 14.02-156	August 26, 2010
RAI 386 — 14.02-157	August 12, 2010

RAI 386 — 14.02-158	August 26, 2010
RAI 386 — 14.02-159	August 26, 2010
RAI 386 — 14.02-160	August 12, 2010
RAI 386 — 14.03.02-44	August 26, 2010
RAI 386 — 14.03.02-45	August 26, 2010
RAI 386 — 14.03.02-46	August 26, 2010
RAI 386 — 14.03.02-47	August 26, 2010
RAI 386 — 14.03.02-48	August 26, 2010
RAI 386 — 14.03.02-49	August 26, 2010
RAI 386 — 14.03.02-50	August 26, 2010
RAI 386 — 14.03.02-51	August 26, 2010
RAI 386 — 14.03.03-37	August 26, 2010
RAI 386 — 14.03.03-46	August 26, 2010
RAI 386 — 14.03.08-2	August 26, 2010
RAI 386 — 14.03.08-3	August 26, 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, June 03, 2010 7:02 PM
To: 'Tefaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); LENTZ Tony F (EXT); RYAN Tom (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 386(4306,4418,4532,4349,2666,4512,4341), FSAR Ch. 14

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 386 Response US EPR DC.pdf" provides a schedule since a technically correct and complete response to the 24 questions is not provided.

The following table indicates the respective pages in the response document, "RAI 386 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 386 — 14.02-149	2	2
RAI 386 — 14.02-150	3	3
RAI 386 — 14.02-151	4	4
RAI 386 — 14.02-152	5	5
RAI 386 — 14.02-153	6	6

RAI 386 — 14.02-154	7	7
RAI 386 — 14.02-155	8	8
RAI 386 — 14.02-156	9	9
RAI 386 — 14.02-157	10	10
RAI 386 — 14.02-158	11	11
RAI 386 — 14.02-159	12	12
RAI 386 — 14.02-160	13	13
RAI 386 — 14.03.02-44	14	15
RAI 386 — 14.03.02-45	16	16
RAI 386 — 14.03.02-46	17	17
RAI 386 — 14.03.02-47	18	18
RAI 386 — 14.03.02-48	19	19
RAI 386 — 14.03.02-49	20	20
RAI 386 — 14.03.02-50	21	21
RAI 386 — 14.03.02-51	22	22
RAI 386 — 14.03.03-37	23	23
RAI 386 — 14.03.03-46	24	24
RAI 386 — 14.03.08-2	25	26
RAI 386 — 14.03.08-3	27	27

A complete answer is not provided for the 24 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 386 — 14.02-149	July 15, 2010
RAI 386 — 14.02-150	July 15, 2010
RAI 386 — 14.02-151	August 26, 2010
RAI 386 — 14.02-152	August 26, 2010
RAI 386 — 14.02-153	July 15, 2010
RAI 386 — 14.02-154	July 15, 2010
RAI 386 — 14.02-155	July 15, 2010
RAI 386 — 14.02-156	August 26, 2010
RAI 386 — 14.02-157	July 15, 2010
RAI 386 — 14.02-158	August 26, 2010
RAI 386 — 14.02-159	August 26, 2010
RAI 386 — 14.02-160	July 15, 2010
RAI 386 — 14.03.02-44	August 26, 2010
RAI 386 — 14.03.02-45	August 26, 2010
RAI 386 — 14.03.02-46	August 26, 2010
RAI 386 — 14.03.02-47	August 26, 2010
RAI 386 — 14.03.02-48	August 26, 2010
RAI 386 — 14.03.02-49	August 26, 2010
RAI 386 — 14.03.02-50	August 26, 2010
RAI 386 — 14.03.02-51	August 26, 2010
RAI 386 — 14.03.03-37	August 26, 2010
RAI 386 — 14.03.03-46	August 26, 2010
RAI 386 — 14.03.08-2	August 26, 2010
RAI 386 — 14.03.08-3	August 26, 2010

Sincerely,

Martin (Marty) C. Bryan
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From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Tuesday, May 04, 2010 1:52 PM
To: ZZ-DL-A-USEPR-DL
Cc: Keim, Andrea; Rasmussen, Richard; Dehmel, Jean-Claude; Bernal, Sara; Roach, Edward; Jeng, David; Hawkins, Kimberly; Ng, Ching; Dixon-Herrity, Jennifer; Miernicki, Michael; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 386(4306,4418,4532,4349,2666,4512,4341), FSAR Ch. 14

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on April 6, 2010, and discussed with your staff on May 4, 2010. Drat RAI Question 14.03.02-47 was modified 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: 2840

Mail Envelope Properties (1F1CC1BBDC66B842A46CAC03D6B1CD41043A754A)

Subject: Draft Revised Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Question 14.03.02-50
Sent Date: 4/13/2011 8:24:57 AM
Received Date: 4/13/2011 8:25:03 AM
From: WELLS Russell (AREVA)

Created By: Russell.Wells@areva.com

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"LENTZ Tony (EXTERNAL AREVA)" <Tony.Lentz.ext@areva.com>
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Tracking Status: None

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Files	Size	Date & Time
MESSAGE	31269	4/13/2011 8:25:03 AM
RAI 386 Response Q 14.03.02-50 US EPR DC - DRAFT.pdf		491778

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

Response to

**Request for Additional Information No. 386, Question 14.03.02-50
(4306, 4418, 4532, 4349, 2666, 4512, 4341), Revision 0**

5/4/2010

U. S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

**SRP Section: 14.02 - Initial Plant Test Program - Design Certification and New
License Applicants**

**SRP Section: 14.03.02 - Structural and Systems Engineering - Inspections, Tests,
Analyses, and Acceptance Criteria**

**SRP Section: 14.03.03 - Piping Systems and Components - Inspections, Tests,
Analyses, and Acceptance Criteria**

**SRP Section: 14.03.08 - Radiation Protection Inspections, Tests, Analyses, and
Acceptance Criteria**

Application Section: SRP 14.02 (NUREG 0800)

QUESTIONS for Quality and Vendor Branch 2 (ESBWR/ABWR) (CQVB)

QUESTIONS for Health Physics Branch (CHPB)

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

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

Question 14.03.02-50:**Follow-up to RAI 132, Question 14.03.02-11(1)(h)**

GDC 4 states in part that structures systems and components shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping and discharging fluids. In its response to **RAI 132, Question 14.03.02-11 (1), part h**, the applicant stated that the U.S. EPR FSAR, Tier 1, Section 2.1 would be revised to provide additional details regarding the basis for protection against pressurization effects associated with postulated rupture of pipes. In the revised design description write-up of Section 2.1.1 and associated subsections, there are references to accident pressure loads and pipe break loads. However, there is nothing that specifically addresses cubicle pressurization loads and the basis for protection against pressurization effects. Also, in revised ITAAC Tables 2.1.1-4 and 2.1.1-8, cubicle pressurization effects have not been explicitly included. Table 2.1.1-4 provides ITAAC for the Nuclear Island which includes the Reactor Building. Item 3.4 in Table 2.1.1-4 under "Commitment Wording" states that a pipe break hazards analyses summary exists that concludes the plant can be safely shut down and maintained in a cold safe shutdown following a pipe break with loss of offsite power. Under "Inspection, Analysis or Test," it states that a pipe break hazards analysis will be performed. Under "Acceptance Criteria", it addresses pipe stresses in the penetration area, pipe whip restraints and jet impingement shields, environmental effects of postulated pipe rupture, and loads on safety-related SSCs. Cubicle pressurization is not mentioned. Under "Commitment Wording," it should state what the pipe break hazards analysis includes and address cubicle pressurization. Under "Inspection, Analysis or Test," a second activity should be added requiring that an inspection of as-installed features that provide protection against pipe break effects including the effects of cubicle pressurization will be performed and compared to the requirements identified in the pipe break hazards analysis. Under "Acceptance Criteria," cubicle pressurization should be addressed. Item 3.5 in Table 2.1.1-4 appears to address jet impingement shields and pipe whip restraints for certain rooms listed in Table 2.1.1-6. As a result, it is not clear if Item 3.4 addresses all other jet impingement shields and pipe whip restraints or is not supposed to address them at all. The applicant needs to revise the wording in the "Commitment Wording," "Inspection, Analysis or Test" and "Acceptance Criteria" columns for items 3.4 and 3.5 so it is clear as to which aspect of pipe hazards analysis each of these ITAAC items is to address.

Response to Question 14.03.02-50:

U.S. EPR FSAR Tier 1, Table 2.1.1-4, Item 3.5 and the associated Table 2.1.1-6 was deleted as noted in the Response to RAI 222, Question 03.06.02-31, Item 2 because it was redundant with Table 2.1.1-4, Item 3.4. Table 2.1.1-4, Item 3.4 referenced in the RAI question remains as the pipe break hazards ITAAC item, however, it was moved to U.S. EPR FSAR Tier 1, Table 3.8-1 and revised per RAI 354, Question 03.06.02-42, Part a.

The intent of this ITAAC item is to address pipe break hazards effects, including the effects of cubicle pressurization. For clarification, wording that specifically addresses cubicle pressurization will be added to the "Acceptance Criteria" for this ITAAC item and to the "Commitment Wording" for U.S. EPR FSAR Tier 1, Table 2.1.1-8, Item 2.4, Table 2.1.1-10, Item 2.1, Table 2.1.1-11, Item 2.1, Table, 2.1.2-3, Item 3.4 and Table 2.1.5-3, Item 3.5.

FSAR Impact:

U.S. EPR FSAR Tier 1, Tables 2.1.1-8, 2.1.1-10, 2.1.1-11, 2.1.2-3, 2.1.5-3, and 3.8-1 will be revised as described in the response and indicated on the attached markup.

DRAFT

U.S. EPR Final Safety Analysis Report Markups

DRAFT

Table 2.1.1-8—Reactor Building ITAAC (6 Sheets)

	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
2.1	Six rib support structures are provided at the bottom of the reactor cavity as shown on Figure 2.1.1-9.	Inspection of the reactor vessel cavity will be performed.	Six rib support structures are provided at the bottom of the reactor cavity as shown on Figure 2.1.1-9.
2.2	As shown on Figure 2.1.1-4, a flooding barrier is provided to prevent ingress of water into the core melt spreading area.	Inspection of the core melt water ingress barrier will be performed.	The RCB provides a spreading area water ingress barrier as shown on Figure 2.1.1-4. Penetrations and doors within the core melt water ingress barrier are water tight.
2.3	Core melt cannot relocate to upper containment due to the existence of concrete barriers as shown on Figure 2.1.1-9.	Inspection of the RCB will be performed.	Concrete barriers are located within the RCB as shown on Figure 2.1.1-9.
2.4	<p>The RB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety related functions.</p> <ul style="list-style-type: none"> • Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads). • Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, <u>cubicle pressurization loads</u>, and missile impact loads). 	An analysis of the RB structures for the design basis loads will be performed. During construction, deviations from the approved design will be analyzed for design basis loads.	A report exists which reconciles deviations during construction and concludes that the as-built RB structures conform to the approved design and will withstand the design basis loads specified without loss of structural integrity or safety-related functions.

14.03.02-50

Table 2.1.1-10—Safeguard Buildings ITAAC (3 Sheets)

	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
2.1	<p>The SB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety related functions.</p> <ul style="list-style-type: none"> • Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads). • Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, <u>cubicle pressurization loads</u>, and missile impact loads). • External events (including rain, snow, flood, tornado, tornado-generated missiles and earthquake). 	<p>An analysis of the SB structures for the design basis loads will be performed. During construction, deviations from the approved design will be analyzed for design basis loads.</p>	<p>A report exists which reconciles deviations during construction and concludes that the as-built SB structures conform to the approved design and will withstand the design basis loads specified without loss of structural integrity or safety-related functions.</p>

14.03.02-50

Table 2.1.1-11—Fuel Building ITAAC (3 Sheets)

	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
2.1	<p>The FB structure is Seismic Category I and is designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety related functions.</p> <ul style="list-style-type: none"> • Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads). • Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, <u>cubicle pressurization loads</u>, and missile impact loads). • External events (including rain, snow, flood, tornado, tornado-generated missiles and earthquake). 	<p>An analysis of the FB structure for the design basis loads will be performed. During construction, deviations from the approved design will be analyzed for design basis loads.</p>	<p>A report exists which reconciles deviations during construction and concludes that the as-built FB structures conform to the approved design and will withstand the design basis loads specified without loss of structural integrity or safety-related functions.</p>

14.03.02-50

**Table 2.1.2-3—Emergency Power Generating Building
ITAAC (3 Sheets)**

	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
3.4	<p>The EPGB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety-related functions.</p> <ul style="list-style-type: none"> • Normal plant operation (including dead loads, live loads, lateral earth pressure loads, hydrostatic loads, hydrodynamic loads, and temperature loads). • Internal Events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads – including reaction loads, jet impingement loads, <u>cubicle pressurization loads, and missile impact loads</u>). • External events (including rain, snow, flood, tornado, tornado-generated missiles, and earthquake). 	<p>An analysis of the EPGB structures for the design basis loads will be performed. During construction, deviations from the approved design will be analyzed for design basis loads.</p>	<p>A report exists which reconciles deviations during construction and concludes that the as-built EPGB structures conform to the approved design and will withstand the design basis loads specified without loss of structural integrity or safety-related functions.</p>
3.5	<p>EPGB structures located below grade elevation are protected from external flooding by waterstops, watertight seals, and waterproofing.</p>	<p>An inspection of the EPGB structures will be performed.</p>	<p>EPGB structures located below grade elevation are protected from external flooding by waterstops, watertight seals, and waterproofing.</p>

14.03.02-50

**Table 2.1.5-3—Essential Service Water Building ITAAC
(3 Sheets)**

	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
		<p>c. Inspection of as-built conditions of barriers, doors, dampers, and penetrations through the barriers identified in Figure 2.1.5-6, versus construction drawings of barriers, doors, dampers, and penetrations as determined in the part (b) analysis, will be performed.</p>	<p>c. The as-built configuration of walls, doors, dampers and penetrations through the barriers listed in Figure 2.1.5-6 agrees with the construction drawings.</p>
3.5	<p>The ESWB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety related functions.</p> <ul style="list-style-type: none"> • Normal plant operation (including dead loads, live loads, lateral earth pressure loads, hydrostatic loads, hydrodynamic loads, and temperature loads). • Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reaction, and pipe break loads – including reaction loads, jet impingement loads, cubicle pressurization loads, and missile impact loads). • External events (including rain, snow, flood, tornado, tornado-generated missiles, and earthquake). 	<p>An analysis of the ESWB structures for the design basis loads will be performed. During construction, deviations from the approved design will be analyzed for design basis loads.</p>	<p>A report exists which reconciles deviations during construction and concludes that the as-built ESWB structures conform to the approved design and will withstand the design basis loads specified without loss of structural integrity or safety-related functions.</p>

14.03.02-50

Table 3.8-1—Piping Hazard Analysis ITAAC

	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
<p>2.1 4.0</p>	<p><u>Systems, structures, and components that are required to be functional during and following an SSE are protected against or qualified to withstand the dynamic and environmental effects associated with postulated failures in Seismic Category 1 and non-safety-related piping systems.</u> A pipe break hazards analyses summary exists that concludes the plant can be shut down safely and maintained in cold safe shutdown following a pipe break with loss of offsite power.</p>	<p>a. An <u>as-designed</u> pipe break hazards analysis will be performed. {{DAC}}</p>	<p>a. A pipe break hazards analyses summary exists that concludes the plant can be shut down safely and maintained in cold safe shutdown following a pipe break with loss of offsite power and. <u>For postulated pipe breaks, the pipe break hazards analyses confirms whether that:</u></p> <ul style="list-style-type: none"> - Piping stresses in the RCB penetration area are within allowable stress limits. - Pipe whip restraints and jet shield designs <u>for protection of the essential systems and components</u> can mitigate pipe break loads. - Loads on safety-related SSCs are within design load limits. - SSCs are protected or qualified to withstand the <u>dynamic and environmental effects of postulated failures, including cubicle pressurization effects.</u> - <u>A summary of the dynamic analyses applicable to high-energy piping systems, including:</u> <ul style="list-style-type: none"> - <u>Sketches showing the location of the resulting postulated pipe ruptures, including identification of longitudinal and circumferential breaks; structural barriers, if</u>

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14.03.02-50

