

## ArevaEPRDCPEm Resource

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**From:** WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]  
**Sent:** Monday, August 29, 2011 4:00 PM  
**To:** Tesfaye, Getachew  
**Cc:** BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); LENTZ Tony (EXTERNAL AREVA)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 19  
**Attachments:** RAI 386 Supplement 19 Response US EPR DC - PUBLIC.pdf

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 to provide 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 to provide a technically correct and complete response to 1 of the 15 questions and provided a revised schedule for the remaining 14 questions. Supplements 11 and 12 were submitted to the NRC on March 22, 2011 and April 22, 2011 to provide a revised schedule for the response to the remaining questions. Supplement 13 was submitted to NRC on May 6, 2011 to provide technically correct and complete responses to 2 of the remaining 14 questions. Supplement 14 was submitted to NRC on May 16, 2011 to provide a technically correct and complete response to 1 of the remaining 12 questions. Supplement 15 and Supplement 16 were submitted to the NRC on June 9, 2011 and August 5, 2011 to provide a revised schedule for the remaining 11 questions. Supplement 17 was submitted to NRC on August 10, 2011 to provide technically correct and complete responses to 6 of the remaining 11 questions. Supplement 18 was submitted to NRC on August 22, 2011 to provide a technically correct and complete response to 1 of the remaining 5 questions.

The attached file, "RAI 386 Supplement 19 Response US EPR DC - PUBLIC.pdf" provides technically correct and complete final responses to the remaining 4 questions, as committed. Because the response file contains security-related sensitive information that should be withheld from public disclosure in accordance with 10 CFR 2.390, a public version is provided with the security-related sensitive information redacted. This email and attached file do not contain any security-related information. An unredacted security-related version is provided under separate email.

The following table indicates the respective pages in the response document, "RAI 386 Supplement 19 Response US EPR DC - PUBLIC.pdf," that contain AREVA NP's response to the subject questions.

<b>Question #</b>	<b>Start Page</b>	<b>End Page</b>
RAI 386 — 14.03.02-44	2	4
RAI 386 — 14.03.02-45	5	6
RAI 386 — 14.03.02-49	7	7
RAI 386 — 14.03.02-51	8	8

This concludes the formal AREVA NP response to RAI 386, 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](mailto:Dennis.Williford@areva.com)

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**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Monday, August 22, 2011 3:21 PM  
**To:** Getachew.Tesfaye@nrc.gov  
**Cc:** BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); LENTZ Tony (External RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 18

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 to provide 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 to provide a technically correct and complete response to 1 of the 15 questions and provided a revised schedule for the remaining 14 questions. Supplements 11 and 12 were submitted to the NRC on March 22, 2011 and April 22, 2011 to provide a revised schedule for the response to the remaining questions. Supplement 13 was submitted to NRC on May 6, 2011 to provide technically correct and complete responses to 2 of the remaining 14 questions. Supplement 14 was submitted to NRC on May 16, 2011 to provide a technically correct and complete response to 1 of the remaining 12 questions. Supplement 15 and Supplement 16 were submitted to the NRC on June 9, 2011 and August 5, 2011 to provide a revised schedule for the remaining 11 questions. Supplement 17 was submitted to NRC on August 10, 2011 to provide technically correct and complete responses to 6 of the remaining 11 questions.

The attached file, "RAI 386 Supplement 18 Response US EPR DC.pdf" provides a technically correct and complete final response to 1 of the remaining 5 questions.

The following table indicates the respective pages in the response document, "RAI 386 Supplement 18 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 386 — 14.03.02-50	2	3

The schedule for a technically correct and complete response to the remaining 4 questions is unchanged and is provided below:

Question #	Response Date
RAI 386 — 14.03.02-44	August 30, 2011
RAI 386 — 14.03.02-45	August 30, 2011
RAI 386 — 14.03.02-49	August 30, 2011
RAI 386 — 14.03.02-51	August 30, 2011

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  
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**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Wednesday, August 10, 2011 5:03 PM  
**To:** Getachew.Tesfaye@nrc.gov  
**Cc:** BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); NOXON David (RS/NB); LENTZ Tony (External RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 17

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 to provide 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 to provide a technically correct and complete response to 1 of the 15 questions and provided a revised schedule for the remaining 14 questions. Supplements 11 and 12 were submitted to the NRC on March 22, 2011 and April 22, 2011 to provide a revised schedule for the response to the remaining questions. Supplement 13 was submitted to NRC on May 6, 2011 to provide technically correct and complete responses to 2 of the remaining 14 questions. Supplement 14 was submitted to NRC on May 16, 2011 to provide a technically correct and complete response to 1 of the remaining 12 questions. Supplement 15 and Supplement 16 were submitted to the NRC on June 9, 2011 and August 5, 2011 to provide a revised schedule for the remaining 11 questions. The attached file, "RAI 386 Supplement 17 Response US EPR DC.pdf" provides technically correct and complete FINAL responses to 6 of the 11 remaining questions.

The following table indicates the respective pages in the response document, "RAI 386 Supplement 17 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 386 — 14.02-151	2	2
RAI 386 — 14.02-152	3	3
RAI 386 — 14.02-156	4	4
RAI 386 — 14.02-158	5	5
RAI 386 — 14.02-159	6	6
RAI 386 — 14.03.08-2	7	8

The schedule for a technically correct and complete response to the remaining 5 questions is unchanged as provided below:

Question #	Response Date
RAI 386 — 14.03.02-44	August 30, 2011
RAI 386 — 14.03.02-45	August 30, 2011
RAI 386 — 14.03.02-49	August 30, 2011

RAI 386 — 14.03.02-50	August 30, 2011
RAI 386 — 14.03.02-51	August 30, 2011

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](mailto:Dennis.Williford@areva.com)

---

**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Friday, August 05, 2011 12:36 PM  
**To:** Getachew.Tesfaye@nrc.gov  
**Cc:** BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); LENTZ Tony (External RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 16

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 to provide 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 to provide a technically correct and complete response to 1 of the 15 questions and provided a revised schedule for the remaining 14 questions. Supplements 11 and 12 were submitted to the NRC on March 22, 2011 and April 22, 2011 to provide a revised schedule for the response to the remaining questions. Supplement 13 was submitted to NRC on May 6, 2011 to provide technically correct and complete responses to 2 of the remaining 14 questions. Supplement 14 was submitted to NRC on May 16, 2011 to provide a technically correct and complete response to 1 of the remaining 12 questions. Supplement 15 was submitted to NRC on June 9, 2011 to provide a revised schedule for the remaining 11 questions.

The schedule for a technically correct and complete response to the remaining 11 questions has been revised and is provided below:

<b>Question #</b>	<b>Response Date</b>
RAI 386 — 14.02-151	<b>August 30, 2011</b>
RAI 386 — 14.02-152	<b>August 30, 2011</b>
RAI 386 — 14.02-156	<b>August 30, 2011</b>
RAI 386 — 14.02-158	<b>August 30, 2011</b>
RAI 386 — 14.02-159	<b>August 30, 2011</b>
RAI 386 — 14.03.02-44	<b>August 30, 2011</b>
RAI 386 — 14.03.02-45	<b>August 30, 2011</b>
RAI 386 — 14.03.02-49	<b>August 30, 2011</b>
RAI 386 — 14.03.02-50	<b>August 30, 2011</b>
RAI 386 — 14.03.02-51	<b>August 30, 2011</b>

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](mailto:Dennis.Williford@areva.com)

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**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Thursday, June 09, 2011 12:58 PM  
**To:** Tesfaye, Getachew  
**Cc:** BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); LENTZ Tony (External RS/NB); NOXON David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 386, FSAR Ch. 14, Supplement 15

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. Supplements 11 and 12 were submitted to the NRC on March 22, 2011 and April 22, 2011 to provide a revised schedule for the response to the remaining questions. Supplement 13 was submitted to NRC on May 6, 2011 which provided technically correct and complete responses to 2 of the remaining 14 questions. Supplement 14 was submitted to NRC on May 16, 2011 which provided a technically correct and complete response to 1 of the remaining 12 questions.

The schedule for a technically correct and complete response to the remaining 11 questions has been revised and is provided below:

Question #	Response Date
RAI 386 — 14.02-151	August 9, 2011
RAI 386 — 14.02-152	August 9, 2011
RAI 386 — 14.02-156	August 9, 2011
RAI 386 — 14.02-158	August 9, 2011
RAI 386 — 14.02-159	August 9, 2011
RAI 386 — 14.03.02-44	August 9, 2011
RAI 386 — 14.03.02-45	August 9, 2011
RAI 386 — 14.03.02-49	August 9, 2011
RAI 386 — 14.03.02-50	August 9, 2011
RAI 386 — 14.03.02-51	August 9, 2011
RAI 386 — 14.03.08-2	August 9, 2011

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](mailto:Dennis.Williford@areva.com)

---

**From:** WELLS Russell (RS/NB)  
**Sent:** Monday, May 16, 2011 7:19 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 14

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. Supplement 11 and Supplement 12 were submitted to NRC on March 22, 2011 and April 21, 2011, respectively, to provide a revised schedule for the response to the remaining questions. Supplement 13 was submitted to NRC on May 6, 2011 which provided technically correct and complete response to 1 of the 14 questions.

The attached file, "RAI 386 Supplement 14 Response US EPR DC.pdf" provides technically correct and complete FINAL responses to 2 of the remaining 13 questions, as committed.

The following table indicates the respective pages in the response document, "RAI 386 Supplement 14 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

The schedule for the remaining 11 questions has not changed and is provided below.

Question #	Response Date
RAI 386 — 14.02-151	June 9, 2011
RAI 386 — 14.02-152	June 9, 2011
RAI 386 — 14.02-156	June 9, 2011
RAI 386 — 14.02-158	June 9, 2011
RAI 386 — 14.02-159	June 9, 2011
RAI 386 — 14.03.02-44	June 9, 2011
RAI 386 — 14.03.02-45	June 9, 2011

RAI 386 — 14.03.02-49	June 9, 2011
RAI 386 — 14.03.02-50	June 9, 2011
RAI 386 — 14.03.02-51	June 9, 2011
RAI 386 — 14.03.08-2	June 9, 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](mailto:Russell.Wells@Areva.com)*

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**From:** WELLS Russell (RS/NB)

**Sent:** Friday, May 06, 2011 10:43 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 13

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. Supplement 11 and Supplement 12 were submitted to NRC on March 22, 2011 and April 21, 2011, respectively, to provide a revised schedule for the response to the remaining questions.

The attached file, "RAI 386 Supplement 13 Response US EPR DC.pdf" provides technically correct and complete responses to 1 of the remaining 14 questions.

The following table indicates the respective pages in the response document, "RAI 386 Supplement 13 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 386 — 14.03.03-46	2	3

The schedule for the remaining 13 questions has not changed and is provided below.

Question #	Response Date
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RAI 386 — 14.02-149	June 9, 2011
RAI 386 — 14.02-150	June 9, 2011
RAI 386 — 14.02-151	June 9, 2011
RAI 386 — 14.02-152	June 9, 2011
RAI 386 — 14.02-156	June 9, 2011
RAI 386 — 14.02-158	June 9, 2011
RAI 386 — 14.02-159	June 9, 2011
RAI 386 — 14.03.02-44	June 9, 2011
RAI 386 — 14.03.02-45	June 9, 2011
RAI 386 — 14.03.02-49	June 9, 2011
RAI 386 — 14.03.02-50	June 9, 2011
RAI 386 — 14.03.02-51	June 9, 2011
RAI 386 — 14.03.08-2	June 9, 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](mailto:Russell.Wells@Areva.com)*

---

**From:** WELLS Russell (RS/NB)

**Sent:** Thursday, April 21, 2011 7:38 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 12

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. Supplement 11 was submitted to NRC on March 22, 2011 to provide a revised schedule 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
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RAI 386 — 14.02-149	June 9, 2011
RAI 386 — 14.02-150	June 9, 2011
RAI 386 — 14.02-151	June 9, 2011
RAI 386 — 14.02-152	June 9, 2011
RAI 386 — 14.02-156	June 9, 2011
RAI 386 — 14.02-158	June 9, 2011
RAI 386 — 14.02-159	June 9, 2011
RAI 386 — 14.03.02-44	June 9, 2011
RAI 386 — 14.03.02-45	June 9, 2011
RAI 386 — 14.03.02-49	June 9, 2011
RAI 386 — 14.03.02-50	June 9, 2011
RAI 386 — 14.03.02-51	June 9, 2011
RAI 386 — 14.03.03-46	June 9, 2011
RAI 386 — 14.03.08-2	June 9, 2011

*Sincerely,*

*Russ Wells*

*U.S. EPR Design Certification Licensing Manager*

*AREVA NP, Inc.*

*3315 Old Forest Road, P.O. Box 10935*

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*434-942-6375 (cell)*

*Fax: 434-382-3884*

*[Russell.Wells@Areva.com](mailto:Russell.Wells@Areva.com)*

---

**From:** WELLS Russell (RS/NB)

**Sent:** Tuesday, March 22, 2011 10:15 AM

**To:** 'Tesyfaye, 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](mailto: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](mailto: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](mailto:Martin.Bryan.ext@areva.com)

---

**From:** BRYAN Martin (External RS/NB)  
**Sent:** Monday, November 29, 2010 6:55 PM  
**To:** 'Tesyfaye, 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](mailto:Martin.Bryan.ext@areva.com)

---

**From:** BRYAN Martin (External RS/NB)  
**Sent:** Wednesday, November 10, 2010 2:10 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 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](mailto: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:

<b>Question #</b>	<b>Response Date</b>
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](mailto: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:

<b>Question #</b>	<b>Response Date</b>
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  
[Martin.Bryan.ext@areva.com](mailto:Martin.Bryan.ext@areva.com)

**From:** BRYAN Martin (External RS/NB)

**Sent:** Thursday, September 09, 2010 2:30 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 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:

<b>Question #</b>	<b>Response Date</b>
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](mailto: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

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](mailto:Martin.Bryan.ext@areva.com)

---

**From:** BRYAN Martin (EXT)  
**Sent:** Thursday, August 12, 2010 6:02 PM  
**To:** 'Tesyfaye, 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  
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[Martin.Bryan.ext@areva.com](mailto:Martin.Bryan.ext@areva.com)

---

**From:** BRYAN Martin (EXT)  
**Sent:** Thursday, July 15, 2010 1:03 PM  
**To:** 'Tesyfaye, 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	<b>August 12, 2010</b>
RAI 386 — 14.02-150	<b>August 12, 2010</b>
RAI 386 — 14.02-151	August 26, 2010
RAI 386 — 14.02-152	August 26, 2010
RAI 386 — 14.02-153	<b>August 12, 2010</b>
RAI 386 — 14.02-154	<b>August 12, 2010</b>
RAI 386 — 14.02-155	<b>August 12, 2010</b>
RAI 386 — 14.02-156	August 26, 2010
RAI 386 — 14.02-157	<b>August 12, 2010</b>
RAI 386 — 14.02-158	August 26, 2010
RAI 386 — 14.02-159	August 26, 2010
RAI 386 — 14.02-160	<b>August 12, 2010</b>
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](mailto:Martin.Bryan.ext@areva.com)

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**From:** BRYAN Martin (EXT)  
**Sent:** Thursday, June 03, 2010 7:02 PM  
**To:** 'Tesfaye, 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.

<b>Question #</b>	<b>Response Date</b>
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,



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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:** 3361

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**Response to**

**Request for Additional Information No. 386 (4306, 4418, 4532, 4349, 2666, 4512, 4341), Revision 0, Supplement 19**

**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 14.03.02-44:****Follow-up to RAI 230, Question 14.03.02-13**

The staff review of U.S EPR FSAR, Tier 1, Section 2.1 determined that the design descriptions and ITAAC tables were too brief and lacked key design information. In order to meet the guidance of SRP 14.3.2, the staff in RAI 132, Question 14.03.02-11-1 requested that the applicant revise and augment Section 2.1 with additional information including a description of the design loads, critical dimensions and building protective features. The applicant responded with additional information including what it called key dimensions. This response addressed some but not all of the staff's concerns. As a follow up to the applicant's response, the staff in RAI 230, Question 14.03.02-13 requested that the applicant provide additional information since it was not clear if all key dimensions had been provided or what the safety significance was for the dimensions that were provided. The applicant's response was that structural key dimensions include the overall building dimensions (i.e., length, width, and height) and those dimensions confirmed by the structural design of the critical sections in U.S. EPR FSAR Tier 2, Appendix 3E. The applicant stated that the overall building dimensions are key dimensions because they confirm the building size for global stability evaluations. Critical sections are those portions of individual Seismic Category I structures (i.e., shear walls, floor slabs and roofs, structure-to-structure connections) that prevent or mitigate consequences of postulated design basis accidents, are expected to experience the largest structural demands during design basis conditions, or are needed to evaluate a complete design. The overall building dimensions and the key dimensions of the critical sections defined in U.S. EPR FSAR Tier 2, Appendix 3E define the structural key dimensions for the Seismic Category I structures. The staff, however, believes the dimensional information is incomplete and requests that the following additional information be provided:

- a. In Tier 1, Section 2.1 the applicant should define what constitutes a key dimension or a critical section for a structure.
- b. For the reactor building structures, critical sections have been identified in Appendix 3E but are not included in the tables or figures of Tier 1, Section 2.1. These are the equipment hatch and typical cylinder wall and buttress. The applicant should either include these or justify why they are not included.
- c. The critical sections of the Reactor Building Internal Structure discussed in Appendix 3E.
- d. There are no critical dimensions provided for the Reactor Pressure Vessel cavity walls or floor. The applicant should explain why these were not provided and why this portion of the Reactor Building is not considered to be a critical element of the Reactor Building design.
- e. The connections of the roofs of the Fuel Building and Safeguards Building 2 and 3 to the Reactor Shield Building are identified as critical sections in Appendix 3E but are not included in the Tables or Figures of Section 2.1. The applicant should either include these or justify why they are not included.
- f. The applicant is requested to identify any additional critical sections that need to be included in Tier 1, Section 2.1. This includes critical sections applicable to the EPGB and ESWB structures.
- g. The title of Table 2.1.1-2 is "Key Dimensions of NI Foundation Footprint" but the table also includes elevations of structures. The title of the table should be corrected.

- h. In Figure 2.1.1-7 more information is required for the dimension S4, as the detail is not clear from the picture.
- i. The existing commitment wording of Item 3.4 of Table 2.1.1-4 is identical to that under the Acceptance Criteria column. Consistent with other commitment wording, Item 3.4 of Table 2.1.1-4 should state that the NI structures include features which allow the plant to be shut-down safely and maintained in a cold safe shut-down following a pipe break accident with loss of offsite power.

**Response to Question 14.03.02-44:**

- a. The definition of key dimensions will be added to U.S. EPR FSAR Tier 2, Section 14.3. As stated in the Response to RAI 155, Question 03.08.01-20: ""Critical sections are those portions of individual Seismic Category I structures (i.e., shear walls, floor slabs and roofs, structure-to-structure connections) that are particularly important for prevention or mitigation of consequences of postulated design basis accidents, are expected to experience the largest structural demands during design basis conditions, or are needed for safety evaluation of an essentially complete design.""
- b. Key dimensions and figures will be added for the equipment hatch and typical cylinder wall and buttress.
- c. The critical sections of the Reactor Building Internal Structure (RBIS) that are discussed in Appendix 3E were reviewed. Considering the addition of the equipment hatch and typical cylindrical wall and buttress, the key dimensions for the RBIS basemat, which will be added to the U.S.EPR FSAR, are the only remaining key dimensions to be included in the U.S. EPR FSAR.
- d. The reactor pressure vessel cavity walls or floor are currently not included in U.S. EPR Tier 2, Appendix 3E as a critical section. If a critical section is added to U.S. EPR Tier 2, Appendix 3E for these structural components, key dimensions will be added to U.S. EPR FSAR Tier 1 to stay aligned with U.S. EPR FSAR Tier 2, Appendix 3E. See the Response to RAI 230, Question 14.03.02-22.
- e. The connections of the Fuel Building and Safeguards Building 2 and 3 roofs to the Reactor Shield Building are currently included in U.S. EPR FSAR Tier 2, Table 2.1.1-5, and Figure 2.1.1-9 as key dimensions W6, W7, W8, W9, S8 and S9.
- f. The critical sections of U.S. EPR FSAR Tier 2, Appendix 3E were reviewed. Considering the addition of the equipment hatch, typical cylindrical wall and buttress, and RBIS basemat key dimensions noted in the response to items b and c, key dimensions have been included for all of the critical sections. If additional critical sections are added to U.S. EPR FSAR Tier 2, Appendix 3E, key dimensions will be added to U.S. EPR FSAR Tier 1 to stay aligned with U.S. EPR FSAR Tier 2, Appendix 3E. See the Response to RAI 230, Question 14.03.02-22.
- g. The key dimensions are the pertinent U.S. EPR FSAR Tier 1, Table 2.1.1-2 commitments. The elevations and other data in this table provide supplemental information that is not specific U.S. EPR FSAR Tier 1 commitments. The title of U.S. EPR FSAR Tier 1, Table 2.1.1-2 will be revised to remove the term "Foundation Footprint."
- h. U.S. EPR FSAR Tier 1, Figure 2.1.1-7 will be revised to clarify the dimension S4.

- i. At the request of NRC, in the Response to RAI 354, Supplement 6, Question 03.06.02-42, U.S. EPR FSAR Tier 1, Section 2.1.1-4, Item 3.4 and Table 2.1.1-4 were deleted and moved to a new U.S. EPR FSAR Tier 1, Section 3.8. The Response to RAI 354, Supplement 6, Question 03.06.02-42 also modified the commitment wording. The current version of U.S. EPR FSAR Tier 1, Section 3.8 is provided in the attached markups.

Note that some of the U.S. EPR FSAR changes associated with this RAI response were already processed and included in Revision 3 and are not denoted by “redline-strikeout” on the enclosed markup of U.S. EPR FSAR Interim Revision 4. Other portions of the FSAR changes will be incorporated into Interim Rev. 4 as identified in the FSAR markups.

**FSAR Impact:**

U.S. EPR FSAR Tier 1, Table 2.1.1-2, Table 2.1.1-5, Figure 2.1.1-7, Figure 2.1.1-9, and U.S. EPR FSAR Tier 2, Section 14.3 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR FSAR Tier 1, Figure 2.1.1-45 will be added as described in the response and indicated on the enclosed markup.

**Question 14.03.02-45:****Follow-up to RAI 132, Question 14.03.02-11(2)**

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. The applicant in its response to **RAI 132, Question 14.03.02-11(2)** identified certain design features that have been identified as internal hazards barriers. These are shown in Revision 1 to U.S EPR FSAR, Tier 1, Figures 2.1.1-20 to 2.1.1- 44, Figure 2.1.2-4 and Figure 2.1.5-6. It is not clear that all internal hazard barriers have been identified. For instance, it would seem that some of the walls within the Reactor Building are needed to provide missile protection for internal missiles, yet none have been identified in the figures presented. The applicant should state if all barriers are shown and if not to provide justification as to why they are not. In addition, SRP Section 14.3.2, Acceptance Criteria 2 states that key dimensions of structures be provided. As the safety function of seismic Category I structures includes providing barriers for protection against missile impact, pipe whip, jet impingement, flooding, etc., the key dimensions of these safety-related features should be included in the design descriptions and require verification in the ITAAC tables. The approach should be similar to what has been done for radiation barriers listed in Tier 1, Table 2.1.1-3. The staff is requesting that this information be provided not only for the NI Common Basemat Structures, but also for the EPGB and ESWB. Finally, it appears from the markup of Table 2.1.1-4, Item 3.5 provided in the response to **RAI 230, Question 14.03.02-22**, that the applicant may have deleted Table 2.1.1-6 (Rooms with Jet Shields or Pipe Restraints) from the Tier 1 material. Since this information is also needed to meet GDC 4 and was the only information in Tier 1 that identified these protective features, the applicant is requested to include this table or provide justification as to why the table was deleted.

**Response to Question 14.03.02-45:**

1. All internal hazard barriers that provide divisional separation between redundant trains of safety systems have been identified. Within the Reactor Building (RB), there are no barriers that provide divisional separation from the effects of fire or flooding. The analysis of barriers that provide internal missile protection inside the RB will be performed later in the design process. However, inside the RB, postulated missiles originating from unique pressurized high-energy items such as the reactor vessel and associated fittings, steam generator, reactor coolant pump, pressurizer, and RCPB piping during normal operation are not considered credible due to ASME Code Section III and Section XI criteria controlling quality from production through operation, material characteristics, design strengths, and the preservice and inservice inspections. Additional assurances to prevent generation of missiles are provided by prudent operation of the system. Similar logic was accepted by the NRC for other design certification applications (e.g., Section 3.5.1.2 of NUREG-1793). Additionally, as noted in U.S. EPR FSAR Tier 2, postulated missiles in the form of a piece of the CRDM housing or a control rod ejected rapidly from the core is not considered credible. Therefore, an ITAAC will not be add on missile barriers to U.S. EPR FSAR Tier 1.

Additionally, U.S. EPR FSAR Tier 1, Table 3.8-1, ITAAC Item 1.0 requires that a pipe break hazards analysis report 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. This ITAAC item also requires that an inspection be performed to confirm that features are installed to mitigate the effects of a pipe break.



2. The Response to RAI 230, Question 14.03.02-22 provided the basis for the key dimensions that are provided in U.S. EPR FSAR Tier 1. Key dimensions cannot be provided for features of the design that have not yet been confirmed. ITAAC have been included to provide design commitments for completing the appropriate internal hazards analyses and for confirming that the features of the plant necessary to mitigate the effects of the internal hazards are installed in accordance with the final as-built construction drawings. These ITAAC for fire, flood and pipe break were identified in the Response to RAI 230, Question 14.03.02-22, Table 14.03.02-22-2.
3. U.S. EPR FSAR Tier 1, Table 2.1.1-4, Item 3.5 was deleted in response to RAI 222, Question 03.06.02-31, Item 2. GDC 4 is met by U.S. EPR FSAR Tier 1, Table 3.8-1, ITAAC Item 1.0.

**FSAR Impact:**

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

**Question 14.03.02-49:**

Section C.I.3.8.1.7 of Regulatory Guide 1.206 states in part that the applicant should describe the testing and ISI, including milestones, for the containment, with emphasis on the extent of compliance with Articles CC-6000 and CC-9000 of the ASME Code, Section III, Division 2. In Revision 1 of U.S EPR FSAR, Tier 1, Table 2.1.1-8, Item 2.6, under the Inspections, Tests, Analyses column, subparagraph (c) it states that a Structural Integrity Test (SIT) of the RCB post-tensioned pre-stressed concrete structure will be performed. Under the Acceptance Criteria column in subparagraph (c), it states that the RCB post-tensioned, pre-stressed concrete structure maintains its integrity at the design pressure of at least 62 psig. To meet the SIT requirements of the ASME Code, the containment needs to be tested at 115% of the design pressure and meet the acceptance criteria of Subsubarticle CC-6410. Subparagraph (c) of the Acceptance Criteria as currently written is incorrect. The applicant is requested to revise subparagraph (c) to reflect the SIT requirements of the ASME Code, Section III, Division 2 Code and the acceptance criteria of Subsubarticle CC-6410.

**Response to Question 14.03.02-49:**

U.S EPR FSAR Tier 1, Table 2.1.1-8, Item 2.5 and 2.6 will be revised to clarify ASME Code, Section III, Division 2 design, fabrication, inspection, and SIT requirements. SIT acceptance criteria of the ASME Code, Section III, Division 2, Subsubarticle CC-6410 will be referenced.

Note: While ASME Code, Section III, Division 2, Article CC-6000 provides the requirements for SIT, there is no Article CC-9000 in ASME Code, Section III, Division 2.

**FSAR Impact:**

U.S. EPR FSAR Tier 1, Table 2.1.1-8 will be revised as described in the response and indicated on the enclosed markup.

**Question 14.03.02-51:****Follow-up to RAI 230, Question 14.03.02-26**

Section C.I.3.8.1.7 of regulatory Guide 1.206, states in part that the applicant should describe the testing and ISI, including milestones, for the containment, with emphasis on the extent of compliance with Articles CC-6000 and CC-9000 of the ASME Code, Section III, Division 2. In its response to **RAI 230, Question 14.03.02-26**, the applicant failed to address the need to provide instrumentation to measure strains for prototype containments during the SIT as required by ASME Code, Section III, Division 2, Subsubarticle CC-6370. The applicant is requested to address the requirement to measure strains for prototype containments and if strains are not to be measured provide justification for not doing so. As part of that same response, item 2.5 of Table 2.1.1-8 under Acceptance Criteria in subparagraph (d) the FSAR has been revised to state that the RCB including the liner plate and penetration assemblies maintains its integrity at the design pressure of at least 62 psig. However, to meet the SIT requirements of ASME Code, Section III, Division 2, the containment is to be tested at 115% of the design pressure and meet the acceptance criteria of Subsubarticle CC-6410. The applicant is requested to revise subparagraph (d) under Acceptance Criteria to reflect the SIT requirements of the ASME Code, Section III, Division 2 Code and the acceptance criteria of Subsubarticle CC-6410.

**Response to Question 14.03.02-51:**

The U.S. EPR containment is a nonprototype containment as defined in ASME Code, Section III, Division 2, Paragraph CC-6152. Therefore, an ITAAC will not be added to address the requirement to measure strains for prototype containments in accordance with ASME Code, Section III, Division 2, Subsubarticle CC-6370.

U.S EPR FSAR Tier 1, Table 2.1.1-8, Item 2.5 and 2.6 will be revised to clarify ASME Code, Section III, Division 2 design, fabrication, inspection, and SIT requirements in accordance with Question 14.03.02-49.

**FSAR Impact:**

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

# U.S. EPR Final Safety Analysis Report Markups

Table 2.1.1-2—Key Dimensions of Nuclear Island **Foundation Footprint** ← 14.02.03-44

Label	Section Descriptions	Region	Key Dimension	Tolerance
D1	Distance from North edge of SB 2/3 to South edge of FB foundation base slabs.	Refer to Figure 2.1.1-1	344 ft - 10 in.	+/- 12 in.
D2	Distance from West edge of SB 1 to East edge of SB 4 foundation base slabs.	Refer to Figure 2.1.1-1	362 ft - 6 in.	+/- 12 in.
D3	Distance from finish floor at +0 ft elevation to FB roof elevation.	Refer to Figure 2.1.1-12	111 ft - 7 in.	+/- 12 in. <sup>(1)</sup>
D4	Distance from finish floor at +0 ft elevation to top of FB foundation base slab.	Refer to Figure 2.1.1-12	31 ft - 6 in.	
D5	Distance from finish floor at +0 ft elevation to SB 1 roof elevation.	Refer to Figure 2.1.1-14	96 ft - 2 in.	+/- 12 in. <sup>(1)</sup>
D6	Distance from finish floor at +0 ft elevation to top of SB 1 foundation base slab.	Refer to Figure 2.1.1-14	31 ft - 6 in.	
D7	Distance from finish floor at +0 ft elevation to SB 2/3 roof elevation.	Refer to Figure 2.1.1-17	94 ft - 6 in.	+/- 12 in. <sup>(1)</sup>
D8	Distance from finish floor at +0 ft elevation to top of SB 2/3 foundation base slab.	Refer to Figure 2.1.1-17	31 ft - 6 in.	
D9	Distance from finish floor at +0 ft elevation to SB 4 roof elevation.	Refer to Figure 2.1.1-19	96 ft - 2 in.	+/- 12 in. <sup>(1)</sup>
D10	Distance from finish floor at +0 ft elevation to top of SB 4 foundation base slab.	Refer to Figure 2.1.1-19	31 ft - 6 in.	

**Notes:**

1. Tolerance specified is for the total dimension from top of foundation to top of roof elevation. The key dimensions individually are permitted to utilize up to the total tolerance specified provided the combined total tolerance for the two key dimensions does not exceed the tolerance specified.

Table 2.1.1-5—Key Dimensions of Reactor Building Structures (2 Sheets)

Label	Section Descriptions	Region	Floor Elevation or Elevation Range	Key Dimension <sup>(1)</sup>
W6	RSB Wall above FB Roof Connection	Refer to Figure 2.1.1-9	The FB roof is at top of slab nominal elevation +112 ft	5 ft - 10 7/8 in.
W7	RSB Wall below FB Roof Connection	Refer to Figure 2.1.1-9	The FB roof is at top of slab nominal elevation +112 ft	4 ft - 3 3/16 in.
S8	FB Roof at RSB Wall Connection	Refer to Figure 2.1.1-9	The FB roof is at top of slab nominal elevation +112 ft	5 ft - 10 7/8 in.
W8	RSB Wall above SB 2/3 Roof Connection	Refer to Figure 2.1.1-9	The SB 2/3 roof is at top of slab nominal elevation +94 ft	5 ft - 10 7/8 in.
W9	RSB Wall below SB 2/3 Roof Connection	Refer to Figure 2.1.1-9	The SB 2/3 roof is at top of slab nominal elevation +94 ft	4 ft - 3 3/16 in.
S9	SB 2/3 Roof at RSB Wall Connection	Refer to Figure 2.1.1-9	The SB 2/3 roof is at top of slab nominal elevation +94 ft	5 ft - 10 7/8 in.
G1	RCB Wall to Foundation Gusset Connection.	Refer to Figure 2.1.1-9 and Figure 2.1.1-10	From bottom of RB foundation base slab to nominal elevation -8 ft	Varies as shown on Figure 2.1.1-10
W14	Typical Containment Wall	Refer to Figure 2.1.1-9	From nominal elevations -8 ft to +144 ft	4 ft - 3 3/16 in.
H1	Equipment Hatch Wall	Refer to Figure 2.1.1-9 and Figure 2.1.1-45	From nominal elevations +48 ft to +103 ft	7 ft - 11 3/16 in.
F6	RBIS Foundation Basemat - IRWST	Refer to Figure 2.1.1-9	Top of slab for the IRWST portion of the RBIS foundation basemat is at nominal elevation -21 ft	4 ft - 11 7/16 in.
F7	RBIS Foundation Basemat - Outer Ring	Refer to Figure 2.1.1-9	Top of slab for the outer ring portion of the RBIS foundation is at nominal elevation -8 ft	18 ft - 0 9/16 in.

**Notes:**

14.02.03-44

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

	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
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"> <li>• Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads).</li> <li>• 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, cubicle pressurization loads, and missile impact loads).</li> <li>• External events (including rain, snow, flood, tornado, tornado-generated missiles and earthquake)</li> </ul>	<p>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.</p>	<p>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.</p>
2.5	<p>The RCB, including the liner plate and penetration assemblies, maintains its pressure boundary integrity at the design pressure.</p>	<p>a. <u>A Structural Integrity Test of the RCB, including the liner plate and penetration assemblies, will be performed in accordance with ASME Code Section III. Inspections will be performed for the existence of ASME Code Section III Design Report(s) for the RCB liner plate and penetration assemblies.</u></p>	<p>a. ASME Code Section III <del>Design Data</del> Report(s) <del>(NCA-3550)</del> exist <u>and conclude that for</u> the RCB, <u>including the</u> liner plate and penetration assemblies, <u>the Structural Integrity Test results comply with ASME Code Section III, Division 2, CC-6400 requirements at a test pressure of 115% of the design pressure of 62 psig.</u></p>

14.03.03-49





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


	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
	<p>14.03.03-49 </p>	<p><del>b. Inspections will be performed to verify the existence of RCB liner plate and penetration assemblies analyses which reconcile as-built deviations to the ASME Code Design Report as required by ASME Code Section III.</del></p> <p><del>e. Inspections of pressure boundary welds will be performed to verify that welding on the RCB liner plate and penetration assemblies is performed in accordance with ASME Code Section III requirements.</del></p> <p><del>d. A Structural Integrity Test of the RCB, including the liner plate and penetration assemblies, will be performed in accordance with ASME Code Section III.</del></p> <p><del>e. Pre-service Inspections on the RCB liner plate and penetration assemblies has been performed in accordance with ASME Code Section III.</del></p>	<p><del>b. ASME Code Data Reports (NCA-8000) exist and conclude that Reconciliation (NCA-3554) of the as-built RCB liner plate and penetration assemblies with the Design Report (NCA-3550) has occurred.</del></p> <p><del>e. ASME Code Section III Data Reports exist and concludes that pressure boundary welding has been performed on the RCB liner plate and penetration assemblies in accordance with ASME Code Section III.</del></p> <p><del>d. ASME Code Data Report (CC-6500) exists and concludes the Structural Integrity Test performed on the RCB, including the liner plate and penetration assemblies meets the ASME Section III requirements at the design pressure of at least 62 psig.</del></p> <p><del>e. ASME Code Section III Data Reports exist and concludes that Pre-service NDE performed on the RCB liner plate and penetration assemblies meets ASME Section III requirements.</del></p>

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


	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
2.6	<p>The RCB is a post-tensioned, pre-stressed concrete structure.</p> <div data-bbox="305 541 500 590" style="border: 1px solid red; padding: 2px; display: inline-block; margin-top: 10px;">14.03.03-49</div> 	<p>a. <del>Inspections will be performed for the existence</del> <u>An analysis of ASME Code Section III Design Report(s) for the RCB post-tensioned, pre-stressed concrete structure will be performed.</u></p> <p>b. Inspections will be performed for the existence of ASME Code Section III Construction Report(s) for the RCB post-tensioned, pre-stressed concrete structure.</p> <p>c. <del>Inspections will be performed to verify the existence</del> <u>An analysis of the RCB post-tensioned, pre-stressed concrete structure using as-designed and as-built information and ASME Code Design Reports (NCA-3550) will be performed analyses which reconcile as-built deviations to the ASME Code Design Report as required by ASME Code Section III.</u></p>	<p>a. ASME Code Section III Design Report(s) (NCA-3550) exist <u>and conclude that the design of</u> <del>for</del> the RCB post-tensioned, pre-stressed concrete structure <u>complies with ASME Code Section III, Division 2 requirements.</u></p> <p>b. ASME Code Section III Construction Report(s) (NCA-3454) exists for the RCB post-tensioned, pre-stressed concrete structure.</p> <p>c. ASME Code Data Reports (NCA-8000) exist and conclude that Reconciliation (NCA-3554) of the as-built RCB post-tensioned, pre-stressed concrete structure with the Design Report (NCA-3550) has occurred. <u>ASME Code Section III Design Reports (NCA-3550) exist and conclude for components listed as ASME Code Section III, other than RPV internals, in Table 2.2.1-1 that design reconciliation (NCA-3554) has been completed in accordance with the ASME Code Section III for the as-built system. The report(s) document the results of the reconciliation analysis.</u></p>

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


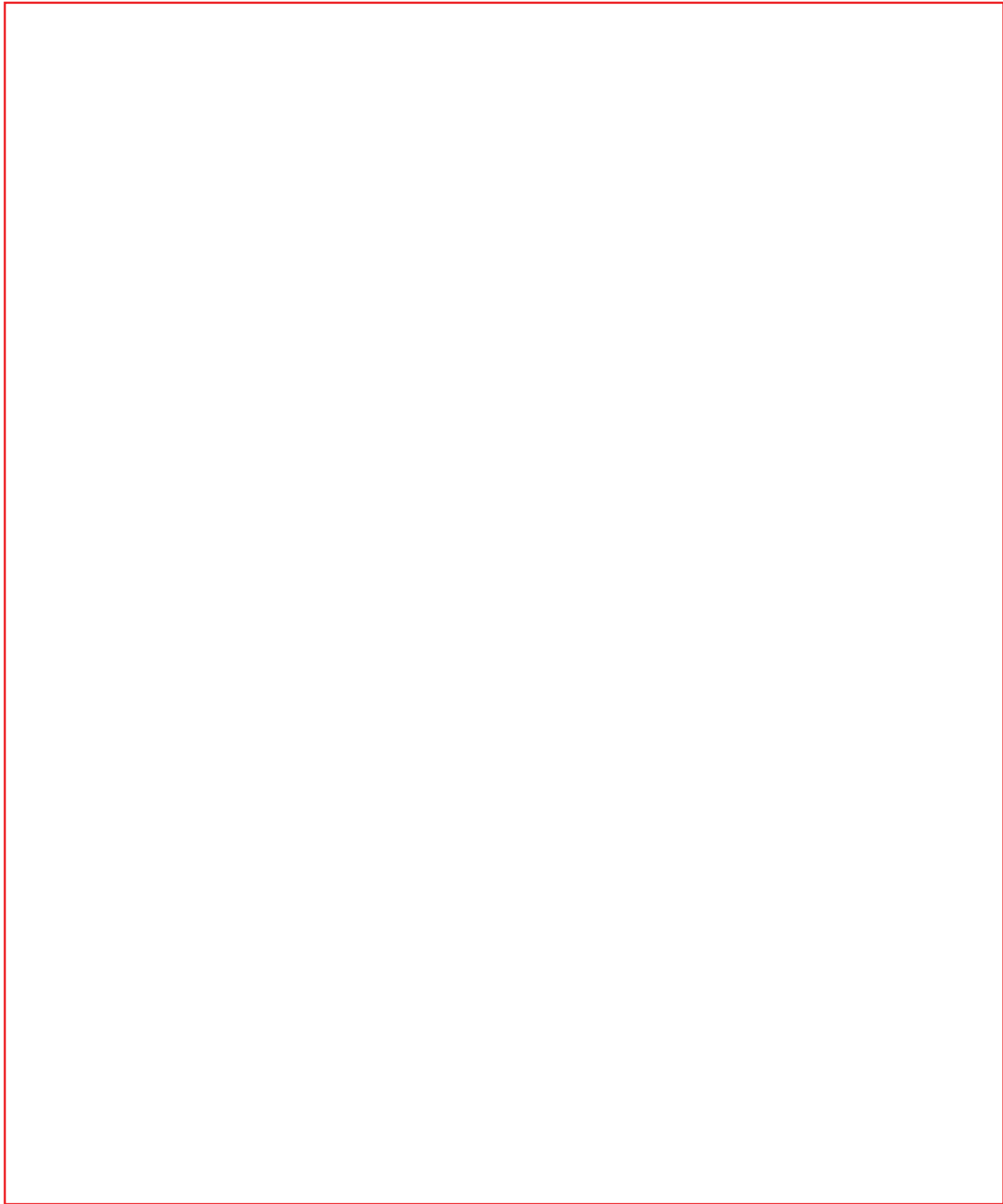
	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
	<p>14.03.03-49</p> 	<p><del>d. A Structural Integrity Test of the RCB post-tensioned, pre-stressed concrete structure will be performed in accordance with ASME Code Section III.</del></p> <p><del>e. Pre-service Inspections on the RCB post-tensioned, pre-stressed concrete structure has been performed in accordance with ASME Code Section III.</del></p>	<p><del>d. ASME Code Data Report (CC-6500) exists and concludes that the Structural Integrity Test performed on the RCB post-tensioned, pre-stressed concrete structure meets ASME Section III requirements at the design pressure of 62 psig.</del></p> <p><del>e. ASME Code Section III Data Reports exist and concludes that Pre-Service Inspections on the RCB post-tensioned, pre-stressed concrete structure meets ASME Section III.</del></p>
2.7	<p>The RBA is separated from the SBs and the FB <u>and the RBA is separated from the RCB</u> by <del>an</del> internal hazard protection barriers <del>as shown on Figure 2.1.1-20</del> that <del>have</del>s <u>an adequate minimum 3-hour</u> fire rating <u>as indicated on Figure 2.1.1-20</u>.</p>	<p>a. A fire protection analysis will be performed.</p> <p>b. Inspection of as-built conditions of <u>features such as</u> barriers, doors, dampers, and penetrations, which separate the RBA from the SBs and FB, <u>and the RBA is separated from the RCB</u> versus construction drawings of barriers, doors, dampers and penetrations as determined in the part (a) analysis will be performed.</p>	<p>a. Completion of fire protection analysis <del>that</del> concludes <u>that features such as</u> barriers, doors, dampers, and penetrations that separate the RBA from the SBs and FB, <u>and the RBA from the RCB</u>, have <u>an adequate minimum 3-hour</u> fire rating.</p> <p>b. The as-built configuration of fire barriers, doors, dampers, and penetrations that separate the RBA from the SBs and FB <u>and the RBA from the RCB</u> (as shown on Figure 2.1.1-20) agrees with the construction drawings.</p>

Figure 2.1.1-7—Reactor Building Plan Elevation +45 ft.

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Figure 2.1.1-9—Reactor Building Elevation Section C-C



14.02.03-44

**Figure 2.1.1-45—Cross Section of Equipment Hatch Area**



14.02.03-44



- Flooding Protection — Flooding evaluations were reviewed for safety-significant design features. The results are in Table 14.3-4—Flooding Analysis (Safety-Significant Features).
- Anticipated Transient Without Scram (ATWS) —10 CFR 50.62 (the ATWS rule) and the engineering evaluation addressing ATWS were reviewed for safety-significant design features. The results are in Table 14.3-5—ATWS (Safety-Significant Features).
- PRA and Severe Accident — The PRA insights report and severe accident analyses were reviewed for safety-significant design features. Using the PRA insights report provided a process to identify non-safety-related features that are safety-significant and otherwise may not have been identified. The results are in Table 14.3-6—PRA and Severe Accident Analysis (Safety-Significant Features).
- Licensing — Three Mile Island (TMI) items from 10 CFR 50.34(f) and high-priority generic safety issues (GSI) items from NUREG-0933, Appendix B were reviewed for safety-significant design features relevant to the U.S. EPR design. The items were then compared to the other Section 14.3 tables for redundancy. Items not already addressed by another Section 14.3 table or not already addressed by other Tier 1 criteria are listed in Table 14.3-7—Licensing (Safety-Significant Features).

In addition to identifying the safety-significant features, the tables developed during the second approach (team reviews of analyses) list the Tier 2 section that describes the identified design feature. If the value of the design feature was judged to be safety significant, then a value was provided in the tables. As part of the Tier 1 development process, roadmaps were also created to maintain consistency between Tier 1 and Tier 2 material. Additionally, the information contained in the Tier 2, Section 14.3 tables was verified to be included in Tier 1, and Tier 1 material related to testing was verified to be consistent with the initial test program in Tier 2, Section 14.2.

Safety-significant structures providing radiation shielding for normal operations and post-accident conditions are also included in Tier 1. The criteria for safety-significant structures during normal operations is an area where a radiation zone 3 compartment (dose rate  $\leq 2.5$  mR/hr) is immediately adjacent to a radiation zone 7 or 8 compartment (dose rates above 5 rad/hr). The criteria for safety-significant structures during post-accident conditions is a structure needed to provide radiation shielding to reduce mission doses for personnel performing post-accident actions.

14.03.02-44

Structural key dimensions include the overall building dimensions (length, width and height) and those dimensions confirmed by the structural design of the critical sections in Appendix 3E. Key dimensions are also provided for the concrete components that provide radiation protection.

The U.S. EPR systems are listed in Table 14.3-8—ITAAC Screening Summary. Systems within the scope of Tier 1 or that contain ITAAC are identified in the table.