

## ArevaEPRDCPEm Resource

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**From:** WELLS Russell (AREVA) [Russell.Wells@areva.com]  
**Sent:** Monday, April 18, 2011 4:36 PM  
**To:** Tesfaye, Getachew  
**Cc:** KOWALSKI David (AREVA); BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 16  
**Attachments:** RAI 385 Supplement 16 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8, Supplement 9, Supplement 10, Supplement 11, Supplement 12, Supplement 13, Supplement 14 and Supplement 15 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15, 2010, September 22, 2010, October 22, 2010, October 28, 2010, November 18, 2010, November 23, 2010, December 15, 2010, January 6, 2011, January 12, 2011, February 9, 2011, March 2, 2011 and April 5, 2011, respectively, to provide a revised schedule.

The attached file, "RAI 385 Supplement 16 Response US EPR DC.pdf" provides technically correct and complete responses to three of the seven 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 385 Questions 09.01.05-20 and 09.01.05-21.

The following table indicates the respective pages in the response document, "RAI 385 Supplement 16 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 385 — 09.01.05-20	2	2
RAI 385 — 09.01.05-21	3	4
RAI 385 — 09.01.05-23	5	6

The schedule for technically correct and complete responses to the remaining four questions has not changed and is provided below:

Question #	Response Date
RAI 385 — 09.01.04-15	May 6, 2011
RAI 385 — 09.01.04-16	May 6, 2011
RAI 385 — 09.01.04-17	May 6, 2011
RAI 385 — 09.01.05-22	May 6, 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:** Tuesday, April 05, 2011 8:27 AM

**To:** 'Tesfaye, Getachew'

**Cc:** KOWALSKI David (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. 385, FSAR Ch. 9, Supplement 15

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8, Supplement 9, Supplement 10, Supplement 11, Supplement 12, Supplement 13 and Supplement 14 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15, 2010, September 22, 2010, October 22, 2010, October 28, 2010, November 18, 2010, November 23, 2010, December 15, 2010, January 6, 2011, January 12, 2011, February 9, 2011 and March 2, 2011, respectively, to provide a revised schedule.

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

The schedule for technically correct and complete responses to the questions is provided below.

Question #	Response Date
RAI 385 — 09.01.04-15	May 6, 2011
RAI 385 — 09.01.04-16	May 6, 2011
RAI 385 — 09.01.04-17	May 6, 2011
RAI 385 — 09.01.05-20	May 6, 2011
RAI 385 — 09.01.05-21	May 6, 2011
RAI 385 — 09.01.05-22	May 6, 2011
RAI 385 — 09.01.05-23	May 6, 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:** Wednesday, March 02, 2011 10:22 AM

**To:** 'Tesfaye, Getachew'

**Cc:** BENNETT Kathy (RS/NB); ROMINE Judy (RS/NB); DELANO Karen (RS/NB); KOWALSKI David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 14

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8, Supplement 9, Supplement 10, Supplement 11, Supplement 12 and Supplement 13 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15, 2010, September 22, 2010, October 22, 2010, October 28, 2010, November 18, 2010, November 23, 2010, December 15, 2010, January 6, 2011, January 12, 2011 and February 9, 2011, respectively, to provide a revised schedule.

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

The schedule for technically correct and complete responses to the questions is provided below.

<b>Question #</b>	<b>Response Date</b>
RAI 385 — 09.01.04-15	April 7, 2011
RAI 385 — 09.01.04-16	April 7, 2011
RAI 385 — 09.01.04-17	April 7, 2011
RAI 385 — 09.01.05-20	April 7, 2011
RAI 385 — 09.01.05-21	April 7, 2011
RAI 385 — 09.01.05-22	April 7, 2011
RAI 385 — 09.01.05-23	April 7, 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)*  
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[\*Russell.Wells@Areva.com\*](mailto:Russell.Wells@Areva.com)

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**From:** BRYAN Martin (External RS/NB)  
**Sent:** Wednesday, February 09, 2011 2:52 PM  
**To:** 'Tesyfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 13

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8, Supplement 9, Supplement 10, Supplement 11 and Supplement 12 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15,

2010, September 22, 2010, October 22, 2010, October 28, 2010, November 18, 2010, November 23, 2010, December 15, 2010, January 6, 2011, and January 12, 2011, respectively, to provide a revised schedule.

To provide additional time to interact with the NRC, a revised schedule 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 385 — 09.01.04-15	March 9, 2011
RAI 385 — 09.01.04-16	March 9, 2011
RAI 385 — 09.01.04-17	March 9, 2011
RAI 385 — 09.01.05-20	March 9, 2011
RAI 385 — 09.01.05-21	March 9, 2011
RAI 385 — 09.01.05-22	March 9, 2011
RAI 385 — 09.01.05-23	March 9, 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, January 12, 2011 6:35 PM  
**To:** 'Tesyfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 12

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8, Supplement 9, Supplement 10 and Supplement 11 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15, 2010, September 22, 2010, October 22, 2010, October 28, 2010, November 18, 2010, November 23, 2010, December 15, 2010 and January 6, 2011, 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 responses to Questions 09.01.05-20 and 09.01.05-22.

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

Question #	Response Date
RAI 385 — 09.01.04-15	February 10, 2011
RAI 385 — 09.01.04-16	February 10, 2011
RAI 385 — 09.01.04-17	February 10, 2011
RAI 385 — 09.01.05-20	February 10, 2011

RAI 385 — 09.01.05-21	February 10, 2011
RAI 385 — 09.01.05-22	February 10, 2011
RAI 385 — 09.01.05-23	February 10, 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:** Thursday, January 06, 2011 8:14 AM  
**To:** Tesfaye, Getachew  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 11

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8, Supplement 9 and Supplement 10 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15, 2010, September 22, 2010, October 22, 2010, October 28, 2010, November 18, 2010, November 23, 2010 and December 15, 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 responses to Questions 09.01.04-15, 09.01.04-16, 09.01.04-17, 09.01.05-21 and 09.01.05-23.

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

Question #	Response Date
RAI 385 — 09.01.04-15	February 10, 2011
RAI 385 — 09.01.04-16	February 10, 2011
RAI 385 — 09.01.04-17	February 10, 2011
RAI 385 — 09.01.05-20	January 14, 2011
RAI 385 — 09.01.05-21	February 10, 2011
RAI 385 — 09.01.05-22	January 14, 2011
RAI 385 — 09.01.05-23	February 10, 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, December 15, 2010 9:44 AM  
**To:** 'Tesfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB); Miernicki, Michael  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 10

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8 and Supplement 9 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15, 2010, September 22, 2010, October 22, 2010, October 28, 2010, November 18, 2010 and November 23, 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 responses to Questions 09.01.05-20 and 09.01.05-22.

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

Question #	Response Date
RAI 385 — 09.01.04-15	January 6, 2011
RAI 385 — 09.01.04-16	January 6, 2011
RAI 385 — 09.01.04-17	January 6, 2011
RAI 385 — 09.01.05-20	January 14, 2011
RAI 385 — 09.01.05-21	January 6, 2011
RAI 385 — 09.01.05-22	January 14, 2011
RAI 385 — 09.01.05-23	January 6, 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:** Tuesday, November 23, 2010 9:22 AM  
**To:** 'Tesfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 9

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5,

Supplement 6, Supplement 7 and Supplement 8 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15, 2010, September 22, 2010, October 22, 2010, October 28, 2010 and November 18, 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 responses to Questions 09.01.04-15 thru -17, 09.01.05-21 and 09.01.05-23.

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

<b>Question #</b>	<b>Response Date</b>
RAI 385 — 09.01.04-15	January 6, 2011
RAI 385 — 09.01.04-16	January 6, 2011
RAI 385 — 09.01.04-17	January 6, 2011
RAI 385 — 09.01.05-20	December 16, 2010
RAI 385 — 09.01.05-21	January 6, 2011
RAI 385 — 09.01.05-22	December 16, 2010
RAI 385 — 09.01.05-23	January 6, 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:** Thursday, November 18, 2010 3:11 PM  
**To:** 'Tesfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB); 'Miernicki, Michael'  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 8

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, Supplement 6 and Supplement 7 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15, 2010, September 22, 2010, October 22, 2010 and October 28, 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 responses to Questions 09.01.05-20 and 09.01.05-22.

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

<b>Question #</b>	<b>Response Date</b>
RAI 385 — 09.01.04-15	November 23, 2010
RAI 385 — 09.01.04-16	November 23, 2010
RAI 385 — 09.01.04-17	November 23, 2010

RAI 385 — 09.01.05-20	December 16, 2010
RAI 385 — 09.01.05-21	November 23, 2010
RAI 385 — 09.01.05-22	December 16, 2010
RAI 385 — 09.01.05-23	November 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, October 28, 2010 3:55 PM  
**To:** 'Tesfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 7

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4, Supplement 5, and Supplement 6 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15, 2010, September 22, 2010, and October 22, 2010, respectively, to provide a revised schedule.

To provide additional time to interact with the NRC, and to provide time to process the responses, a revised schedule is provided in this e-mail for the responses to Questions 09.01.04-15, 09.01.04-16, 09.01.04-17, 09.01.05-21 and 09.01.05-23. The schedule for the responses to the remaining questions is unchanged and is provided below.

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

Question #	Response Date
RAI 385 — 09.01.04-15	November 23, 2010
RAI 385 — 09.01.04-16	November 23, 2010
RAI 385 — 09.01.04-17	November 23, 2010
RAI 385 — 09.01.05-20	November 18, 2010
RAI 385 — 09.01.05-21	November 23, 2010
RAI 385 — 09.01.05-22	November 18, 2010
RAI 385 — 09.01.05-23	November 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:** Friday, October 22, 2010 2:06 PM  
**To:** 'Tefaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 6

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3, Supplement 4 and Supplement 5 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010, September 15, 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 responses to Questions 09.01.05-20 and 09.01.05-22.

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

Question #	Response Date
RAI 385 — 09.01.04-15	October 28, 2010
RAI 385 — 09.01.04-16	October 28, 2010
RAI 385 — 09.01.04-17	October 28, 2010
RAI 385 — 09.01.05-20	November 18, 2010
RAI 385 — 09.01.05-21	October 28, 2010
RAI 385 — 09.01.05-22	November 18, 2010
RAI 385 — 09.01.05-23	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:** Wednesday, September 22, 2010 11:46 AM  
**To:** 'Tefaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 5

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2, Supplement 3 and Supplement 4 responses to

RAI No. 385 were sent on June 24, 2010, July 28, 2010, August 24, 2010 and September 15, 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 responses to Questions 09.01.05-20 and 09.01.05-22.

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

Question #	Response Date
RAI 385 — 09.01.04-15	October 28, 2010
RAI 385 — 09.01.04-16	October 28, 2010
RAI 385 — 09.01.04-17	October 28, 2010
RAI 385 — 09.01.05-20	October 22, 2010
RAI 385 — 09.01.05-21	October 28, 2010
RAI 385 — 09.01.05-22	October 22, 2010
RAI 385 — 09.01.05-23	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:** Wednesday, September 15, 2010 4:06 PM  
**To:** 'Tesfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 4

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1, Supplement 2 and Supplement 3 responses to RAI No. 385 were sent on June 24, 2010, July 28, 2010 and August 24, 2010, respectively, to provide a revised schedule.

Since the remaining responses are being processed, a revised schedule is provided in this e-mail.

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

Question #	Response Date
RAI 385 — 09.01.04-15	October 28, 2010
RAI 385 — 09.01.04-16	October 28, 2010
RAI 385 — 09.01.04-17	October 28, 2010
RAI 385 — 09.01.05-20	September 22, 2010
RAI 385 — 09.01.05-21	October 28, 2010
RAI 385 — 09.01.05-22	September 22, 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:** Tuesday, August 24, 2010 9:49 AM  
**To:** 'Tsfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 3

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1 and Supplement 2 responses to RAI No. 385 were sent on June 24, 2010 and July 28, 2010, respectively, to provide a revised schedule.

On July 28, 2010, DRAFT responses to Questions 09.01.05-20 and 09.01.05-22 were submitted to the NRC staff. To allow additional time for interaction between AREVA and the NRC staff, a revised schedule 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 385 — 09.01.04-15	September 15, 2010
RAI 385 — 09.01.04-16	September 15, 2010
RAI 385 — 09.01.04-17	September 15, 2010
RAI 385 — 09.01.05-20	<b>September 22, 2010</b>
RAI 385 — 09.01.05-21	September 15, 2010
RAI 385 — 09.01.05-22	<b>September 22, 2010</b>
RAI 385 — 09.01.05-23	September 15, 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:** Wednesday, July 28, 2010 6:14 PM  
**To:** 'Tsfaye, Getachew'  
**Cc:** DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC);

KOWALSKI David J (AREVA NP INC)

**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 2

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010. Supplement 1 response to RAI No. 385 was sent on June 24, 2010 to provide a revised schedule.

To allow time for interaction between AREVA and the NRC staff, a revised schedule 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 385 — 09.01.04-15	September 15, 2010
RAI 385 — 09.01.04-16	September 15, 2010
RAI 385 — 09.01.04-17	September 15, 2010
RAI 385 — 09.01.05-20	August 25, 2010
RAI 385 — 09.01.05-21	September 15, 2010
RAI 385 — 09.01.05-22	August 25, 2010
RAI 385 — 09.01.05-23	September 15, 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 24, 2010 4:52 PM

**To:** 'Tesfaye, Getachew'

**Cc:** DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); KOWALSKI David J (AREVA NP INC)

**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 1

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 385 on May 19, 2010.

To allow time for interaction between AREVA and the NRC staff, a revised schedule is provided in this e-mail. With respect to Questions 09.01.04-15, 09.01.04-16, 09.01.04-17, and 09.01.04-22, AREVA anticipates having draft responses available during July to support interaction with the NRC staff to review the responses prior to the formal submittal.

The schedule for technically correct and complete responses to the questions identified above has been revised as provided below.

Question #	Response Date
RAI 385 — 09.01.04-15	August 13, 2010
RAI 385 — 09.01.04-16	August 13, 2010
RAI 385 — 09.01.04-17	August 13, 2010
RAI 385 — 09.01.05-20	July 28, 2010
RAI 385 — 09.01.05-21	July 28, 2010
RAI 385 — 09.01.05-22	August 12, 2010
RAI 385 — 09.01.05-23	July 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)

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**From:** BRYAN Martin (EXT)  
**Sent:** Wednesday, May 19, 2010 5:57 PM  
**To:** 'Tefaye, Getachew'  
**Cc:** DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); KOWALSKI David J (AREVA NP INC)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 385 Response US EPR DC," provides a schedule since technically correct and complete responses to the seven questions are not provided. With respect to Questions 09.01.04-15, 09.01.04-16 and 09.01.04-17, AREVA anticipates having draft responses in late July to support interaction with the NRC staff to review the responses prior to the formal submittal. Additional time is included in the response date below to allow for these interactions.

The following table indicates the respective pages in the response document, "RAI 385 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 385 — 09.01.04-15	2	3
RAI 385 — 09.01.04-16	4	5
RAI 385 — 09.01.04-17	6	6
RAI 385 — 09.01.05-20	7	7
RAI 385 — 09.01.05-21	8	8
RAI 385 — 09.01.05-22	9	10
RAI 385 — 09.01.05-23	11	11

The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 385 — 09.01.04-15	August 13, 2010
RAI 385 — 09.01.04-16	August 13, 2010

RAI 385 — 09.01.04-17	August 13, 2010
RAI 385 — 09.01.05-20	June 18, 2010
RAI 385 — 09.01.05-21	June 18, 2010
RAI 385 — 09.01.05-22	July 14, 2010
RAI 385 — 09.01.05-23	June 18, 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:** Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]  
**Sent:** Monday, April 19, 2010 9:46 AM  
**To:** ZZ-DL-A-USEPR-DL  
**Cc:** Curran, Gordon; Lee, Samuel; Segala, John; Hearn, Peter; Colaccino, Joseph; ArevaEPRDCPEm Resource  
**Subject:** U.S. EPR Design Certification Application RAI No. 385 (4524, 4515),FSAR Ch. 9

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on March 31, 2010, and on April 15, 2010, you informed us that the RAI is clear and no further clarification is needed. As a result, no change is made to the draft RAI. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the published schedule.

Thanks,  
Getachew Tesfaye  
Sr. Project Manager  
NRO/DNRL/NARP  
(301) 415-3361

**Hearing Identifier:** AREVA\_EPR\_DC\_RAIs  
**Email Number:** 2852

**Mail Envelope Properties** (1F1CC1BBDC66B842A46CAC03D6B1CD41043EE564)

**Subject:** Response to U.S. EPR Design Certification Application RAI No. 385, FSAR Ch. 9, Supplement 16  
**Sent Date:** 4/18/2011 4:35:54 PM  
**Received Date:** 4/18/2011 4:36:10 PM  
**From:** WELLS Russell (AREVA)

**Created By:** Russell.Wells@areva.com

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**Post Office:** AUSLYNCMX02.adom.ad.corp

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	30932	4/18/2011 4:36:10 PM
RAI 385 Supplement 16 Response US EPR DC.pdf		53618

**Options**

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

**Response to**

**Request for Additional Information No. 385(4524, 4515), Supplement 16**

**4/19/2010**

**U.S. EPR Standard Design Certification**

**AREVA NP Inc.**

**Docket No. 52-020**

**SRP Section: 09.01.04 - Light Load Handling System (Related to Refueling)**

**SRP Section: 09.01.05 - Overhead Heavy Load Handling Systems**

**Application Section: 9.1**

**QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)**



**Question 09.01.05-20:****Follow-up to RAI 173, Question 09.01.05-10**

The staff asked the applicant in RAI 9.1.5-10 to describe the protection of the non-safety related, non-seismic heavy load handling equipment (HLHE) identified in FSAR Tier 2 Table 9.1.5-1 and the HLHE in the ultimate heat sink/essential service water structure from common mode failures. Provide the means to prevent the total loss of a safety function if multiple load drops are postulated to occur.

The applicant replied in RAI #173, Supplement 3. The applicant stated that the FSAR was updated to classify the cranes in the safeguard buildings, emergency power generating buildings, and the ultimate heat sink/essential service water structures as Seismic Category II and in accordance with American Society of Mechanical Engineers (ASME) NOG-1 or NUM-1 (Type II). However, the diesel hall cranes are located in the emergency power generating building and are classified as non-seismic in Table 3.2.2-1. Therefore, the RAI response regarding the diesel crane seismic classification is inconsistent with the Table 3.2.2-1. The applicant should justify the non-seismic classification for the diesel cranes located in the emergency power generating building and clarify the FSAR accordingly.

In addition, the RAI response provided additional clarification stating, "If one division is unavailable because of maintenance, load handling over in-service safety-related equipment and systems of other divisions is prohibited. During a seismic event, the design of Type II cranes results in the cranes remaining in place and not impacting safety-related equipment and systems below the cranes. The design of Type II cranes requires electrical power to enable the crane hoist brakes to open. In the event of a common mode failure causing a loss of electrical power, the hoist brakes close enabling the load to be placed in a safe condition." The staff finds this statement acceptable. However, the applicant should incorporate this response to RAI 9.1.5-10 into the FSAR.

**Response to Question 09.01.05-20:**

The diesel hall cranes located in the Emergency Power Generating Building are classified Seismic Category II. U.S. EPR FSAR Tier 2, Table 3.2.2-1—Classification Summary was revised in U.S. EPR FSAR, Revision 2 to reflect this seismic classification.

U.S. EPR FSAR Tier 2, Section 9.1.5.2.4 will be revised to include the information in the response to RAI 173, Question 09.01.05-10.

**FSAR Impact:**

U.S. EPR FSAR Tier 2, Section 9.1.5.2.4 will be revised as described in the response and indicated on the enclosed markup.

**Question 09.01.05-21:****Follow-up to RAI 173, Question 09.01.05-13**

The applicant replied to RAI 9.1.5-13 in RAI 173, Supplement 3. The applicant stated that handling loads over equipment that is not completely divisionally separated will be performed only when that equipment is not required to be in service (i.e., outage conditions) and cranes in these areas are Seismic Category II. As indicated by the applicant's response, for conditions when load handling by non-single-failure proof cranes is identified over equipment in non-divisionally separated areas, analyses will be performed later in the design process to determine if a simultaneous loss of more than one redundancy of a system is possible and acceptable, due to a postulated load drop, . The applicant's RAI response further clarified that "Non-single failure proof cranes will not be used to handle critical loads."

The applicant should incorporate the RAI 9.1.5-13 response into the FSAR, regarding the handling of loads only when equipment is not required to be in service (i.e., outage conditions) and clearly define (per RAI 9.1.5-13 response) when non-single failure proof cranes will not be used to handle critical loads in the FSAR. In addition, the applicant is asked to provide an additional COL Item or ITAAC for applicant to identify conditions of load handling by non-single failure proof cranes over SSC in non-divisionally separate areas and to provide the load drop analysis accordingly.

**Response to Question 09.01.05-21:**

This response supersedes in its entirety the response to RAI 173, Supplement 3, Question 09.01.05-13.

The response to RAI 173, Supplement 3, Question 09.01.05-13 included the following information:

"For conditions where load handling by non-single failure-proof cranes is identified over equipment in non-divisionally separated areas, analyses to determine if a simultaneous loss of more than one redundancy of a system is possible and acceptable, due to a postulated load drop, will be performed later in the design process."

Non-single failure-proof cranes will not be used to handle critical loads. The commitment to perform an analysis to justify load handling by non-single failure-proof cranes over equipment in non-divisionally separated areas has been eliminated. Therefore, there is no need to provide an additional COL Item or ITAAC to identify conditions of load handling by non-single failure-proof cranes over structures, systems, and components in non-divisionally separated areas and provide an associated load drop analysis.

To clarify the restrictions on the use of non-single failure-proof cranes to handle heavy loads over safety-related equipment that is required to be in-service, U.S. EPR FSAR Tier 2, Section 9.1.5.2.4 will be revised to include the following information:

"For buildings that are not completely divisionally separated (Containment Building, Reactor Building Annulus, and Fuel Building), handling of heavy loads by non-single failure-proof cranes is restricted to plant conditions when the equipment is not required to be in service; i.e., maintenance repairs or outage conditions. Cranes in these areas will be qualified as

Seismic Category II (ASME NOG-1/NUM-1, Type II) equipment. Qualification of the equipment in this manner confirms that the cranes will maintain their structural integrity and remain in place during a postulated seismic occurrence.”

**FSAR Impact:**

U.S. EPR FSAR Tier 2, Section 9.1.5.2.4 will be revised as described in the response and indicated on the enclosed markup.

**Question 09.01.05-23:**

Table 1.8-2 "US-EPR Combined License Information Items" contains COL Item 9.1-1 requesting the applicant to provide heavy load handling program and includes a reference to Section 9.1.5.2.5 for details. In accordance with RG 1.206 C.I.9.1.5, the COL applicant is to include specific information in the heavy load handling program. However, COL Item 9.1-1 and Section 9.1.5.2.5 does not contain all the specific items, outlined in C.I.9.1.5 of RG 1.206, that the applicant is to include into the handling program. The staff requests the applicant to revise Table 9.1-1 or Section 9.1.5.2.5 to include all the elements, as indicated in RG 1.206 C.I.9.1.5, needed for the COL applicant to include in the heavy load handling program.

**Response to Question 09.01.05-23:**

U.S. EPR FSAR Tier 2, Table 1.8-2—U.S. EPR Combined License Information Items, Item 9.1-1 states:

“A COL applicant that references the U.S. EPR design certification will provide site-specific information on the heavy load handling program, including a commitment to procedures for heavy load lifts in the vicinity of irradiated fuel or safe shutdown equipment, and crane operator training and qualification.”

The specific information to be included in the description of the heavy load handling system is identified in Section C.I.9.1.5.2 of RG 1.206, which states:

“The applicant should provide a description of the overhead heavy-load handling system, including component drawings, building layouts, and illustrations of special lifting devices. For all principal components, provide the relevant design data, seismic category, and quality class, and identify the design codes and standards used for design, manufacture, testing, operation, maintenance, and seismic design aspects.”

The following U.S. EPR FSAR Tier 2 sections and tables provide the required information with respect to the heavy load handling equipment (HLHE):

- Section 3B (Figures 3B-1 thru 3B-76) contains building layouts, and plans and elevations of buildings containing HLHE.
- Table 3.2.2-1—Classification Summary provides the safety and quality group classifications, seismic category, and applicable design codes of the HLHE.
- Sections 9.1.5.1, 9.1.5.2, and 9.1.5.4, and Table 9.1.5-1—Heavy Load Handling Equipment specify the applicable design codes and standards for the design, manufacture, testing, operation, and maintenance of the HLHE.

AREVA NP believes that it is not necessary to revise U.S. EPR FSAR Tier 2, Section 9.1.5 or the existing COL Information Item 9.1-1. This COL information item, in combination with the U.S. EPR FSAR sections and tables previously cited, represent operational commitments concerning the heavy load handling program imposed on the COL applicant by their adoption of the U.S. EPR FSAR. These commitments must either be implemented with the COL applicant's procedures, or a departure from the U.S. EPR FSAR be processed in accordance with applicable NRC rules and regulations.

**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

The Fuel Building contains bridge cranes in the equipment lock area. These cranes are used to move equipment and material from the plant grade elevation up to the equipment hatch level. These cranes are located in areas remote from the spent fuel pool such that movement of loads in the vicinity of the spent fuel pool by these cranes is not possible.

The Safeguard Buildings, Emergency Power Generating Buildings, and ultimate heat sink/essential service water structures are also equipped with cranes that are rated for heavy loads. For these divisionally separated buildings, the local effect of a load drop is restricted to the affected division. Accordingly, the loss of a safety system inside the affected division is acceptable from a nuclear safety standpoint.

09.01.05-20

If one division is unavailable because of maintenance, load handling over in-service safety-related equipment and systems of other divisions is procedurally prohibited.

During a seismic event, the design of Type II cranes results in the cranes remaining in place and not impacting safety-related equipment and systems below the cranes. The design of Type II cranes requires electrical power to enable the crane hoist brakes to open. In the event of a common mode failure causing a loss of electrical power, the hoist brakes close enabling the load to be placed in a safe condition.

09.01.05-21

For buildings that are not completely divisionally separated (Containment Building, Reactor Building Annulus, and Fuel Building), handling of heavy loads by non-single failure-proof cranes is restricted to plant conditions when the equipment is not required to be in service; i.e., maintenance repairs or outage conditions. Cranes in these areas will be qualified as Seismic Category II (ASME NOG-1/NUM-1, Type II) equipment. Qualification of the equipment in this manner confirms that the cranes will maintain their structural integrity and remain in place during a postulated seismic occurrence.

~~For buildings that are not completely divisionally separated (Containment Building, Reactor Building Annulus, and the FB), analyses are performed to determine if a simultaneous loss of more than one redundancy of a system is possible due to a postulated local load drop. If it is possible, the acceptability is evaluated. If single failure proof crane designs are used, load drop analyses are not required.~~

~~In accordance with Section 5.1 of Reference 3, the use of non single failure proof cranes is allowed in certain applications when handling heavy loads.~~

### 9.1.5.2.5 System Operation

A COL applicant that references the U.S. EPR design certification will provide site-specific information on the heavy load handling program, including a commitment to procedures for heavy load lifts in the vicinity of irradiated fuel or safe shutdown equipment, and crane operator training and qualification.