

## ArevaEPRDCPEm Resource

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**From:** WELLS Russell (AREVA) [Russell.Wells@areva.com]  
**Sent:** Monday, February 28, 2011 2:22 PM  
**To:** Tesfaye, Getachew  
**Cc:** BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); KOWALSKI David (AREVA)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 277, FSAR Ch. 9, Supplement 14  
**Attachments:** RAI 277 Supplement 14 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions. 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. 277 were sent on April 14, 2010, May 6, 2010, May 27, 2010, June 24, 2010, July 28, 2010, August 27, 2010, September 22, 2010, October 25, 2010, November 12, 2010 and December 10, 2010, respectively, to provide a revised schedule.

The attached file, "RAI 277 Supplement 14 Response US EPR DC.pdf" provides technically correct and complete responses to two of the remaining five 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 277 Question 09.04.05-2.

The following table indicates the respective pages in the response document, "RAI 277 Supplement 14 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

<b>Question #</b>	<b>Start Page</b>	<b>End Page</b>
RAI 277 — 09.04.03-1	2	2
RAI 277 — 09.04.05-2	3	4

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 remaining three questions has been revised and is provided below:

<b>Question #</b>	<b>Response Date</b>
RAI 277 — 09.04.01-1	March 31, 2011
RAI 277 — 09.04.02-1	March 31, 2011
RAI 277 — 09.04.03-3	March 31, 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:** BRYAN Martin (External RS/NB)  
**Sent:** Friday, December 10, 2010 1:05 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. 277, FSAR Ch. 9, Supplement 13

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions. Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8, Supplement 9, Supplement 10, Supplement 11 and Supplement 12 responses to RAI No. 277 were sent on April 14, 2010, May 6, 2010, May 27, 2010, June 24, 2010, July 28, 2010, August 27, 2010, September 22, 2010, October 25, 2010 and November 12, 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.

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

Question #	Response Date
RAI 277 — 09.04.01-1	March 10, 2011
RAI 277 — 09.04.02-1	March 10, 2011
RAI 277 — 09.04.03-1	March 10, 2011
RAI 277 — 09.04.03-3	March 10, 2011
RAI 277 — 09.04.05-2	March 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)

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**From:** BRYAN Martin (External RS/NB)  
**Sent:** Friday, November 12, 2010 2:26 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. 277, FSAR Ch. 9, Supplement 12

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions. Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8, Supplement 9, Supplement 10 and Supplement 11 responses to RAI No. 277 were sent on April 14, 2010, May 6, 2010, May 27, 2010, June 24, 2010, July 28, 2010, August 27, 2010, September 22, 2010 and October 25, 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.

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

Question #	Response Date
RAI 277 — 09.04.01-1	December 10, 2010
RAI 277 — 09.04.02-1	December 10, 2010
RAI 277 — 09.04.03-1	December 10, 2010
RAI 277 — 09.04.03-3	December 10, 2010
RAI 277 — 09.04.05-2	December 10, 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 (External RS/NB)  
**Sent:** Monday, October 25, 2010 1:14 PM  
**To:** 'Getachew.Tesfaye@nrc.gov'  
**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. 277, FSAR Ch. 9, Supplement 11

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions. Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8, Supplement 9 and Supplement 10 responses to RAI No. 277 were sent on April 14, 2010, May 6, 2010, May 27, 2010, June 24, 2010, July 28, 2010, August 27, 2010, and September 22 respectively, to provide a revised schedule.

To provide additional time to process the response, 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 277 — 09.04.01-1	November 12, 2010
RAI 277 — 09.04.02-1	November 12, 2010
RAI 277 — 09.04.03-1	November 12, 2010
RAI 277 — 09.04.03-3	November 12, 2010
RAI 277 — 09.04.05-2	November 12, 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 2:38 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. 277, FSAR Ch. 9, Supplement 10

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions. Supplement 4, Supplement 5, Supplement 6, Supplement 7, Supplement 8 and Supplement 9 responses to RAI No. 277 were sent on April 14, 2010, May 6, 2010, May 27, 2010, June 24, 2010, July 28, 2010 and August 27, 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.

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 277 — 09.04.01-1	October 26, 2010
RAI 277 — 09.04.02-1	October 26, 2010
RAI 277 — 09.04.03-1	October 26, 2010
RAI 277 — 09.04.03-3	October 26, 2010
RAI 277 — 09.04.05-2	October 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 (External RS/NB)  
**Sent:** Friday, August 27, 2010 11:57 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. 277, FSAR Ch. 9, Supplement 9

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions. Supplement 4, Supplement 5, Supplement 6, Supplement 7 and Supplement 8 responses to RAI No. 277 were sent on April 14, 2010, May 6, 2010, May 27, 2010, June 24, 2010 and July 28, 2010, respectively, to provide a revised schedule.

On June 25, 2010, DRAFT responses to the remaining 5 questions were submitted to the NRC staff.

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:

Question #	Response Date
RAI 277 — 09.04.01-1	September 24, 2010
RAI 277 — 09.04.02-1	September 24, 2010
RAI 277 — 09.04.03-1	September 24, 2010
RAI 277 — 09.04.03-3	September 24, 2010
RAI 277 — 09.04.05-2	September 24, 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 5:16 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. 277, FSAR Ch. 9, Supplement 8

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions. Supplement 4, Supplement 5, Supplement 6 and Supplement 7 responses to RAI No. 277 were sent on April 14, 2010, May 6, 2010, May 27, 2010 and June 24, 2010, respectively, to provide a revised schedule.

To allow time for interaction between AREVA and the NRC staff on the draft response submitted June 24, 2010, 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 277 — 09.04.01-1	August 27, 2010
RAI 277 — 09.04.02-1	August 27, 2010
RAI 277 — 09.04.03-1	August 27, 2010
RAI 277 — 09.04.03-3	August 27, 2010
RAI 277 — 09.04.05-2	August 27, 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 4:31 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. 277, FSAR Ch. 9, Supplement 7

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions. Supplement 4, Supplement 5 and Supplement 6 responses to RAI No. 277 were sent on April 14, 2010, May 6, 2010 and May 27, 2010, respectively, 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:

Question #	Response Date
RAI 277 — 09.04.01-1	July 28, 2010
RAI 277 — 09.04.02-1	July 28, 2010
RAI 277 — 09.04.03-1	July 28, 2010
RAI 277 — 09.04.03-3	July 28, 2010
RAI 277 — 09.04.05-2	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)

---

**From:** BRYAN Martin (EXT)  
**Sent:** Thursday, May 27, 2010 7:05 AM  
**To:** 'Tesyfaye, 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. 277, FSAR Ch. 9, Supplement , Supplement 6

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions. Supplement 4 and Supplement 5 responses to RAI No. 277 were sent on April 14, 2010 and May 6, 2010 to provide a revised schedule. Since additional time is needed for AREVA to discuss the responses to the questions with the NRC, an updated 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 277 — 09.04.01-1	June 24, 2010
RAI 277 — 09.04.02-1	June 24, 2010
RAI 277 — 09.04.03-1	June 24, 2010
RAI 277 — 09.04.03-3	June 24, 2010
RAI 277 — 09.04.05-2	June 24, 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, May 06, 2010 3:59 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. 277, FSAR Ch. 9, Supplement , Supplement 5

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions. Supplement 4 response to RAI No. 277 was sent on April 14, 2010 to provide a revised schedule.

To allow time for AREVA to discuss the responses to the remaining questions with the NRC, a revised schedule is provided in this e-mail that has been agreed to by the NRC.

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

Question #	Response Date
RAI 277 — 09.04.01-1	May 27, 2010
RAI 277 — 09.04.02-1	May 27, 2010
RAI 277 — 09.04.03-1	May 27, 2010
RAI 277 — 09.04.03-3	May 27, 2010
RAI 277 — 09.04.05-2	May 27, 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, April 14, 2010 3:51 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. 277, FSAR Ch. 9, Supplement , Supplement 4

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions. Supplement 3 response to RAI No. 277 was sent on March 11, 2010 to address 1 of the remaining 6 questions.

To allow time for AREVA to discuss the responses to the remaining questions with the NRC, a revised schedule is provided in this e-mail.

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

<b>Question #</b>	<b>Response Date</b>
RAI 277 — 09.04.01-1	May 6, 2010
RAI 277 — 09.04.02-1	May 6, 2010
RAI 277 — 09.04.03-1	May 6, 2010
RAI 277 — 09.04.03-3	May 6, 2010
RAI 277 — 09.04.05-2	May 6, 2010

Sincerely,

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

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**From:** BRYAN Martin (EXT)  
**Sent:** Thursday, March 11, 2010 4:11 PM  
**To:** 'Tefaye, Getachew'  
**Cc:** DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); ROMINE Judy (AREVA NP INC); KOWALSKI David J (AREVA NP INC)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 277, FSAR Ch. 9, Supplement 3

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. Supplement 1 response to RAI No. 277 was sent on December 9, 2009 to provide a revised schedule for the remaining questions. Supplement 2 response to RAI No. 277 was sent on February 4, 2010 to address 1 of the remaining 7 questions.

The attached file, "RAI 277 Supplement 3 Response US EPR DC.pdf" provides a technically correct and complete response to 1 of the remaining 6 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 277 Question 09.02.05-21.

The following table indicates the respective pages in the response document, "RAI 277 Supplement 3 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 277 — 09.02.05-21	2	3

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

Question #	Response Date
RAI 277 — 09.04.01-1	April 14, 2010
RAI 277 — 09.04.02-1	April 14, 2010
RAI 277 — 09.04.03-1	April 14, 2010
RAI 277 — 09.04.03-3	April 14, 2010
RAI 277 — 09.04.05-2	April 14, 2010

Sincerely,

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

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**From:** DUNCAN Leslie E (AREVA NP INC)  
**Sent:** Thursday, February 04, 2010 3:14 PM  
**To:** 'Tefaye, Getachew'  
**Cc:** DELANO Karen V (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. 277, FSAR Ch. 9, Supplement 2

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. AREVA NP submitted Supplement 1 to the response on December 9, 2009 to provide a revised schedule. The attached file, "RAI 277 Supplement 2 Response US EPR DC.pdf" provides a technically correct and complete response to one of the remaining seven questions. The schedule for the remaining six questions has been revised.

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 277 Question 09.04.03-2.

The following table indicates the respective pages in the response document, "RAI 277 Supplement 2 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 277 — 09.04.03-2	2	2

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

Question #	Response Date
RAI 277 — 09.02.05-21	March 12, 2010
RAI 277 — 09.04.01-1	April 14, 2010

RAI 277 — 09.04.02-1	April 14, 2010
RAI 277 — 09.04.03-1	April 14, 2010
RAI 277 — 09.04.03-3	April 14, 2010
RAI 277 — 09.04.05-2	April 14, 2010

Sincerely,

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

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**From:** Pederson Ronda M (AREVA NP INC)  
**Sent:** Wednesday, December 09, 2009 4:03 PM  
**To:** 'Tesfaye, Getachew'  
**Cc:** BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); KOWALSKI David J (AREVA NP INC)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 277, FSAR Ch. 9, Supplement 1

Getachew,

AREVA NP Inc. provided responses to 5 of the 12 questions of RAI No. 277 on October 16, 2009. AREVA NP also provided a schedule for technically correct and complete responses to the remaining 7 questions.

Since responses to the remaining questions remain in process, a revised schedule is provided in this email.

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

Question #	Response Date
RAI 277 — 09.02.05-21	February 4, 2010
RAI 277 — 09.04.01-1	February 4, 2010
RAI 277 — 09.04.02-1	February 4, 2010
RAI 277 — 09.04.03-1	February 4, 2010
RAI 277 — 09.04.03-2	February 4, 2010
RAI 277 — 09.04.03-3	February 4, 2010
RAI 277 — 09.04.05-2	February 4, 2010

Sincerely,

*Ronda Pederson*  
[ronda.pederson@areva.com](mailto:ronda.pederson@areva.com)  
Licensing Manager, U.S. EPR Design Certification  
**AREVA NP Inc.**  
An AREVA and Siemens company  
3315 Old Forest Road  
Lynchburg, VA 24506-0935  
Phone: 434-832-3694  
Cell: 434-841-8788

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**From:** Pederson Ronda M (AREVA NP INC)  
**Sent:** Friday, October 16, 2009 5:33 PM  
**To:** 'Tesfaye, Getachew'  
**Cc:** BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); KOWALSKI David J (AREVA NP INC)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 277, FSAR Ch. 9

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 277 Response US EPR DC.pdf" provides technically correct and complete responses to 5 of the 12 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 277 Questions 09.04.02-2, 09.04.04-1, and 09.05.01-71.

The following table indicates the respective page(s) in the response document, "RAI 277 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 277 — 09.02.05-21	2	2
RAI 277 — 09.04.01-1	3	3
RAI 277 — 09.04.02-1	4	4
RAI 277 — 09.04.02-2	5	5
RAI 277 — 09.04.03-1	6	6
RAI 277 — 09.04.03-2	7	7
RAI 277 — 09.04.03-3	8	8
RAI 277 — 09.04.04-1	9	10
RAI 277 — 09.04.04-2	11	11
RAI 277 — 09.04.05-2	12	12
RAI 277 — 09.05.01-71	13	13
RAI 277 — 09.05.06-12	14	14

A complete answer is not provided for 7 of the 12 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 277 — 09.02.05-21	December 10, 2009
RAI 277 — 09.04.01-1	December 10, 2009
RAI 277 — 09.04.02-1	December 10, 2009
RAI 277 — 09.04.03-1	December 10, 2009
RAI 277 — 09.04.03-2	December 10, 2009
RAI 277 — 09.04.03-3	December 10, 2009
RAI 277 — 09.04.05-2	December 10, 2009

Sincerely,

*Ronda Pederson*

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Licensing Manager, U.S. EPR Design Certification  
AREVA NP Inc.

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

**Sent:** Wednesday, September 16, 2009 12:52 PM

**To:** ZZ-DL-A-USEPR-DL

**Cc:** Wheeler, Larry; Segala, John; ODriscoll, James; Jackson, Christopher; Snodderly, Michael; McCann, Edward; Radlinski, Robert; Wolfgang, Robert; Hearn, Peter; Colaccino, Joseph; ArevaEPRDCPEm Resource

**Subject:** U.S. EPR Design Certification Application RAI No. 277(3538,3371,3372,3376,3374,3375,3399,2995)), FSAR Ch. 9

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on August 17, 2009, and discussed with your staff on August 31, 2009. Draft RAI Questions 09.05.01-70 was deleted 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:** 2623

**Mail Envelope Properties** (1F1CC1BBDC66B842A46CAC03D6B1CD410404A84D)

**Subject:** Response to U.S. EPR Design Certification Application RAI No. 277, FSAR Ch. 9, Supplement 14  
**Sent Date:** 2/28/2011 2:21:55 PM  
**Received Date:** 2/28/2011 2:22:00 PM  
**From:** WELLS Russell (AREVA)

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

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"BENNETT Kathy (AREVA)" <Kathy.Bennett@areva.com>

Tracking Status: None

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Tracking Status: None

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

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MESSAGE	28700	2/28/2011 2:22:00 PM
RAI 277 Supplement 14 Response US EPR DC.pdf		170746

**Options**

**Priority:** Standard

**Return Notification:** No

**Reply Requested:** No

**Sensitivity:** Normal

**Expiration Date:**

**Recipients Received:**

**Response to**

**Request for Additional Information No. 277, Supplement 14**

**9/16/2009**

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

**AREVA NP Inc.**

**Docket No. 52-020**

**SRP Section: 09.02.05 - Ultimate Heat Sink**

**SRP Section: 09.04.01 - Control Room Area Ventilation System**

**SRP Section: 09.04.02 - Spent Fuel Pool Area Ventilation System**

**SRP Section: 09.04.03 - Auxiliary and Radwaste Area Ventilation System**

**SRP Section: 09.04.04 - Turbine Area Ventilation System**

**SRP Section: 09.04.05 - Engineered Safety Feature Ventilation System**

**SRP Section: 09.05.01 - Fire Protection Program**

**SRP Section: 09.05.06 - Emergency Diesel Engine Starting System**

**Application Section: 9.2.9**

**QUESTIONS for Balance of Plant Branch 2 (ESBWR/ABWR) (SBPB)**

**QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects)  
(SPCV)**

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

**Question 09.04.03-1:**

To ensure reliable in-place testing, Regulatory Guide 1.140, Position C3.2, states that the volumetric air-flow rate of a single cleanup unit should be limited to approximately 30,000 cfm. RAI No. 135, Question 09.04.05-1 (#8) requested the applicant to provide data indicating that the maximum flow rate for a single cleanup unit would not exceed 30,000 cfm or multiple units should be selected. While the low flow purge subsystem flowrate of 3,000 cfm was provided, the response did not specify that the maximum flowrates for single cleanup unit would not exceed 30,000 cfm or require multiple units for the internal filtration subsystem, the containment building cooling subsystem and the service and equipment compartment cooling subsystem. The open item can be resolved by providing a statement indicating that the volumetric air-flow rate of a single cleanup unit will not exceed 30,000 cfm or multiple units will be selected for the internal filtration subsystem, the containment building cooling subsystem and the service and equipment compartment cooling subsystem. If the applicant elects not to follow the recommendation of Regulatory Guide 1.140, Position C3.2; then an alternative approach demonstrating compliance with GDC 60 should be provided.

A normal atmosphere cleanup system housings and ductwork should be designed to exhibit, on test a maximum total leakage rate as defined in Article SA-4500 of ASME AG-1-1997 Ref. 3, Regulatory Guide 1.140, Position C3.6. The applicant did indicate in FSAR Tier 2, Section 9.4.7.2.1 that the containment purge subsystem is designed in accordance with ASME AG-1-2003. However, the applicant did not provide information indicating that the internal filtration subsystem, the containment building cooling subsystem and the service and equipment compartment cooling subsystem are designed to ASME AG-1-2003. The applicant should state that the above systems are designed in accordance with ASME AG-1-2003. If the applicant elects not to follow the recommendation of Regulatory Guide 1.140, Position C3.6; then provide an alternative approach demonstrating compliance with GDC 60.

**Response to Question 09.04.03-1:**

The internal filtration subsystem has a nominal flow rate of 4,120 cfm. This flow rate complies with RG 1.140, Position C3.2, which specifies that the volumetric air flow rate of a single cleanup unit be limited to approximately 30,000 cfm.

The 30,000 cfm limit supports the performance of reliable in-place testing of the cleanup units. The containment building cooling subsystem and the service compartments cooling subsystem are air cooling systems and do not include cleanup units. These subsystems are not required to comply with Position C3.6 of RG 1.140.

The containment building cooling subsystem and service compartments cooling subsystem are designed to the applicable sections of ASME AG-1 that address ventilation air conditioning systems. The corresponding subsections in U.S. EPR FSAR Tier 2, Section 9.4.7.2.1 were revised in U.S. EPR FSAR, Revision 2 to reflect this change.

U.S. EPR FSAR Tier 2, Table 1.9-2—U.S. EPR Conformance with Regulatory Guides was revised in U.S. EPR FSAR, Revision 2 to include U.S. EPR FSAR Tier 2, Section 9.4.7.2.1.

**FSAR Impact:**

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

**Question 09.04.05-2:**

GDC 2 requires the Engineered Safety Function Ventilation System being capable of withstanding the effects of earthquakes. SRP 9.4.5 includes GDC 2 as specific acceptance criteria. FSAR Tier 2 Section 9.4.5.1 indicates that the Safeguard Building Controlled Area Ventilation system is designed to Seismic Category I except for the following:

- a. Supply air ductwork which is classified as supplemented grade safety (NS-AQ) and designed to Seismic Category II requirements.
- b. Electric air heating convectors which are non-safety-related and Non-Seismic.

FSAR Table 3.2.2-1 indicates that the fire dampers are supplemented grade safety (NS-AQ) and designed to Seismic Category II requirements.

Since the SBVS fire dampers are classified as Seismic Category II (FSAR Tier 2 Table 3.2.2-1), they are not expected to function after an SSE (RG 1.29 Position C.2). The fire dampers after an SSE can be assumed to fail closed, thereby isolating the SB rooms from the normal and accident exhaust trains in each of the four SBVS divisions. Additionally, Seismic Category II ductwork can be assumed to deform (restricting airflow) but not impact or cause harm to a Seismic Category I SSC. Finally any nonsafety-related active component can be assumed to fail when challenged during any accident.

The applicant is requested to either show that potential failure of these components will not reduce the safety function of the SBVS or classify the components as Seismic Category I.

**Response to Question 09.04.05-2:**

- a) The safeguard building controlled area ventilation system (SBVS) supply ventilation ductwork has been reclassified as safety-related, Quality Group C and Seismic Category I.

U.S. EPR FSAR Tier 1, Figure 2.6.6-1—Safeguard Building Controlled-Area Ventilation System Air Supply Functional Arrangement was revised in U.S. EPR FSAR, Revision 2 to reflect this change in classification.

U.S. EPR FSAR Tier 2, Section 9.4.5.1 was revised in U.S. EPR FSAR, Revision 2 to reflect this change. Refer to the Response to Question 09.04.01-1, Part 1.

U.S. EPR FSAR Tier 2, Figure 9.4.5-1—Safeguard Building Controlled-Area Ventilation System Air Supply Subsystem and Figure 9.4.5-2—Safeguard Building Controlled-Area Ventilation System Exhaust Air Subsystem were revised in U.S. EPR FSAR, Revision 2 to reflect this change in classification. Refer to the Response to Question 09.04.01-1, Part 1.

- b) Electric air heating convectors, such as wall- or ceiling-mounted electric unit heaters for the SBVS, provide personnel comfort heating only for stairwells and access areas during normal plant operation. These non-safety-related, non-seismic heaters are not required to maintain the minimum ambient design temperature (50°F) for the Safeguard Building controlled area. Non-safety-related heaters, which are non-seismically-supported, are located such that they do not damage safety-related equipment in the event of an SSE. Non-safety-related heaters that are required to be located in the proximity of safety-related equipment and could damage this equipment in the event of an SSE are classified as NS-AQ Seismic II.

The SBVS fire dampers were reclassified in U.S. EPR FSAR, Revision 2 as safety-related, Quality Group C and Seismic Category I.

U.S. EPR FSAR Tier 2, Table 3.2.2-1—Classification Summary and Table 3.10-1—List of Seismically and Dynamically Qualified Mechanical were revised in U.S. EPR FSAR, Revision 2 to reflect this change.

U.S. EPR FSAR Tier 2, Section 9.4.5.1 was revised in U.S. EPR FSAR, Revision 2 to reflect this change. Refer to the Response to Question 09.04.01-1, Part 1.

U.S. EPR FSAR Tier 2, Figure 9.4.5-1—Safeguard Buildings Air Supply Subsystem and Figure 9.4.5-2—Safeguard Buildings Exhaust Air Subsystem were revised in U.S. EPR FSAR, Revision 2 to reflect this change.

U.S. EPR FSAR Tier 1, Figure 2.6.7-4—Electrical Division of Safeguard Building Ventilation System Division 2 and Division 3 Air Supply and Exhaust Functional Arrangement and U.S. EPR FSAR Tier 2, Figure 9.4.6-4—Safeguard Building Electrical Divisions 2 and 3 Air Supply and Exhaust, will be revised to eliminate inconsistencies and provide additional description of non-safety-related heaters.

**FSAR Impact:**

U.S. EPR FSAR Tier 1, Figure 2.6.7-4 and U.S. EPR FSAR Tier 2, Figure 9.4.6-4 will be revised as described in the response and indicated on the enclosed markup.

# U.S. EPR Final Safety Analysis Report Markups

Figure 2.6.7-4—Electrical Division of Safeguard Building Ventilation System Division 2 and Division 3 Air Supply and Exhaust Functional Arrangement

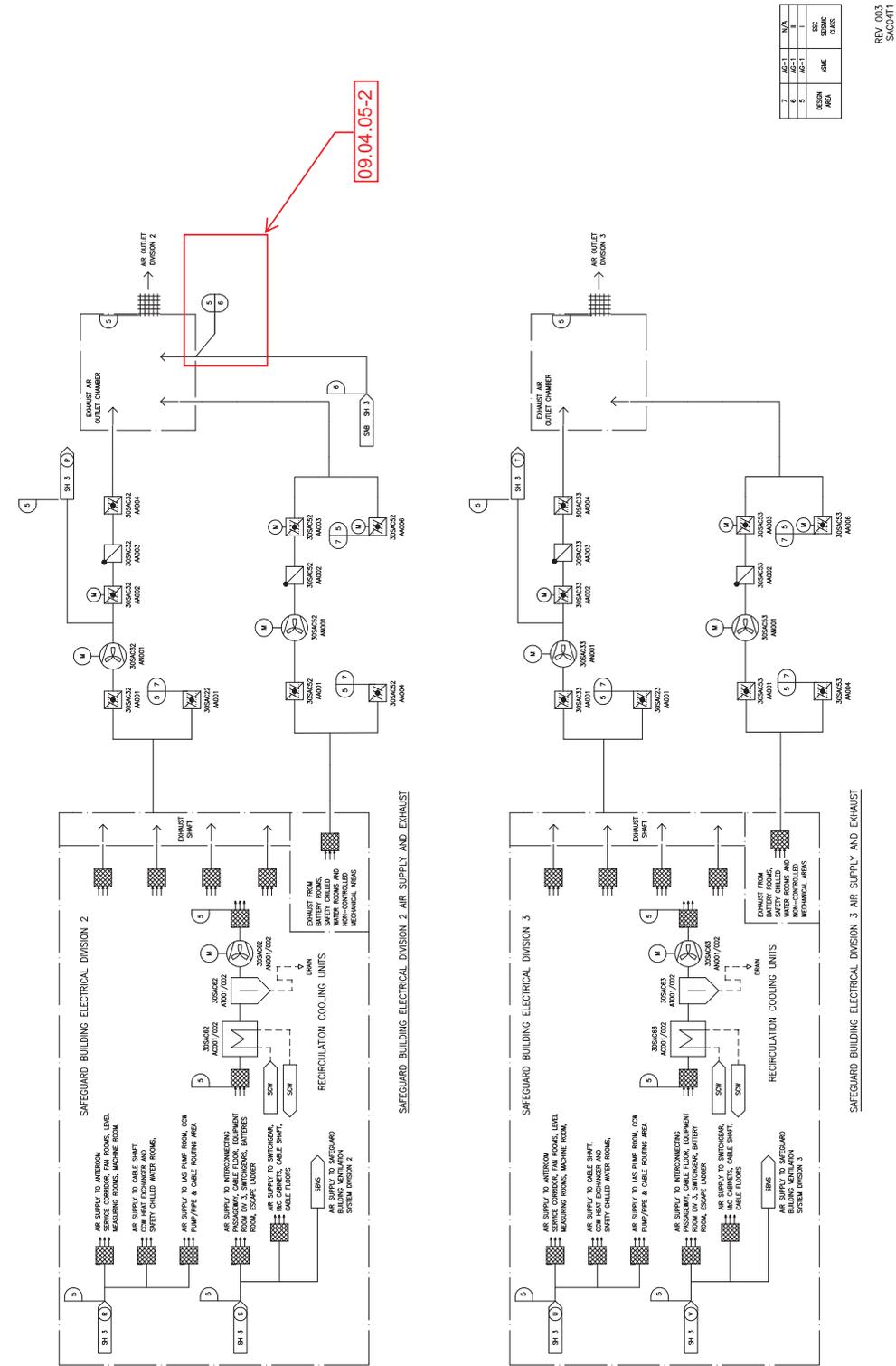
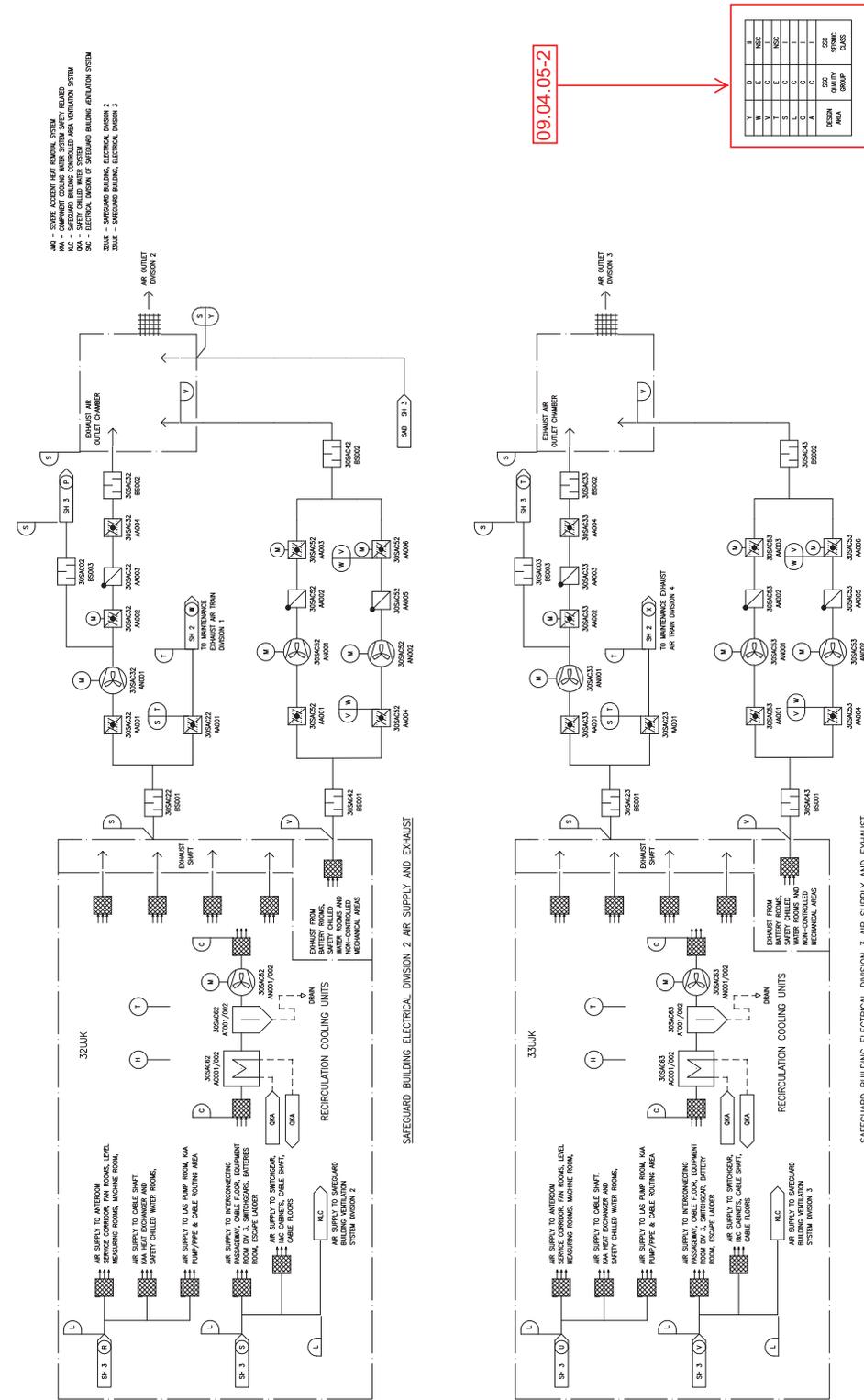


Figure 9.4.6-4—Safeguard Building Electrical Divisions 2 and 3 Air Supply and Exhaust



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3/20/07