ArevaEPRDCPEm Resource

From: WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]
Sent: Thursday, October 13, 2011 6:02 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (AREVA); CRIBB Arnie (EXTERNAL AREVA); DELANO Karen (AREVA); HATHCOCK Phillip (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); LENTZ Tony (EXTERNAL AREVA)
Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Questions 16-318 and 16-320
Attachments: RAI 315 Response US EPR DC - DRAFT 5.pdf

Getachew,

Attached is a draft response for RAI No. 315, FSAR Ch. 16, Question 16-320 in advance of the November 17, 2011 final date. In addition, a proposed revised response to RAI No. 315, FSAR Ch. 16, Question 16-318 is provided.

Let me know if the staff has questions or if this can be sent as a final response.

Sincerely,

Dennis Williford, P.E.
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
7207 IBM Drive, Mail Code CLT 2B
Charlotte, NC 28262
Phone: 704-805-2223
Email: Dennis.Williford@areva.com

From: WILLIFORD Dennis (RS/NB)
Sent: Friday, September 09, 2011 1:58 PM
To: Getachew.Tesfaye@nrc.gov
Cc: 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. 315, FSAR Ch. 16 OPEN ITEM, Supplement 13

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 315 was sent on October 12, 2010 to provide a response to one of the remaining four questions, 16-321. Supplement 4 response to RAI No. 315 was sent on October 20, 2010 to provide a revised schedule. Supplement 5 response to RAI No. 315 was sent on November 18, 2010 to provide a revised schedule. Supplement 6 response to RAI No. 315 was sent on December 16, 2010 to provide a revised schedule. Supplement 7 response to RAI No. 315 was sent on January 26, 2011 to provide a revised schedule. Supplement 8 response to RAI No. 315 was sent on March 22, 2011 to provide a revised schedule. Supplement 9 response to RAI No. 315 was sent on March 31, 2011 to provide a response to two of the remaining three questions. Supplement 10, Supplement 11, and Supplement 12 responses to RAI No. 315 were sent on April 21, 2011, June 7, 2011, and July 19, 2011, respectively, to provide a revised schedule.

The schedule for a technically correct and complete response to the remaining question has been changed, as provided below.

Question #	Response Date
RAI 315 — 16-320	**November 17, 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

From: WILLIFORD Dennis (RS/NB)
Sent: Tuesday, July 19, 2011 10:46 AM
To: Tesfaye, Getachew
Cc: 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. 315, FSAR Ch. 16 OPEN ITEM, Supplement 12

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 315 was sent on October 12, 2010 to provide a response to one of the remaining four questions, 16-321. Supplement 4 response to RAI No. 315 was sent on October 20, 2010 to provide a revised schedule. Supplement 5 response to RAI No. 315 was sent on November 18, 2010 to provide a revised schedule. Supplement 6 response to RAI No. 315 was sent on December 16, 2010 to provide a revised schedule. Supplement 7 response to RAI No. 315 was sent on January 26, 2011 to provide a revised schedule. Supplement 8 response to RAI No. 315 was sent on March 22, 2011 to provide a revised schedule. Supplement 9 response to RAI No. 315 was sent on March 31, 2011 to provide a response to two of the remaining three questions. Supplement 10 and Supplement 11 responses to RAI No. 315 were sent on April 21, 2011 and June 7, 2011, respectively, to provide a revised schedule.

The schedule for a technically correct and complete response to the remaining question has been changed, as provided below.

Question #	Response Date
RAI 315 — 16-320	**September 12, 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

From: WILLIFORD Dennis (RS/NB)
Sent: Tuesday, June 07, 2011 9:32 AM

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)
Subject: Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Supplement 11

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 315 was sent on October 12, 2010 to provide a response to one of the remaining four questions, 16-321. Supplement 4 response to RAI No. 315 was sent on October 20, 2010 to provide a revised schedule. Supplement 5 response to RAI No. 315 was sent on November 18, 2010 to provide a revised schedule. Supplement 6 response to RAI No. 315 was sent on December 16, 2010 to provide a revised schedule. Supplement 7 response to RAI No. 315 was sent on January 26, 2011 to provide a revised schedule. Supplement 8 response to RAI No. 315 was sent on March 22, 2011 to provide a revised schedule. Supplement 9 response to RAI No. 315 was sent on March 31, 2011 to provide a response to two of the remaining three questions. Supplement 10 response to RAI No. 315 was sent on April 21, 2011 to provide a revised schedule.

The schedule for a technically correct and complete response to the remaining question has been changed, as provided below.

Question #	Response Date
RAI 315 — 16-320	July 20, 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

From: WELLS Russell (RS/NB)
Sent: Thursday, April 21, 2011 12:45 PM
To: Tesfaye, Getachew
Cc: 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. 315, FSAR Ch. 16 OPEN ITEM, Supplement 10

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 315 was sent on October 12, 2010 to provide a response to one of the remaining four questions, 16-321. Supplement 4 response to RAI No. 315 was sent on October 20, 2010 to provide a revised schedule. Supplement 5 response to RAI No. 315 was sent on November 18, 2010 to provide a revised schedule. Supplement 6 response to RAI No. 315 was sent on December 16, 2010 to provide a revised schedule. Supplement 7 response to RAI No. 315 was sent on January 26, 2011 to provide a revised schedule. Supplement 8 response to RAI No. 315 was sent on March 22, 2011 to provide a revised schedule. Supplement 9 response to RAI No. 315 was sent on March 31, 2011 to provide a response to two of the remaining three questions.

Additional time is required to interact with the NRC staff.

The schedule for a technically correct and complete response to the remaining question has been changed and is provided below.

Question #	Response Date
RAI 315 — 16-320	June 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)
Fax: 434-382-3884
Russell.Wells@Areva.com

From: WELLS Russell (RS/NB)
Sent: Thursday, March 31, 2011 7:53 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. 315, FSAR Ch. 16 OPEN ITEM, Supplement 9

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 315 was sent on October 12, 2010 to provide a response to one of the remaining four questions, 16-321. Supplement 4 response to RAI No. 315 was sent on October 20, 2010 to provide a revised schedule. Supplement 5 response to RAI No. 315 was sent on November 18, 2010 to provide a revised schedule. Supplement 6 response to RAI No. 315 was sent on December 16, 2010 to provide a revised schedule. Supplement 7 response to RAI No. 315 was sent on January 26, 2011 to provide a revised schedule. Supplement 8 response to RAI No. 315 was sent on March 22, 2011 to provide a revised schedule.

The attached file, “RAI 315 Supplement 9 US EPR DC.pdf,” provides a response to two of the remaining three questions.

The following table indicates the respective pages in the response document, “RAI 315 Supplement 9 US EPR DC.pdf,” that contain AREVA NP’s response to the subject questions.

Question #	Start Page	End Page
RAI 315 — 16-318	2	12
RAI 315 — 16-319	13	14

The schedule for a technically correct and complete response to the remaining question remains unchanged and is provided below.

Question #	Response Date
RAI 315 — 16-320	April 26, 2011

Sincerely,

Russ Wells
U.S. EPR Design Certification Licensing Manager
AREVA NP, Inc.
3315 Old Forest Road, P.O. Box 10935
Mail Stop OF-57
Lynchburg, VA 24506-0935
Phone: 434-832-3884 (work)
434-942-6375 (cell)
Fax: 434-382-3884
Russell.Wells@Areva.com

From: WELLS Russell (RS/NB)
Sent: Tuesday, March 22, 2011 1:04 PM
To: Tesfaye, Getachew
Cc: 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. 315, FSAR Ch. 16 OPEN ITEM, Supplement 8

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 315 was sent on October 12, 2010 to provide a response to one of the remaining four questions, 16-321. Supplement 4 response to RAI No. 315 was sent on October 20, 2010 to provide a revised schedule. Supplement 5 response to RAI No. 315 was sent on November 18, 2010 to provide a revised schedule. Supplement 6 response to RAI No. 315 was sent on December 16, 2010 to provide a revised schedule. Supplement 7 response to RAI No. 315 was sent on January 26, 2011 to provide a revised schedule.

A revised schedule is provided below to allow additional time to address comments and have additional interaction with the staff on the three remaining questions.

A complete answer is not provided for the remaining 3 questions. The schedule for a technically correct and complete response to these questions is changed and is provided below.

Question #	Response Date
RAI 315 — 16-318	April 26, 2011
RAI 315 — 16-319	April 26, 2011
RAI 315 — 16-320	April 26, 2011

Sincerely,

Russ Wells
U.S. EPR Design Certification Licensing Manager
AREVA NP, Inc.
3315 Old Forest Road, P.O. Box 10935
Mail Stop OF-57
Lynchburg, VA 24506-0935
Phone: 434-832-3884 (work)
434-942-6375 (cell)
Fax: 434-382-3884
Russell.Wells@Areva.com

From: BRYAN Martin (External RS/NB)
Sent: Wednesday, January 26, 2011 3:04 PM
To: Tesfaye, Getachew
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); RYAN Tom (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Supplement 7

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 315 was sent on October 12, 2010 to provide a response to one of the remaining four questions, 16-321. Supplement 4 response to RAI No. 315 was sent on October 20, 2010 to provide a revised schedule. Supplement 5 response to RAI No. 315 was sent on November 18, 2010 to provide a revised schedule. Supplement 6 response to RAI No. 315 was sent on December 16, 2010 to provide a revised schedule.

A revised schedule is provided below to allow additional time to address comments and have additional interaction with the staff on the three remaining questions.

A complete answer is not provided for the remaining 3 questions. The schedule for a technically correct and complete response to these questions is changed and is provided below.

Question #	Response Date
RAI 315 — 16-318	March 24, 2011
RAI 315 — 16-319	March 24, 2011
RAI 315 — 16-320	March 24, 2011

Sincerely,

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

From: BRYAN Martin (External RS/NB)
Sent: Thursday, December 16, 2010 3:28 PM
To: Tesfaye, Getachew
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); RYAN Tom (RS/NB); Miernicki, Michael
Subject: Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Supplement 6

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 315 was sent on October 12, 2010 to provide a response to one of the remaining four questions, 16-321. Supplement 4 response to RAI No. 315 was sent on October 20, 2010 to provide a revised schedule. Supplement 5 response to RAI No. 315 was sent on November 18, 2010 to provide a revised schedule.

A revised schedule is provided below to allow additional time to address comments and have additional interaction with the staff on the three remaining questions.

A complete answer is not provided for the remaining 3 questions. The schedule for a technically correct and complete response to these questions is changed and is provided below.

Question #	Response Date
RAI 315 — 16-318	January 27, 2011
RAI 315 — 16-319	January 27, 2011
RAI 315 — 16-320	January 27, 2011

Sincerely,

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

From: BRYAN Martin (External RS/NB)
Sent: Thursday, November 18, 2010 7:59 AM
To: Tesfaye, Getachew
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); RYAN Tom (RS/NB); Miernicki, Michael
Subject: Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Supplement 5

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 315 was sent on October 12, 2010 to provide a response to one of the remaining four questions, 16-321. Supplement 4 response to RAI No. 315 was sent on October 20, 2010 to provide a revised schedule.

A revised schedule is provided below to allow additional time to address comments and have additional interaction with the staff on the three remaining questions.

A complete answer is not provided for the remaining 3 questions. The schedule for a technically correct and complete response to these questions is changed and is provided below.

Question #	Response Date
RAI 315 — 16-318	December 21, 2010
RAI 315 — 16-319	December 21, 2010
RAI 315 — 16-320	December 21, 2010

Sincerely,

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

From: BRYAN Martin (External RS/NB)
Sent: Wednesday, October 20, 2010 3:40 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); RYAN Tom (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Supplement 4

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 315 was sent on October 12, 2010 to provide a response to one of the remaining four questions, 16-321.

A revised schedule is provided below to allow additional time to address comments and have additional interaction with the staff on the three remaining questions.

A complete answer is not provided for the remaining 3 questions. The schedule for a technically correct and complete response to these questions is changed and is provided below.

Question #	Response Date
RAI 315 — 16-318	November 22, 2010
RAI 315 — 16-319	November 22, 2010
RAI 315 — 16-320	November 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

From: BRYAN Martin (External RS/NB)
Sent: Tuesday, October 12, 2010 4:59 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); RYAN Tom (RS/NB); LENTZ Tony (External RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Supplement 3

Getachew,

AREVA NP Inc. provided responses to the four questions of RAI No. 315 on April 5, 2010. Supplement 1 and Supplement 2 responses to RAI No. 315 were sent on May 20, 2010 and August 27, 2010, respectively, to provide a revised schedule.

The attached file, "RAI 315 Supplement 3 US EPR DC.pdf," provides a partial response.

The following table indicates the respective pages in the response document, "RAI 315 Supplement 3 US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 315 — 16-321	2	3

The schedule for a technically correct and complete response to the remaining three questions remains unchanged and will be provided on October 21, 2010.

Sincerely,

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

From: BRYAN Martin (External RS/NB)
Sent: Friday, August 27, 2010 12:01 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); RYAN Tom (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Supplement 2

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 4 questions in RAI No. 315 on April 5, 2010. AREVA provided an updated schedule for the remaining 4 responses on May 20, 2010 to allow for additional interaction with the NRC.

A revised schedule is provided below to allow additional time to address comments and have additional interaction with the staff on the four remaining questions.

A complete answer is not provided for the remaining 4 questions. The schedule for a technically correct and complete response to these questions is changed and is provided below.

Question #	Response Date
RAI 315 — 16-318	October 21, 2010
RAI 315 — 16-319	October 21, 2010
RAI 315 — 16-320	October 21, 2010
RAI 315 — 16-321	October 21, 2010

Sincerely,

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

From: BRYAN Martin (EXT)
Sent: Thursday, May 20, 2010 12:18 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); RYAN Tom (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Supplement 1

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 4 questions in RAI No. 315 on April 5, 2010. As agreed with the NRC, additional time is needed for the NRC to review and discuss the draft responses to these questions with AREVA.

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

Question #	Response Date
RAI 315 — 16-318	August 31, 2010
RAI 315 — 16-319	August 31, 2010
RAI 315 — 16-320	August 31, 2010
RAI 315 — 16-321	August 31, 2010

Sincerely,

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

From: BRYAN Martin (EXT)
Sent: Monday, April 05, 2010 5:01 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); PANNELL George L (AREVA NP INC); LENTZ Tony F (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 315 (3878), FSARCh. 16 OPEN ITEM

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 315 Response US EPR DC.pdf" provides a schedule since a technically correct and complete response to the 4 questions is not provided.

The following table indicates the respective pages in the response document, "RAI 315 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 315 — 16-318	2	2
RAI 315 — 16-319	3	3
RAI 315 — 16-320	4	4
RAI 315 — 16-321	5	5

A complete answer is not provided for the 4 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 315 — 16-318	May 20, 2010
RAI 315 — 16-319	May 20, 2010
RAI 315 — 16-320	May 20, 2010
RAI 315 — 16-321	May 20, 2010

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

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Wednesday, November 18, 2009 6:59 PM
To: ZZ-DL-A-USEPR-DL
Cc: Le, Hien; DeMarshall, Joseph; Kowal, Mark; Hearn, Peter; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 315 (3878), FSARCh. 16 OPEN ITEM

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on October 21, 2009, and discussed with your staff on November 18, 2009. No changes were made to the draft RAI questions as a result of that discussion. The question in this RAI is an OPEN ITEM in the safety evaluation report for Chapter 16 for Phases 2 and 3 reviews. As such, the schedule we have established for your application assumes technically correct and complete responses prior to the start of Phase 4 review. For any RAI that cannot be answered prior to the start of Phase 4 review, it is expected that a date for receipt of this information will be provided so that the staff can assess how this information will impact the published schedule.

Thanks,

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

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 3472

Mail Envelope Properties (2FBE1051AEB2E748A0F98DF9EEE5A5D493785E)

Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Questions 16-318 and 16-320
Sent Date: 10/13/2011 6:01:38 PM
Received Date: 10/13/2011 6:02:37 PM
From: WILLIFORD Dennis (AREVA)

Created By: Dennis.Williford@areva.com

Recipients:
"BENNETT Kathy (AREVA)" <Kathy.Bennett@areva.com>
Tracking Status: None
"CRIBB Arnie (EXTERNAL AREVA)" <arnie.cribb.ext@areva.com>
Tracking Status: None
"DELANO Karen (AREVA)" <Karen.Delano@areva.com>
Tracking Status: None
"HATHCOCK Phillip (AREVA)" <Phillip.Hathcock@areva.com>
Tracking Status: None
"ROMINE Judy (AREVA)" <Judy.Romine@areva.com>
Tracking Status: None
"RYAN Tom (AREVA)" <Tom.Ryan@areva.com>
Tracking Status: None
"LENTZ Tony (EXTERNAL AREVA)" <Tony.Lentz.ext@areva.com>
Tracking Status: None
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: auscharmx02.adom.ad.corp

Files	**Size**	**Date & Time**
MESSAGE	26154	10/13/2011 6:02:37 PM
RAI 315 Response US EPR DC - DRAFT 5.pdf	505786	

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

Response to

Request for Additional Information No. 315 (3878), Revision 0, DRAFT 5

11/18/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 16 - Technical Specifications
Application Section: TS 3.3

QUESTIONS for Technical Specification Branch (CTSB)

Question 16-318:

OPEN ITEM

Follow-up to RAI 103, Question 16-137

In RAI-SRP16-CTSB-103/137, the staff requested a technical justification regarding the omission of safety-related Reactor Trip (RT) signals in Table 3.3.1-2, Section A (Reactor Trip). FSAR Section 7.2.1.2 identifies the Safety Injection System (SIS) Actuation, Emergency Feedwater System (EFWS) Actuation, and the Manual RT signals from the Safety Information and Control System (SICS), as safety-related RT initiation signals. The applicant concludes that these RT initiation signals should not be included in Technical Specifications on the basis that 1) they are not credited in the EPR safety analysis as implied by their absence from Chapter 15 Tables 15.0-7 and 15.0-8, and 2) they do not satisfy Criterion 3 of 10 CFR 50.36 with regard to being part of the primary success path of a safety sequence analysis. NUREG-1431 includes both the Manual RT and the SIS Actuation initiation signals in comparable LCO 3.3.1, Reactor Trip System Instrumentation. The Manual RT initiation ensures that the control room operator has the capability to initiate a reactor trip at any time. This capability is critical whenever a parameter is rapidly trending toward its Trip Setpoint. Regarding the SIS Actuation, NUREG-1431 Bases B 3.3.1 specifically states that initiation of a reactor trip upon any signal that initiates a safety injection is a condition of acceptability for the LOCA. The EFWS Actuation is the primary success path which functions to mitigate the effects of a loss of Main Feedwater (MFW) event, providing a safety classified means to remove residual heat via the steam generators (SGs). FSAR Section 7.3.1.2.2 identifies a number of failure mechanisms that can result in a loss of MFW, including a Loss of Offsite Power, which is a highly credible event. In addition, it remains unclear how the applicant intends to ensure that surveillance testing requirements associated with the referenced safety-related trip signals will be met if they are not included in the Technical Specifications. The staff finds that the response does not provide the requisite technical justification to warrant exclusion of the safety-related RT initiation signals from Technical Specifications. This issue has been identified as an open item in the SER w/OI for Chapter 16 of the EPR FSAR.

Response to Question 16-318:

This issue was further clarified on Page 16-20 of the NRC's March 10, 2010 Safety Evaluation, which states:

- In RAI 103, Question 16-137, the staff requested that the applicant provide a technical justification regarding the omission of safety-related RT signals in FSAR Tier 2, Table 3.3.1-2, Section A. FSAR Tier 2, Section 7.2.1.2, “Reactor Trip Functional Description,” identifies the Safety Injection System (SIS) Actuation, Emergency Feedwater System (EFWS) Actuation, and the Manual RT signals from the Safety Information and Control System (SICS), as safety-related RT initiation signals. In a March 19, 2009, response to RAI 103, Question 16-137, the applicant concluded that these RT initiation signals should not be included in TS on the basis that (1) they are not credited in the U.S. EPR safety analysis as implied by their absence from FSAR Tier 2, Chapter 15, “Transient and Accident Analyses,” FSAR Tier 2, Tables 15.0-7 and 15.0-8, and (2) they do not satisfy Criterion 3 of 10 CFR 50.36 with regard to being part of the primary success path of a safety-sequence analysis. NUREG-1431 includes both the Manual RT and the SIS Actuation initiation signals in comparable LCO 3.3.1, Reactor

> Trip System Instrumentation. The Manual RT initiation ensures that the control room operator has the capability to initiate a reactor trip at any time. This capability is critical whenever a parameter is rapidly trending toward its Trip Setpoint. Regarding the SIS Actuation, NUREG-1431, Bases B 3.3.1 specifically states that initiation of a reactor trip upon any signal that initiates a safety injection is a condition of acceptability for the loss-of-coolant accident (LOCA). The EFWS Actuation is the primary success path, which functions to mitigate the effects of a loss of Main Feedwater (MFW) event, providing a safety classified means to remove residual heat via the steam generators. FSAR Tier 2, Section 7.3.1.2.2, "Emergency Feedwater System Actuation," identifies a number of failure mechanisms that can result in a loss of MFW, including a loss of offsite power, which is a highly credible event. In addition, it remains unclear how the applicant intends to ensure that surveillance testing requirements associated with the referenced safety-related trip signals will be met if they are not included in the TS. The staff determined that the response does not provide the requisite technical justification to warrant exclusion of the safety-related RT initiation signals from TS.

Due to similarities in the two NRC Questions, this response will address both 16-318 and 16-319. This response supersedes AREVA's previous responses to RAI 103, Questions 16-137 and 16-160.

Reactor Trip on Safety Injection System (SIS) Actuation

The reactor trip on SIS Actuation was added to Revision 3 of Section 3.3.1 in the response to RAI 442, Supplement 13, Question 07.01-30.

Reactor Trip on Emergency Feedwater System (EFWS) Actuation

The reactor trip on EFWS Actuation - Low SG Level was added to Revision 3 of Section 3.3.1 in the response to RAI 442, Supplement 13, Question 07.01-30.

Manual Reactor Trip

The context of the original Question 16-137 was in regard to the manual reactor trip signal not being listed as a separate function in Table 3.3.1-2.

In the follow-up question, the NRC states that:

> FSAR Section 7.2.1.2 identifies the manual reactor trip signal from the Safety Information and Control System (SICS) as a safety-related reactor trip initiation signal. …
>
> The Manual RT initiation ensures that the control room operator has the capability to initiate a reactor trip at any time. This capability is critical whenever a parameter is rapidly trending toward its Trip Setpoint.
>
> In addition, it remains unclear how the applicant intends to ensure that surveillance testing requirements associated with the referenced safety-related trip signals will be met if they are not included in the Technical Specifications.

The manual reactor trip is a safety related design feature of the U.S. EPR and is described in U.S. EPR FSAR Tier 2 Section 7.2.1.2.22 and depicted in Figure 7.2-3. As shown in Figure

7.2-3, the manual reactor trip is initiated by a switch in the Main Control Room which goes directly to the Reactor Trip Breakers. The manual reactor trip actuation switches and their surveillance requirements are listed in Table 3.3.1-1 of the Protection System Technical Specifications. Similarly, the actuation devices necessary to perform reactor trip functions are also listed in Table 3.3.1-1 of the Protection System Technical Specifications. The surveillances on the manual reactor trip actuation switches and the Reactor Trip Breakers ensure that a manual reactor trip will occur when initiated.

The manual reactor trip switches do not provide a signal to the APUs and there is no software "function" for the manual reactor trip loaded in the APUs. The list of functions in Table 3.3.1-2 only contains the credited reactor trip and ESF software functions performed by the APUs. Since the U.S. EPR Protection System Technical Specifications are component based, the format does not readily allow the listing of a function in Table 3.3.1-2 that is not performed by the APUs.

EFWS Isolation on High SG Level (Affected SG) ESFAS Signal

The ESF function for EFWS Isolation on High SG Level (Affected SG) was added to Revision 3 of Section 3.3.1 in the response to RAI 442, Supplement 13, Question 07.01-30.

FSAR Impact:

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

Question 16-320:

OPEN ITEM

Follow-up to RAI 110, Question 16-215.

In RAI-SRP16-CTSB-110/215, the staff requested the information necessary to ensure that EPR Bases B 3.3.3, Remote Shutdown System (RSS), includes all of the functions, control circuits, transfer switches and instrumentation necessary to meet the requirements of GDC 19, Control Room. The response states that the applicant has revised its design and regulatory compliance approach with regards to the Remote Shutdown System and its associated Technical Specifications. Instead of specifying the required functions in U.S. EPR FSAR Tier 2, Chapter 16, Technical Specification Bases Section 3.3.3, the Bases is being revised to state that the displays and controls at the RSS are functionally the same as the displays and controls normally used by the operator to achieve and maintain Mode 3 from the main control room. Given the revised specification, the applicant has not identified the actions that would be taken if a single sensor associated with one of the RSS functions became inoperable. The entire Remote Shutdown Station apparently defaults to an inoperable status since the specification as written, removes all references to "required Functions" in the LCO. The intent is not clearly understood. The staff was unable to make a conclusive determination that the applicant's revised design and regulatory compliance approach meets the requirements of GDC 19, on the basis of the information provided. This issue has been identified as an open item in the SER w/OI for Chapter 16 of the EPR FSAR.

Response to Question 16-320:

Additionally, this issue was further clarified on Page 16-39 of the NRC's March 10, 2010 Safety Evaluation, which states:

> The applicant also maintains that Channel Checks are no longer necessary on the basis of its June 30, 2009, response to RAI 110, Question 16-215, which is used to support the claim that there are no separate and unique analog instruments located at the "Remote Shutdown Station," which require a surveillance. In a June 30, 2009, response to RAI 110, Question 16-215, the applicant proposes to revise its design and regulatory approach with regards to the Remote Shutdown System and its associated TS. Instead of specifying the required Remote Shutdown System functions in TS Bases B 3.3.3, the Bases will be revised to state that the displays and controls at the "Remote Shutdown Station" are functionally the same as the displays and controls normally used by the operator to achieve and maintain Mode 3 from the main control room.

In general, fire protection Technical Specifications, including the requirements for the Remote Shutdown Station (RSS) were retrofitted into existing plants' licensing basis as part of the review and approval of fire protection plans necessary to implement the requirements of 10 CFR 50.48. The supporting fire protection safe shutdown analyses were developed, which allowed the definition of the specific functions and equipment necessary to be included with the RSS.

The underlying Westinghouse plant design, which includes the RSS equipment, that formed the basis for LCO 3.3.4, "Remote Shutdown System," in the Standard Technical Specifications for Westinghouse Plants (NUREG-1431) is fundamentally different than the design of the next generation plants, including the RSS equipment, that utilize a highly integrated control room

concept. These fundamental differences, along with status of design necessary to support a Design Certification, has necessitated a refinement in the approach taken for RSS Technical Specifications. A refined approach was previously proposed for the AP1000 Technical Specifications for the Remote Shutdown Workstation (LCO 3.3.4), which were approved as documented in NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design."

Specifically, in the current operating plants, the RSS includes hard-wired instrumentation and controls. Since the instrumentation and controls are hard-wired, failures in the wiring could result in an inoperable sensor, display, or control, which could render a required RSS function inoperable, while the function from the Main Control Room (MCR) would still be operable. Thus, the Technical Specifications for currently operating plants require periodic surveillance testing to demonstrate, on a function by function basis, the operability of both the instrumentation and controls necessary to take the plant to a safe shutdown state from the RSS.

The U.S. EPR RSS reflects the use of a highly integrated control room. The RSS contains Human Machine Interface (HMI) workstations necessary to bring the plant to, and maintain it in, a safe shutdown state. As shown on U.S. EPR FSAR Tier 2 Figure 7.1-2, "Distributed Control System Functional Architecture," the Process Information Control System (PICS) portion of the U.S. EPR RSS consists of an operators' computer terminal that gathers data for display and communicates equipment control commands through the plant data network. This is the same method used by the operators' computer terminal in the control room for data display and equipment control command communication. Thus, from a broad perspective, demonstrating the operability of the RSS SICS and PICS, provides the assurance that the information and control capabilities present in the MCR can be replicated by the RSS.

While the detailed U.S. EPR fire protection safe shutdown analysis is not required to be and has not been finalized, the displays and controls will be provided in the RSS, as described in U.S. EPR FSAR Tier 2 Section 7.4, to allow the monitoring and control of the following safe shutdown functions in all four divisions during a postulated fire in the MCR or during an event that could cause the MCR to become uninhabitable, coupled with a single failure. As stated in U.S. EPR FSAR Tier 2 Section 7.4.1.3.4, "Remote Shutdown Station," the SICS and PICS in the RSS, will include the monitoring and control functions necessary for:

- Reactivity control,
- Reactor coolant makeup,
- Reactor coolant system pressure control,
- Decay heat removal, and
- Control and monitoring of safety support systems for the above functions, as well as essential service water, component cooling water, and onsite power including the emergency diesel generators.

The RSS Technical Specification addresses the display and control aspect of these safe shutdown functions. The operability of the systems that perform these functions is governed, as required, by other Technical Specification sections and Limiting Condition for Operations (LCOs).

In addition, the U.S. EPR Technical Specifications also have a relevant unique aspect which provides NRC with added assurance that the instrumentation required to perform safe shutdown functions will be operable when required. As stated in the Westinghouse Standard Technical Specifications, the Remote Shutdown System LCO provides the operability requirements of the instrumentation and controls necessary to place and maintain the unit in Mode 3 from a location other than the control room. As stated in the Westinghouse Standard Technical Specifications Bases for LCO 3.3.4:

> "A Function of a Remote Shutdown System is OPERABLE if all instrument and control channels needed to support the Remote Shutdown System Function are OPERABLE. In some cases, Table B 3.3.4-1 may indicate that the required information or control capability is available from several alternate sources. In these cases, the Function is OPERABLE as long as one channel of any of the alternate information or control sources is OPERABLE. …
>
> For channels that fulfill GDC 19 requirements, the number of OPERABLE channels required depends upon the unit licensing basis as described in the NRC unit specific Safety Evaluation Report (SER). Generally, two divisions are required OPERABLE. However, only one channel per a given Function is required if the unit has justified such a design, and NRC's SER accepted the justification."

In the Westinghouse Standard Technical Specifications, the systems that perform the reactor trip and Engineered Safety Features functions are addressed at a functional level. Due to the sharing of components, these systems are addressed at the component level in the U.S. EPR Distributed Control System Technical Specifications. As a result, the specific instrumentation that can be utilized to support the RSS safe shutdown functions may already be explicitly addressed by the requirements of the Distributed Control System or other Technical Specifications. Many of these EPR Technical Specifications are equivalent or more restrictive, in terms of the required number of divisions and required actions, than the Westinghouse Standard Technical Specification requirements for the corresponding RSS functions.

Thus, it is not necessary for the U.S. EPR RSS Technical Specifications to identify and demonstrate on a function-by-function basis that each individual safe shutdown function is operable. Rather, the underlying purpose of the LCO is to provide the requirements for the operability of the instrumentation and controls necessary to place and maintain the plant in MODE 3 from a location other than the control room, which can be accomplished by:

- Demonstrating that each required MCR-RSS Transfer Switch is capable of performing its function,
- Verifying that each required RSS manual actuation switch is capable of performing its function, and
- Verifying the operability of the RSS hardware and software.

The removal of references to "Functions" in the LCO is also consistent with the wording of the AP1000 Technical Specifications for the Remote Shutdown Workstation (LCO 3.3.4), which were approved as documented in NUREG-1793. In order to improve fidelity with the NRC approved precedent and more explicitly reflect the specific testing necessary to demonstrate the operability of the U.S. EPR RSS, surveillance requirements and their associated Bases changes were revised in Revision 2 and Revision 3 to U.S. EPR FSAR Tier 2 Chapter 16, "Technical Specifications," LCO 3.3.3, "Remote Shutdown Station."

Revision 2 of U.S. EPR FSAR and the response to RAI 383 provided clarification regarding the crediting of the Safety Information and Control System (SICS) and descriptions of the Minimum Inventory.

Consistency corrections to U.S. EPR FSAR Tier 2 Chapter 16, Section 3.3.3 and Bases are shown on the attachment to reflect the I&C architechure changes described in RAI 442, Supplement 12.

FSAR Impact:

U.S. EPR FSAR, Tier 2, Chapter 16 Technical Specifications and Technical Specification Bases will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

3.3 INSTRUMENTATION

3.3.3 Remote Shutdown Station (RSS)

LCO 3.3.3 The RSS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

315, 16-320

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more MCR-RSS Transfer Switch inoperable.	A.1 Restore to OPERABLE status.	30 days
~~NOTE~~ ~~Separate Condition entry is allowed for each RSS manual actuation switch.~~ B. One or more RSS SICS manual actuation switch referenced in Table 3.3.3-1 inoperable.	B.1 Restore to OPERABLE status.	30 days
C. RSS PICS ~~hardware and software~~ inoperable.	C.1 Restore to OPERABLE status.	30 days
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	6 hours 12 hours

315, 16-320

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.3.1	Perform ACTUATING DEVICE OPERATIONAL TEST~~ADOT~~ on MCR-RSS Transfer Switches.	24 months
SR 3.3.3.2	Perform ACTUATING DEVICE OPERATIONAL TEST~~ADOT~~ on RSS SICS manual actuation switches.	24 months
~~SR 3.3.3.3~~	~~Verify the OPERABILITY of the RSS hardware and software.~~	~~24 months~~
SR 3.3.3.3	Verify that the RSS communicates controls and indications with each division of the Process Information Control System.	24 months

Table 3.3.3-1
RSS SICS Manual Actuation Switches

	FUNCTION	NUMBER OF SWITCHES
1.	Reactor Trip	4
2.	EFWS Actuation Reset	4
3.	EFWS Isolation Reset	4
4.	MSRIV Opening Reset	4
5.	MSRT Isolation Reset	4
6.	Safety Injection System Actuation Reset	4
7.	Steam Generator Isolation Reset	4
~~8.~~	~~P6 permissive Validation~~	~~4~~
8~~9~~.	P12 permissive Validation	4
~~10.~~	~~P13 permissive Validation~~	~~4~~
~~11.~~	~~P14 permissive Inhibitation~~	~~4~~
9~~12~~.	P14 permissive Validation	4
10~~13~~.	P15 permissive Validation	4
~~14.~~	~~P16 permissive Inhibitation~~	~~4~~
~~15.~~	~~P16 permissive Validation~~	~~4~~
11~~16~~.	P17 permissive Validation	4

B 3.3 INSTRUMENTATION

B 3.3.3 Remote Shutdown Station (RSS)

315, 16-320

BASES

BACKGROUND

The RSS provides the control room operator with sufficient instrumentation and controls to place and maintain the plant in a safe shutdown condition from a location other than the main control room (MCR). This capability is necessary to protect against the possibility that the MCR becomes inaccessible. A safe shutdown condition is defined as Hot Standby (MODE 3). With the plant in MODE 3, the Emergency Feedwater (EFW) System and Main Steam Relief Train (MSRT) can be used to remove core decay heat and meet all safety requirements. The long term supply of water for the EFW System and the ability to borate the Reactor Coolant System (RCS) from outside the MCR ~~main control room~~ allow extended operation in MODE 3.

The RSS contains the Human Machine Interface (HMI) ~~workstations~~ necessary to bring the plant to and maintain it in a safe shutdown state. The HMI (control) functions of the RSS are isolated as long as the MCR is available. The HMI ~~workstations~~ in the RSS will continue to display all parameters available ~~on each workstation~~in the MCR while the control functions are isolated. ~~These workstations contain~~ The RSS HMI consists of Process Information and Control System (PICS) equipment, Safety Information and Control System (SICS) equipment (manual actuation switches), and select communication equipment. The PICS consists primarily of processing units (PU), external units (XU), operator workstations, plant overview panels (POP), the automation bus, and a firewall. The PICS is used to control both safety-related and non-safety-related process systems. The plant annunciator is integrated into the PICS operating and monitoring system. Special screens display and organize alarms and warnings based on their status and relative level of importance. The SICS provides limited control capabilities in the RSS. The controls and indications on the RSS SICS are implemented with dedicated, hardwired I&C. The RSS SICS only has those manual permissives needed to reach and maintain safe shutdown.

In the event that the MCR becomes inaccessible, the operators can establish control at the RSS and place and maintain the plant in MODE 3 using the RSS PICS and RSS SICS. ~~Not all safety-related controls are required to be located at the RSS. Some safety-related controls may be operated locally at the switchgear, motor control panels, or other local stations.~~ The plant ~~automatically~~ reaches MODE 3 following a plant shutdown and can be maintained safely in MODE 3 for an extended period of time.

BASES

BACKGROUND (continued)

The OPERABILITY of the RSS ensures that there is sufficient information available on selected plant parameters to bring the plant to, and maintain it in, MODE 3 should the MCR become inaccessible.

APPLICABLE SAFETY ANALYSES

The RSS is located outside the MCR with a capability to promptly shut down the plant and maintain it in a safe condition in MODE 3.

The criteria governing the design and the specific system requirements of the RSS are located in 10 CFR 50, Appendix A, GDC 19 (Ref. 1).

The RSS satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The RSS LCO provides the requirements for the OPERABILITY of the instrumentation and controls necessary to place and maintain the plant in MODE 3 from a location other than the MCR.

The controls, instrumentation, and transfer switches necessary to reach MODE 3 are those required for:

315, 16-320

- Reactivity Control (initial and long term),
- Reactor Coolant Make-up,
- RCS Pressure Control,
- Decay Heat Removal, and
- Safety support systems for the above Functions, as well as essential service water, component cooling water, and onsite power including the Emergency Diesel Generators.

The displays and controls at the RSS are functionally the same as the displays and controls normally used by the operator to achieve and maintain MODE 3 from the MCR.

Transfer of Control

In the event of a condition requiring MCR evacuation, operators will transfer control from the MCR to the RSS via the MCR-RSS Transfer Switches. The MCR-RSS Transfer Switches disable MCR controls and enable control functions from the RSS. In the event that the MCR is not available and evacuation is necessary, the PICS and selected SICS controls are designed to achieve and maintain safe shutdown conditions from the RSS. The Operator Terminals for the Operator Workstations (OWS) installed in the MCR will be disabled and the operators will transfer control to the OWS in the RSS. This will prevent simultaneous or unauthorized control from the MCR OWS.

BASES

LCO (continued)

The remote shutdown instrument and control circuits covered by this LCO do not need to be energized to be considered OPERABLE. This LCO is intended to ensure the instruments and control circuits will be OPERABLE if plant conditions require that the RSS be placed in operation.

APPLICABILITY

The RSS LCO is applicable in MODES 1, 2, and 3. This is required so that the plant can be placed and maintained in MODE 3 for an extended period of time from a location other than the MCR.

This LCO is not applicable in MODE 4, 5, or 6. In these MODES, the plant is already subcritical and in the condition of reduced RCS energy. Under these conditions, considerable time is available to restore necessary instrument control Functions if MCR instruments or controls become unavailable.

ACTIONS

315, 16-320

A.1

Condition A addresses the situation where one or more MCR-RSS Transfer Switches are inoperable.

The Required Action is to restore the MCR-RSS Transfer Switch to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the MCR .

B.1

Condition B addresses the situation where one or more RSS SICS manual actuation switches are inoperable.

The Required Action is to restore the RSS SICS manual actuation switch to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the MCR .

315, 16-320

BASES

ACTIONS (continued)

C.1

Condition B addresses the situation where the RSS PICS hardware and software are inoperable.

The Required Action is to restore the RSS PICS hardware and software to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the MCR .

D.1 and D.2

If the Required Action and associated Completion Time of Condition A, B, or C are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required MODE from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.3.1

SR 3.3.3.1 verifies that each required MCR-RSS transfer switch and control circuit performs its intended function. This verification is performed from the RSS. Operation of the equipment from the RSS is not necessary. Displays in the MCR and RSS contain real time plant data prior to, during, and after control transfer from the MRC to the RSS. The RSS data is populated from the same information busses that supply data to the MCR. During the time control is transferred from the MCR to the RSS or vice versa, the operator will have seamless transfer of control and data will not be interrupted. The operators will have an indication via the control system that RSS control has been established. This will ensure that if the MCR becomes inaccessible, the plant can be brought to and maintained in MODE 3 from the RSS. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience demonstrates that RSS control usually passes the Surveillance when performed at a Frequency of once every 24 months.

315, 16-320

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.2

SR 3.3.3.2 is the performance of an ADOT every 24 months on the SICS manual actuation switches. The ADOT may be performed by means of any series of sequential, overlapping, or total steps.

SR 3.3.3.3

This Surveillance verifies that the RSS communicates with the controls and indications for each division of the Plant Information and Control System (PICS) (i.e, the operator can select the controls and indications available through each PICS division).

This Surveillance verifies the OPERABILITY of the RSS PICS hardware and software by performing diagnostics to show that operator displays are capable of being called up and displayed to an operator at the RSS. The RSS has video display units which can be used by the operator. The operator can display information on the video display units in the same manner in which the information is displayed in the MCR . The operator normally selects an appropriate set of displays based on the particular operational goals being controlled by the operator at the time. The Frequency of 24 months is based on the use of the data display capability in the MCR as part of the normal plant operation and the availability of multiple video display units at the RSS. The Frequency of 24 months is based upon operating experience and consistency with MCR hardware and software.

REFERENCES 1. 10 CFR 50, Appendix A, GDC 19.