

ArevaEPRDCPEm Resource

From: WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]
Sent: Friday, July 01, 2011 12:03 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (AREVA); DELANO Karen (AREVA); HALLINGER Pat (EXTERNAL AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); LENTZ Tony (EXTERNAL AREVA); SHARPE Robert (AREVA); PATTON Jeff (AREVA)
Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Question 16-320
Attachments: RAI 315 Response US EPR DC - Q 16-320 - DRAFT 4.pdf

Getachew,

Attached is a revised draft response for RAI 315, Question 16-320 in advance of the July 20, 2011 final date. The changes to the previous response, which are based on NRC feedback, are shown in Track Change format.

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: 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*](mailto: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: 'Tefsaye, 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

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: 3188

Mail Envelope Properties (2FBE1051AEB2E748A0F98DF9EEE5A5D47AF560)

Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No. 315, FSAR Ch. 16 OPEN ITEM, Question 16-320
Sent Date: 7/1/2011 12:02:59 PM
Received Date: 7/1/2011 12:03:05 PM
From: WILLIFORD Dennis (AREVA)

Created By: Dennis.Williford@areva.com

Recipients:

"BENNETT Kathy (AREVA)" <Kathy.Bennett@areva.com>
Tracking Status: None
"DELANO Karen (AREVA)" <Karen.Delano@areva.com>
Tracking Status: None
"HALLINGER Pat (EXTERNAL AREVA)" <Pat.Hallinger.ext@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
"SHARPE Robert (AREVA)" <Robert.Sharpe@areva.com>
Tracking Status: None
"PATTON Jeff (AREVA)" <Jeff.Patton@areva.com>
Tracking Status: None
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: auscharm02.adom.ad.corp

Files	Size	Date & Time
MESSAGE	22053	7/1/2011 12:03:05 PM
RAI 315 Response US EPR DC - Q 16-320 - DRAFT 4.pdf		485819

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 4

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)

DRAFT

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, "U.S. EPR I&C Architecture," the Plant 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 U.S. EPR RSS PICS communication with the plant data network, 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 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 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, ~~as implied by title of Section 3.3, "Instrumentation,"~~ 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 Protection 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 Protection 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. A review of the above safe shutdown functions, supporting instrumentation, and existing Technical Specification requirements are presented in Table 16-320-1.

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, ~~which~~ 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 ~~division communicates both indications and control commands~~, and
- Verifying the operability of the RSS hardware and software.

The removal of references to "required Functions" in the LCO is 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, additional surveillance requirements and their associated Bases changes will be added 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 will provide clarification regarding the crediting of the Safety Information and Control System (SICS) and descriptions of the Minimum Inventory.

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.

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TABLE 16-320-1
 Comparison of Supporting Instrumentation for Safe Shutdown Functions
 Versus Existing Technical Specification Requirements

Safe Shutdown Function Supporting Instrumentation	Existing Technical Specification Requirements for OPERABILITY in MODES 1, 2 and 3
Reactivity Control – Reactor Trip Signal – Safety Injection Signal – Neutron Flux	Signal generated by the Protection System. Operability governed by LCO 3.3.1 in Modes 1 and 2 and in Mode 3 with the RCSL System capable of withdrawing a RCCA or one or more RCCAs not fully inserted. Signal generated by the Protection System. Operability governed by LCO 3.3.1 in Modes 1, 2 and 3.
– Self-Powered Neutron Detectors – Power Range <u>Detectors</u> Monitors	Operability required by LCO 3.3.1, Table 3.3.1-1 in Mode 1 with RTP greater than or equal to 10% RTP. With less than 67 of 72 detectors operable, power must be reduced to less than 10% RTP in 6 hours. Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1 and 2 and in Mode 3 with the RCSL System capable of withdrawing a RCCA or one or more RCCAs not fully inserted. With less than three divisions operable (with two detectors in each division), the plant must be in Mode 3 in 6 hours and the reactor trip breakers opened.
– Intermediate Range – <u>Detectors</u> Monitors – Source Range <u>Detectors</u> Monitors	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1 and 2 and in Mode 3 with the RCSL System capable of withdrawing a RCCA or one or more RCCAs not fully inserted. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and the reactor trip breakers opened. Operability of two divisions required by LCO 3.3.2. Required actions are to restore one required division to operable status within 30 days, have one required division operable within 7 days, or the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours.

Safe Shutdown Function Supporting Instrumentation	Existing Technical Specification Requirements for OPERABILITY in MODES 1, 2 and 3
– Cold Leg Temperature (Narrow Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Mode 1 with RTP greater than or equal to 10% RTP. With less than three divisions operable, power must be reduced to less than 10% RTP in 6 hours.
– Cold Leg Temperature (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Mode 1, in Mode 2 with flux greater than or equal to 10 ⁻⁵ % RTP, and in Modes 3 when one or more RCSs <u>RCPs</u> are in operation. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– Hot Leg Temperature (Narrow Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Mode 1 and in Mode 2 with flux greater than or equal to 10 ⁻⁵ % RTP. With less than three divisions operable (with three sensors in each division), the plant must be in Mode 3 in 6 hours.
– Hot Leg Temperature (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– RCCA Analog Position Indication	Operability required by LCO 3.1.7 in Modes 1 and 2. The indicators must be restored to operable status within 24 hours such that a maximum of one in the associated bank is inoperable or the plant must be in Mode 3 in 6 hours.
+ <u>RCCA Shutdown Bank Bottom Position</u> Indication	Operability required by LCO 3.3.1, Table 3.3.1-1 in <u>Mode 1 with RTP greater than or equal to 10% RTP</u> Mode 3 with one or more RCPs in operation . If an RCCA Analog Position Indicator is inoperable, the plant must declare associated Rod Cluster Control Assembly Analog Position Indication Indicator sensor inoperable and enter <u>applicable Conditions and Required Actions of LCO 3.1.7</u> suspend operations involving positive reactivity additions that could result in a less of required Shutdown Margin or boron concentration . Operability required by LCO 3.1.7 in Modes 1 and 2. If a Digital RCCA Position Indicator is inoperable, it has to be restored to operable status or all Analog RCCA Position Indicators verified operable every 8 hours, or reactor power must be reduced to less than 50% RTP in 6 hours. <u>Operability required by LCO 3.3.1, Table 3.3.1-1 in Mode 3 with one or more RCPs in operation. With less than the required number of RCCA Shutdown Bank Bottom Position Indicator operable, the plant must be in Mode 5 in 36 hours.</u>

Safe Shutdown Function Supporting Instrumentation	Existing Technical Specification Requirements for OPERABILITY in MODES 1, 2 and 3
– CVCS Charging Line Boron Concentration	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
Heat Transfer (RCS Pressure and Temperature) Control	
– Cold Leg Temperature (Narrow Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Mode 1 with RTP greater than or equal to 10% RTP. With less than three divisions operable, power must be reduced to less than 10% RTP in 6 hours.
– Cold Leg Temperature (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Mode 1, in Mode 2 with flux greater than or equal to 10 E-5% RTP, and in Modes 3 when one or more RCSs <u>RCPs</u> are in operation. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– Hot Leg Temperature (Narrow Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Mode 1 and in Mode 2 with flux greater than or equal to 10 E-5% RTP. With less than three divisions operable (with three sensors in each division), the plant must be in Mode 3 in 6 hours.
– Hot Leg Temperature (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– RCS (Hot Leg) Pressure (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– Subcooling Margin (Delta Tsat)	Operability of two divisions required by LCO 3.3.2. Required actions are to restore one required division to operable status within 30 days, have one required division operable within 7 days, or the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours.
○ Hot Leg Pressure (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.

Safe Shutdown Function Supporting Instrumentation	Existing Technical Specification Requirements for OPERABILITY in MODES 1, 2 and 3
+ Core Thermocouples	Operability of two divisions required by LCO 3.3.2. Required actions are to restore one required division to operable status within 30 days, have one required division operable within 7 days, or initiate action in accordance with Specification 5.6.5.
o Hot Leg Temperature (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
+ Pressurizer Level <u>(Narrow Range)</u>	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
- Steam Generator Level (Narrow Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1 and 2 and in Mode 3, except when all Man Feedwater full load and low load lines are isolated. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours.
- Steam Generator Level (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 4 <u>5</u> in 12 <u>36</u> hours.
- Steam Generator Pressure	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
RCS Inventory Control	
+ Pressurizer Level <u>(Narrow Range)</u>	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
+ RCS (Hot Leg) Pressure (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.

Safe Shutdown Function Supporting Instrumentation	Existing Technical Specification Requirements for OPERABILITY in MODES 1, 2 and 3
– Core Outlet Temperature	Operability of two divisions required by LCO 3.3.2. Required actions are to restore one required division to operable status within 30 days, have one required division operable within 7 days, or <u>the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours. initiate action in accordance with Specification 5-6-5.</u>
– Subcooling Margin (Delta Tsat)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– Core Thermocouples	Operability of two divisions required by LCO 3.3.2. Required actions are to restore one required division to operable status within 30 days, have one required division operable within 7 days, or initiate action in accordance with Specification 5-6-5.
– Hot Leg Temperature (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– Safety Injection System Operation	IRWST level is used to verify IRWST volume every 7 days while in Modes 1, 2, and 3 per Surveillance Requirement 3.5.4.2. If IRWST volume cannot be verified or restored to within limits in 8 hours, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– LHSI Flow	Operability of two divisions required by LCO 3.3.2. Required actions are to restore one required division to operable status within 30 days, have one required division operable within 7 days, or <u>the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours. initiate action in accordance with Specification 5-6-5.</u>
– MHSI Flow	Operability of two divisions required by LCO 3.3.2. Required actions are to restore one required division to operable status within 30 days, have one required division operable within 7 days, or <u>the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours. initiate action in accordance with Specification 5-6-5.</u>

Safe Shutdown Function Supporting Instrumentation	Existing Technical Specification Requirements for OPERABILITY in MODES 1, 2 and 3
<ul style="list-style-type: none"> - CVCS Operation <ul style="list-style-type: none"> o CVCS Charging Line Flow o Volume Control Tank Level o Auxiliary Spray Flow o Letdown Flow 	<p>Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1 and 2 and in Mode 3 with one or more RCPs in operation. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.</p> <p><i>Not included in the U.S. EPR Technical Specifications.</i></p> <p><i>Not included in the U.S. EPR Technical Specifications.</i></p> <p><i>Not included in the U.S. EPR Technical Specifications.</i></p>
<p>Steam Generator Integrity Control</p> <ul style="list-style-type: none"> - Steam Generator Level (Narrow Range) 	<p>Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1 and 2 and in Mode 3, except when all Man Feedwater full load and low load lines are isolated. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours.</p>
<ul style="list-style-type: none"> - Steam Generator Level (Wide Range) 	<p>Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 4⁵ in 12³⁶ hours.</p>
<ul style="list-style-type: none"> - Steam Generator Pressure 	<p>Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.</p>
<ul style="list-style-type: none"> - Steam Generator Blowdown Activity - Main Steam Line Activity 	<p><i>Not included in the U.S. EPR Technical Specifications.</i></p> <p>Operability of two divisions required by LCO 3.3.2. Required actions are to restore one required division to operable status within 30 days, have one required division operable within 7 days, or the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours.</p>
<ul style="list-style-type: none"> - Feedwater Flow 	<p>Operability of two divisions required by LCO 3.3.2. Required actions are to restore one required division to operable status within 30 days, have one required division operable within 7 days, or the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours.</p>

Safe Shutdown Function Supporting Instrumentation	Existing Technical Specification Requirements for OPERABILITY in MODES 1, 2 and 3
Steam Generator Inventory Control	
– Steam Generator Level (Narrow Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1 and 2 and in Mode 3, except when all Man Feedwater full load and low load lines are isolated. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours.
– Steam Generator Level (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 4-5 in <u>4-36</u> hours.
– Steam Generator Pressure	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2 and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– Feedwater Flow	Operability of two divisions required by LCO 3.3.2. Required actions are to restore one required division to operable status within 30 days, have one required division operable within 7 days, or the plant must be in Mode 3 in 6 hours and Mode 4 in 12 hours.
Containment Integrity	
+ Containment Equipment Compartment Pressure	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1 and 2 and in Mode 3 with the RCSL System capable of withdrawing a RCCA or one or more RCCAs not fully inserted. With less than three divisions operable (with two detectors in each division), the plant must be in Mode 3 in 6 hours and <u>Mode 5 in 36 hours</u> the reactor trip-breakers opened.
+ Containment Service Compartment Pressure (Narrow Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1 and 2 and in Mode 3 with the RCSL System capable of withdrawing a RCCA or one or more RCCAs not fully inserted. With less than three divisions operable (with two detectors in each division), the plant must be in Mode 3 in 6 hours and <u>Mode 5 in 36 hours</u> the reactor trip-breakers opened.

Safe Shutdown Function Supporting Instrumentation	Existing Technical Specification Requirements for OPERABILITY in MODES 1, 2 and 3
– Containment Service Compartment Pressure (Wide Range)	Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2, and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– Containment Sump (Level or Discharge Flow)	Operability required by LCO 3.4.14 in Modes 1, 2, and 3. With less than one monitor operable, the monitor must be restored to operable status in 30 days or the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– Containment Air Cooler Condensate Flow Rate	Operability required by LCO 3.4.14 in Modes 1, 2, and 3. With less than one monitor operable, grab samples must be analyzed once per 24 hours or the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– Containment Atmosphere Radioactivity (Particulate) Monitor	Operability required by LCO 3.4.14 in Modes 1, 2, and 3. With less than one monitor operable, grab samples must be analyzed or perform an RCS water inventory balance once per 24 hours and the monitor must be restored to operable status or verify the containment air cooler condensate flow rate monitor is operable in 30 days or the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
– Radiation Monitor - Containment High Range	Operability required by LCO 3.4.14 in Modes 1, 2, and 3. With less than one monitor operable, the monitor must be restored to operable status or verify the containment air cooler condensate flow rate monitor is operable in 30 days or the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours.
	<u>Operability required by LCO 3.3.1, Table 3.3.1-1 in Modes 1, 2, and 3. With less than three divisions operable, the plant must be in Mode 3 in 6 hours and Mode 5 in 36 hours</u>

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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.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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SURVEILLANCE		FREQUENCY
SR 3.3.3.1	<u>Perform ADOT on MCR-RSS Transfer Switch.</u> Verify each required control circuit and transfer switch is capable of performing the intended function.	24 months
SR 3.3.3.2	----- NOTE ----- Neutron detectors are excluded from the CALIBRATION.	
<u>SR 3.3.3.2</u>	Perform <u>ADOT on RSS manual actuation switch.</u> CALIBRATION for each required instrument division.	24 months
SR 3.3.3.3	Verify the OPERABILITY of the RSS hardware and software.	24 months

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Table 3.3.3-1
RSS Manual Actuation Switches

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

B 3.3 INSTRUMENTATION

B 3.3.3 Remote Shutdown Station (RSS)

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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 control room~~ 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 main control room allow extended operation in MODE 3.

The RSS contains 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 ~~main control room (MCR)~~ is available. The HMI workstations will continue to display all parameters available on each workstation while the control functions are isolated. These workstations contain Process Information and Control System (PICS) equipment, Safety Information and Control System (SICS) equipment (manual ~~reactor trip actuation~~ switches), and select communication equipment. The PICS consists of primarily of processing units (PU), external units (XU), operator workstations, plant overview panels (POP), 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.

In the event that the ~~MCR control room~~ becomes inaccessible, the operators can establish control at the ~~remote shutdown panel~~ RSS and place and maintain the plant in MODE 3. Not all safety-related controls ~~and necessary transfer switches~~ are required to be located at the RSS. Some safety-related controls ~~and transfer switches~~ 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.

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 control room~~ become inaccessible.

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BASES

APPLICABLE
SAFETY
ANALYSES

The RSS is located outside the ~~MCR control room~~ 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 control room~~.

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

- 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. ~~The PIGS consists of primarily of processing units (PU), external units (XU), operator workstations, plant overview panels (POP), and a firewall. The PIGS is used to control both safety related and non-safety related process systems. The plant annunciator is integrated into the PIGS operating and monitoring system. Special screens display and organize alarms and warnings based on their status and relative level of importance.~~

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BASES

LCO (continued)

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~~control transfer switches~~. The MCR-RSS Transfer Switch~~RSS control 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 is 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.

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~~control room~~.

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~~control room~~ instruments or control become unavailable.

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BASES

ACTIONS

A.1

Condition A addresses the situation where one or more MCR-RSS Transfer Switches are ~~the RSS is inoperable. This includes the control and transfer switches.~~

The Required Action is to restore the MCR-RSS Transfer Switch ~~RSS~~ 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 ~~control room~~.

B.1

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

The Required Action is to restore the RSS 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 .

C.1

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

The Required Action is to restore the RSS 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 .

DB.1 and DB.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.

315, 16-320

BASES

SURVEILLANCE
REQUIREMENTSSR 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 reactor shutdown panel and locally, as appropriate. Operation of the equipment from the remote shutdown panel is not necessary. 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 control room becomes inaccessible, the plant can be brought to and maintained in MODE 3 from the reactor shutdown panel and the local control stations. 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.

DRAFT

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. The ADOT may be performed by means of any series of sequential, overlapping, or total steps.

~~A CALIBRATION of each required instrument display function on the RSS every 24 months ensures that each instrument division is reading accurately and within tolerance. A CALIBRATION is a complete check of the instrument division, including the sensor. The test verifies that the division responds to the measured parameter within the necessary range and accuracy. CALIBRATION leaves the division adjusted to account for instrument drift to ensure that the division remains operational between successive tests.~~

SR 3.3.3.3

This Surveillance verifies that the RSS communicates controls and indications with each division of the Plant Information and Control System (PICS). The operator can select the controls and indications available through each PICS division. The Frequency is based on the known reliability of the Functions and the redundancy available and that the PICS is in constant use in the MCR, and has been shown to be acceptable through operating experience.

SR 3.3.3.4

~~SR 3.3.3.4 verifies the OPERABILITY of the RSS 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.