ArevaEPRDCPEm Resource

From: WELLS Russell (AREVA) [Russell.Wells@areva.com]
Sent: Tuesday, March 08, 2011 12:02 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA)
Subject: Response to U.S. EPR Design Certification Application RAI No. 414, FSAR Ch. 7 OPEN ITEM, Supplement 8
Attachments: RAI 414 Supplement 8 Response US EPR DC.pdf

Getachew,

AREVA NP provided a schedule on July 14, 2010 for a technically correct and complete response to RAI 414. Supplement 1 response was sent on October 28, 2010 to provide a revised schedule for all questions. Supplement 2 was sent on November 29, 2010 to provide a revised schedule for 6 of the remaining 7 questions. Supplement 3 was sent on January 13, 2011 to provide a revised schedule for 6 of the remaining 7 questions. Supplement 4 was sent on February 3, 2011 to provide technically correct and complete responses to two questions. Supplement 5 was sent on February 8, 2011 to provide technically correct and complete responses to two questions. Supplement 6 was sent on February 18, 2011 to provide technically correct and complete response to one question. Supplement 7 was sent on February 25, 2011 to provide a revised schedule for the remaining 2 questions. Based on discussions with NRC, the attached file, "RAI 414 Supplement 8 Response US EPR DC.pdf" provides the technically correct and complete response to one of the 2 questions, as committed.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which supports the response to RAI 414 Question 07.02-32.

The following table indicates the respective pages in the response document, "RAI 414 Supplement 8 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 414 07.02-32	2	3

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

Question #	Response Date
RAI 414 — 07.03-30	April 21, 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: Friday, February 25, 2011 12:44 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BRYAN Martin (External RS/NB); RYAN Tom (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 414, FSAR Ch. 7 OPEN ITEM, Supplement 7

Getachew,

AREVA NP provided a schedule on July 14, 2010 for a technically correct and complete response to RAI 414. Supplement 1 response was sent on October 28, 2010 to provide a revised schedule for all questions. Supplement 2 was sent on November 29, 2010 to provide a revised schedule for 6 of the remaining 7 questions. Supplement 3 was sent on January 13, 2011 to provide a revised schedule for 6 of the remaining 7 questions. Supplement 4 was sent on February 3, 2011 to provide technically correct and complete responses to two questions. Supplement 5 was sent on February 8, 2011 to provide technically correct and complete responses to two questions. Supplement 6 was sent on February 18, 2011 to provide technically correct and complete response to one question.

Based upon the information presented to the NRC during the February 15, 2011, Public Meeting, the schedule for the remaining questions has been changed.

The schedule for a technically correct and complete response to the two remaining questions is changed and is provided below.

Question #	Response Date
RAI 414 — 07.02-32	April 5, 2011
RAI 414 — 07.03-30	April 21, 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: Friday, February 18, 2011 10:17 AM
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. 414, FSAR Ch. 7 OPEN ITEM, Supplement 6

Getachew,

AREVA NP provided a schedule on July 14, 2010 for a technically correct and complete response to RAI 414. Supplement 1 response was sent on October 28, 2010 to provide a revised schedule for all questions. Supplement 2 was sent on November 29, 2010 to provide a revised schedule for 6 of the remaining 7 questions. Supplement 3 was sent on January 13, 2011 to provide a revised schedule for 6 of the remaining 7 questions. Supplement 4 was sent on February 3, 2011 to provide technically correct and complete responses to two questions. Supplement 5 was sent on February 8, 2011 to provide technically correct and complete responses to two questions. Based on discussions with NRC, the attached file, "RAI 414 Supplement 6 Response US EPR DC.pdf" provides technically correct and complete response to one of the remaining 3 questions, as committed.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to this question.

The following table indicates the respective pages in the response document, "RAI 414 Supplement 6 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 414 07.03-31	2	3

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

Question #	Response Date
RAI 414 — 07.02-32	March 22, 2011
RAI 414 — 07.03-30	March 10, 2011

Sincerely,

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

From: BRYAN Martin (External RS/NB)
Sent: Tuesday, February 08, 2011 9:46 AM
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. 414, FSAR Ch. 7 OPEN ITEM, Supplement 5

Getachew,

AREVA NP provided a schedule on July 14, 2010 for a technically correct and complete response to RAI 414. Supplement 1 response was sent on October 28, 2010 to provide a revised schedule for all questions. Supplement 2 was sent on November 29, 2010 to provide a revised schedule for 6 of the remaining 7 questions. Supplement 3 was sent on January 13, 2011 to provide a revised schedule for 6 of the remaining 7

questions. Supplement 4 was sent on February 3, 2011 to provide technically correct and complete responses to two questions. Based on discussions with NRC, the attached file, "RAI 414 Supplement 5 Response US EPR DC.pdf" provides technically correct and complete responses to two of the remaining 5 questions, as committed.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to these two questions.

The following table indicates the respective pages in the response document, "RAI 414 Supplement 5 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 414 07.07-20	2	3
RAI 414 07.07-22	4	5

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

Question #	Response Date
RAI 414 — 07.02-32	March 22, 2011
RAI 414 — 07.03-30	March 10, 2011
RAI 414 — 07.03-31	March 10, 2011

Sincerely,

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

From: BRYAN Martin (External RS/NB)
Sent: Thursday, February 03, 2011 2:44 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. 414, FSAR Ch. 7 OPEN ITEM, Supplement 4

Getachew,

AREVA NP provided a schedule on July 14, 2010 for a technically correct and complete response to RAI 414. Supplement 1 response was sent on October 28, 2010 to provide a revised schedule for all questions. Supplement 2 was sent on November 29, 2010 to provide a revised schedule for 6 of the remaining 7 questions. Supplement 3 was sent on January 13, 2011 to provide a revised schedule for 6 of the remaining 7 questions. Based on discussions with NRC, the attached file, "RAI 414 Supplement 4 Response US EPR DC.pdf" provides technically correct and complete responses to two of the remaining 7 questions, as committed.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to these two questions.

The following table indicates the respective pages in the response document, "RAI 414 Supplement 4 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 414 07.02-33	2	3
RAI 414 07.04-14	4	5

To allow additional time to interact with the NRC staff, a revised schedule for the remaining questions is provided.

Question #	Response Date
RAI 414 — 07.02-32	March 22, 2011
RAI 414 — 07.03-30	March 10, 2011
RAI 414 — 07.03-31	March 10, 2011
RAI 414 — 07.07-20	March 10, 2011
RAI 414 — 07.07-22	March 10, 2011

Sincerely,

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

From: BRYAN Martin (External RS/NB)
Sent: Thursday, January 13, 2011 4:35 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); PANNELL George (CORP/QP)
Subject: Response to U.S. EPR Design Certification Application RAI No. 414, FSAR Ch. 7 OPEN ITEM, Supplement 3

Getachew,

AREVA NP provided a schedule on July 14, 2010 for a technically correct and complete response to RAI 414. Supplement 1 response was sent on October 28, 2010 to provide a revised schedule for all questions. Supplement 2 was sent on November 29, 2010 to provide a revised schedule for 6 of the remaining 7 questions. To allow additional time to interact with the NRC staff, a revised schedule for these six questions is provided. The schedule for Question 07.02-32 remains the same.

A complete answer is not provided for the 7 questions. The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 414 — 07.02-32	March 01, 2011
RAI 414 — 07.03-33	February 11, 2011
RAI 414 — 07.02-30	February 11, 2011

RAI 414 — 07.03-31	February 11, 2011
RAI 414 — 07.04-14	February 11, 2011
RAI 414 — 07.07-20	February 11, 2011
RAI 414 — 07.07-22	February 11, 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: Monday, November 29, 2010 2:35 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); PANNELL George (CORP/QP)
Subject: Response to U.S. EPR Design Certification Application RAI No. 414, FSAR Ch. 7 OPEN ITEM, Supplement 2

Getachew,

AREVA NP provided a schedule on July 14, 2010 for a technically correct and complete response to RAI 414. Supplement 1 response was sent on October 28, 2010 to provide a revised schedule for all questions. To allow additional time to interact with the NRC staff, a revised schedule for six of the seven questions is provided. The schedule for Question 07.02-32 remains the same.

A complete answer is not provided for the 7 questions. The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 414 — 07.02-32	March 01, 2011
RAI 414 — 07.03-33	January 13, 2011
RAI 414 — 07.02-30	January 13, 2011
RAI 414 — 07.03-31	January 13, 2011
RAI 414 — 07.04-14	January 13, 2011
RAI 414 — 07.07-20	January 13, 2011
RAI 414 — 07.07-22	January 13, 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, October 28, 2010 4:53 PM

To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); PANNELL George (CORP/QP)
Subject: Response to U.S. EPR Design Certification Application RAI No. 414, FSAR Ch. 7 OPEN ITEM, Supplement 1

Getachew,

AREVA NP provided a schedule on July 14, 2010 for a technically correct and complete response to RAI 414. To allow additional time to interact with the NRC staff, a revised schedule is provided.

A complete answer is not provided for the 7 questions. The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 414 — 07.02-32	March 01, 2011
RAI 414 — 07.03-33	November 29, 2010
RAI 414 — 07.02-30	November 29, 2010
RAI 414 — 07.03-31	November 29, 2010
RAI 414 — 07.04-14	November 29, 2010
RAI 414 — 07.07-20	November 29, 2010
RAI 414 — 07.07-22	November 29, 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: Wednesday, July 14, 2010 6:32 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. 414, FSAR Ch. 7 OPEN ITEM

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 414 Response US EPR DC.pdf" provides a schedule since technically correct and complete responses to the 7 questions are not provided.

The following table indicates the respective pages in the response document, "RAI 414 Response US EPR DC.pdf" that contain AREVA NP's responses to the subject questions.

Question #	Start Page	End Page
RAI 414 — 07.02-32	2	2
RAI 414 — 07.03-33	3	3
RAI 414 — 07.02-30	4	6
RAI 414 — 07.03-31	7	8

RAI 414 — 07.04-14	9	9
RAI 414 — 07.07-20	10	10
RAI 414 — 07.07-22	11	11

A complete answer is not provided for the 6 questions. The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 414 — 07.02-32	October 28, 2010
RAI 414 — 07.03-33	October 28, 2010
RAI 414 — 07.02-30	October 28, 2010
RAI 414 — 07.03-31	October 28, 2010
RAI 414 — 07.04-14	October 28, 2010
RAI 414 — 07.07-20	October 28, 2010
RAI 414 — 07.07-22	October 28, 2010

Sincerely,

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

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Tuesday, June 15, 2010 4:58 PM
To: ZZ-DL-A-USEPR-DL
Cc: Truong, Tung; Morton, Wendell; Spaulding, Deirdre; Mott, Kenneth; Jackson, Terry; Canova, Michael; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 414(4394,4398,4752,4548), FSAR Ch. 7 OPEN ITEM

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on June 8, 2010, and on June 15, 2010, you informed us that the RAI is clear and no further clarification is needed. As a result, no change is made to the draft RAI. The question in this RAI is an OPEN ITEM in the safety evaluation report for Chapter 7 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,
Getachew Tesfaye
Sr. Project Manager
NRO/DNRL/NARP
(301) 415-3361

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 2677

Mail Envelope Properties (1F1CC1BBDC66B842A46CAC03D6B1CD41040ECD74)

Subject: Response to U.S. EPR Design Certification Application RAI No. 414, FSAR Ch. 7 OPEN ITEM, Supplement 8
Sent Date: 3/8/2011 12:01:31 PM
Received Date: 3/8/2011 12:01:52 PM
From: WELLS Russell (AREVA)

Created By: Russell.Wells@areva.com

Recipients:
"BENNETT Kathy (AREVA)" <Kathy.Bennett@areva.com>
Tracking Status: None
"DELANO Karen (AREVA)" <Karen.Delano@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
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: AUSLYNCMX02.adom.ad.corp

Files	**Size**	**Date & Time**
MESSAGE	17805	3/8/2011 12:01:52 PM
RAI 414 Supplement 8 Response US EPR DC.pdf	92585	

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

Response to

Request for Additional Information No. 414(4394, 4398, 4752, 4548), Revision 1, Supplement 8

6/15/2010

U.S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 07.02 - Reactor Trip System
SRP Section: 07.03 - Engineered Safety Features Systems
SRP Section: 07.04 - Safe Shutdown Systems
SRP Section: 07.07 - Control Systems

Application Section: FSAR Chapter 7

QUESTIONS for Instrumentation, Controls and Electrical Engineering 1 (AP1000/EPR Projects) (ICE1)

Question 07.02-32:

OPEN ITEM

Address the rates of change of variables to be accommodated until proper completion of the protective action is ensured.

Clause 4.4 of IEEE Std. 603-1991 requires the documentation of the variables or combinations of variables, or both, that are to be monitored to manually or automatically, or both, control each protective action; the analytical limit associated with each variable, the ranges (normal, abnormal, and accident conditions); and the rates of change of these variables to be accommodated until proper completion of the protective action is ensured. Section 7.2.2.1.3 of U.S. EPR FSAR did not identify the rates of change of variables to be accommodated until proper completion of the protective action is ensured. Identify where in the U.S. EPR FSAR this information is addressed or provide this level of information.

Response to Question 07.02-32:

For the design basis events requiring protective action, the accident analysis models the rates of change of variables monitored by the protection system from the occurrence of the accident to where the plant has reached a controlled state following protection system actions. Relative to the design basis for the protection system, the rates of change of these variables are included to determine that the sensor response time and input sampling rate of the protection system are adequate to detect and mitigate the event. The response times assumed in the accident analysis include sensor response times and worst case input sampling rate (i.e., input to the protection system changes just after the beginning of a clock cycle and is not seen until the beginning of the next clock cycle).

The documentation of sensor response time requirements and protection system cycle time requirements captures the rates of change of input variables monitored by the protection system. The sensor response times and protection system cycle times required to accommodate the rates of change of monitored variables modeled in the accident analysis are reflected in U.S. EPR FSAR Tier 2, Tables 15.0-7 and 15.0-8. U.S. EPR FSAR Tier 1, Section 2.4.1, Commitment 4.24 verifies that the as-built protection system satisfies the sensor response time and processor cycle time requirements.

U.S. EPR FSAR Tier 2, Section 7.1.2.6.3 will be revised to add the following:

> “The variables used to initiate protective actions monitored by the protection system are described in Section 7.2.2 and Section 7.3.2.
>
> The sensor response times and protection system cycle times required to accommodate the rates of change of monitored variables are listed in Tables 15.0-7 and 15.0-8. For the design basis events requiring protective action, the accident analysis models the rates of change of variables monitored by the protection system from the occurrence of the accident to where the plant has reached a controlled state following protection system actions. Relative to the design basis for the protection system, the rates of change of these variables are included to determine that the sensor response time and input sampling rate of the protection system are adequate to detect and mitigate the event. The response times assumed in the accident analysis include sensor response times and worst case input

sampling rate (i.e., input to the protection system changes just after the beginning of a clock cycle and is not seen until the beginning of the next clock cycle)."

FSAR Impact:

U.S. EPR FSAR Tier 2, Section 7.1.2.6.3 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

- Protection system.
- Safety automation system.
- Priority and actuator control system.
- Incore instrumentation system.
- Excore instrumentation system.
- Boron concentration measurement system.
- Radiation monitoring system.
- Process instrumentation (refer to Section 7.2 and 7.3 for details).

The execute features consist of:

- The trip breakers (part of the NUPS).
- The trip contactors (part of the CRDCS).
- Class 1E actuation devices (i.e., switchgear) (part of the Class 1E electrical distribution systems).
- Actuated equipment (part of the process systems).

7.1.2.6.1 Design Basis: Design Basis Events and Corresponding Protective Actions (Clauses 4.a and 4.b)

Compliance to Clauses 4.a and 4.b is described in Section 7.2.2 and Section 7.3.2.

7.1.2.6.2 Design Basis: Permissive Conditions (Clause 4.c)

Compliance to Clause 4.c is described in Section 7.2.2 and Section 7.3.2.

7.1.2.6.3 Design Basis: Monitored Variables (Clause 4.d)

07.02-32

~~Compliance to Clause 4.d is described in Section 7.2.2 and Section 7.3.2~~The variables used to initiate protective actions monitored by the protection system are described in Section 7.2.2 and Section 7.3.2.

The sensor response times and protection system cycle times required to accommodate the rates of change of monitored variables are listed in Tables 15.0-7 and 15.0-8. For the design basis events requiring protective action, the accident analysis models the rates of change of variables monitored by the protection system from the occurrence of the accident to where the plant has reached a controlled state following protection system actions. Relative to the design basis for the protection system, the rates of change of these variables are included to determine that the sensor response time and

07.02-32

input sampling rate of the protection system are adequate to detect and mitigate the event. The response times assumed in the accident analysis include sensor response times and worst case input sampling rate (i.e., input to the protection system changes just after the beginning of a clock cycle and is not seen until the beginning of the next clock cycle)..

7.1.2.6.4 Design Basis: Manual Actions (Clause 4.e)

Manual actions credited in the accident analysis are described in Section 15.0. The protective actions and variables used to initiate those actions are described in Section 7.2.2 and Section 7.3.2. Manual actions are executed by the operators from the MCR. The MCR air conditioning regulates the environmental conditions in the MCR to provide an adequate environment for operator actions during normal, abnormal, and accident conditions. The MCR air conditioning system is described in Section 9.4.1. The radiological analysis of the MCR during accident conditions is provided in Section 15.0.3.

7.1.2.6.5 Design Basis: Spatially Dependent Variables (Clause 4.f)

Compliance to Clause 4.f is described in Section 7.2.2 and Section 7.3.2.

7.1.2.6.6 Design Basis: Range of Operating Conditions (Clause 4.g)

The safety systems are qualified in accordance with the program described in Section 3.11. This qualification includes:

- Environmental effects (e.g., temperature and humidity).
- Seismic effects.
- EMI/RFI effects.

The safety systems are powered by Class 1E power supplies, including the EUPS and Class 1E power supply system (EPSS). The safety systems are designed to remain functional within the range of voltage and frequency provided. The EPSS and EUPS are described in Section 8.3.

7.1.2.6.7 Design Basis: Protection Against Natural Phenomena and Unusual Events (Clause 4.h)

The safety systems are designed to perform their required functions in the presence of natural phenomena and unusual events, which include seismic events, tornadoes, and internal flooding. Refer to Chapter 3 for further information on these events. This is accomplished through the principles of independence described in Section 7.1.1 and equipment qualification described in Section 3.11.