ArevaEPRDCPEm Resource

From: BRYAN Martin (EXTERNAL AREVA) [Martin.Bryan.ext@areva.com]
Sent: Thursday, September 02, 2010 5:32 PM
To: Tesfaye, Getachew
Cc: DELANO Karen (AREVA); ROMINE Judy (AREVA); BENNETT Kathy (AREVA); KOWALSKI David (AREVA); Miernicki, Michael
Subject: Response to U.S. EPR Design Certification Application RAI No. 379, FSAR Ch. 9, Supplement 4
Attachments: RAI 379 Supplement 4 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the nine questions in RAI No. 379 on April 29, 2010. Supplement 1, Supplement 2 and Supplement 3 responses to RAI No. 379 were sent on May 28, 2010, June 30, 2010 and August 5, 2010, respectively, to provide a revised schedule.

On June 30, 2010, AREVA provided DRAFT responses to the nine questions in RAI No. 379 for NRC review. Final responses are being provided for eight of the nine questions. A revised scheduled is being provided for the remaining question, 09.05.02-12.

The attached file, "RAI 379 Supplement 4 Response US EPR DC.pdf" provides technically correct and complete responses to eight of the nine questions.

The following table indicates the respective pages in the response document, "RAI 379 Supplement 4 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 379 — 09.05.02-13	2	2
RAI 379 — 09.05.02-14	3	3
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RAI 379 — 09.05.02-16	6	7
RAI 379 — 09.05.02-17	8	8
RAI 379 — 09.05.02-18	9	9
RAI 379 — 09.05.02-19	10	11
RAI 379 — 09.05.02-20	12	12

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

Question #	Response Date
RAI 379 — 09.05.02-12	October 8, 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, August 05, 2010 4:08 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); KOWALSKI David (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 379, FSAR Ch. 9, Supplement 3

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the nine questions in RAI No. 379 on April 29, 2010. Supplement 1 and Supplement 2 responses to RAI No. 379 were sent on May 28, 2010 and June 30, 2010, respectively, to provide a revised schedule.

On June 30, 2010, AREVA provided DRAFT responses to the nine questions in RAI No. 379 for NRC review and comment. As of today, AREVA has not received any feedback. To allow time for interaction between AREVA and the NRC staff, a revised schedule is provided in this e-mail.

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

Question #	Response Date
RAI 379 — 09.05.02-12	September 2, 2010
RAI 379 — 09.05.02-13	September 2, 2010
RAI 379 — 09.05.02-14	September 2, 2010
RAI 379 — 09.05.02-15	September 2, 2010
RAI 379 — 09.05.02-16	September 2, 2010
RAI 379 — 09.05.02-17	September 2, 2010
RAI 379 — 09.05.02-18	September 2, 2010
RAI 379 — 09.05.02-19	September 2, 2010
RAI 379 — 09.05.02-20	September 2, 2010

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
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Martin.Bryan.ext@areva.com

From: BRYAN Martin (EXT)
Sent: Wednesday, June 30, 2010 6:44 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); SLAY Lysa M (AREVA NP INC); KOWALSKI David J (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 379, FSAR Ch. 9, Supplement 2

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the nine questions in RAI No. 379 on April 29, 2010. Supplement 1 response to RAI No. 379 was sent on May 28, 2010 to provide a revised schedule.

To allow time for interaction between AREVA and the NRC staff, a revised schedule is provided in this e-mail.

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

Question #	Response Date
RAI 379 — 09.05.02-12	August 5, 2010
RAI 379 — 09.05.02-13	August 5, 2010
RAI 379 — 09.05.02-14	August 5, 2010
RAI 379 — 09.05.02-15	August 5, 2010
RAI 379 — 09.05.02-16	August 5, 2010
RAI 379 — 09.05.02-17	August 5, 2010
RAI 379 — 09.05.02-18	August 5, 2010
RAI 379 — 09.05.02-19	August 5, 2010
RAI 379 — 09.05.02-20	August 5, 2010

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
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Martin.Bryan.ext@areva.com

From: BRYAN Martin (EXT)
Sent: Friday, May 28, 2010 10:40 AM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); KOWALSKI David J (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 379, FSAR Ch. 9, Supplement 1

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the nine questions in RAI No. 379 on April 29, 2010. Since additional time is needed for AREVA to discuss the responses to the questions with the NRC, an updated schedule is provided in this e-mail.

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

Question #	Response Date
RAI 379 — 09.05.02-12	June 30, 2010
RAI 379 — 09.05.02-13	June 30, 2010
RAI 379 — 09.05.02-14	June 30, 2010
RAI 379 — 09.05.02-15	June 30, 2010
RAI 379 — 09.05.02-16	June 30, 2010
RAI 379 — 09.05.02-17	June 30, 2010
RAI 379 — 09.05.02-18	June 30, 2010
RAI 379 — 09.05.02-19	June 30, 2010
RAI 379 — 09.05.02-20	June 30, 2010

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
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From: BRYAN Martin (EXT)
Sent: Thursday, April 29, 2010 9:43 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); KOWALSKI David J (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 379, FSAR Ch. 9

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 379 Response US EPR DC," provides a schedule since technically correct and complete responses to the nine questions are not provided.

The following table indicates the respective pages in the response document, "RAI 379 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 379 — 09.05.02-12	2	2
RAI 379 — 09.05.02-13	3	3
RAI 379 — 09.05.02-14	4	4
RAI 379 — 09.05.02-15	5	5
RAI 379 — 09.05.02-16	6	6
RAI 379 — 09.05.02-17	7	7
RAI 379 — 09.05.02-18	8	8
RAI 379 — 09.05.02-19	9	9
RAI 379 — 09.05.02-20	10	10

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

Question #	Response Date
RAI 379 — 09.05.02-12	May 31, 2010
RAI 379 — 09.05.02-13	May 31, 2010
RAI 379 — 09.05.02-14	May 31, 2010
RAI 379 — 09.05.02-15	May 31, 2010
RAI 379 — 09.05.02-16	May 31, 2010
RAI 379 — 09.05.02-17	May 31, 2010
RAI 379 — 09.05.02-18	May 31, 2010
RAI 379 — 09.05.02-19	May 31, 2010
RAI 379 — 09.05.02-20	May 31, 2010

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
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Martin.Bryan.ext@areva.com

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Monday, March 29, 2010 7:01 PM
To: ZZ-DL-A-USEPR-DL
Cc: Zhang, Deanna; Jackson, Terry; Hearn, Peter; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 379 (4416), FSAR Ch. 9

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on March 17, 2010, and on March 29, 2010, you informed us that the RAI is clear and no further clarification is needed. As a result, no change is made to the draft RAI. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the published schedule.

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

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 1953

Mail Envelope Properties (BC417D9255991046A37DD56CF597DB71076C21A7)

Subject: Response to U.S. EPR Design Certification Application RAI No. 379, FSAR Ch. 9, Supplement 4
Sent Date: 9/2/2010 5:32:02 PM
Received Date: 9/2/2010 5:32:06 PM
From: BRYAN Martin (EXTERNAL AREVA)

Created By: Martin.Bryan.ext@areva.com

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Files	**Size**	**Date & Time**
MESSAGE	9372	9/2/2010 5:32:06 PM
RAI 379 Supplement 4 Response US EPR DC.pdf	84406	

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

Response to

Request for Additional Information No. 379(4416), Supplement 4

3/29/2010

U.S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 09.05.02 - Communications Systems
Application Section: 09.05.02

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

Question 09.05.02-13:

Provide acceptance criteria to verify that the portable wireless system provides adequate coverage for plant communication functions to meet the requirements of 10 CFR 52.47(b)(1).

10 CFR 52.47(b)(1), which requires that a DC application contain the proposed inspections, tests, analyses, and acceptance criteria (ITAAC) that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a plant that incorporates the design certification is built and will operate in accordance with the design certification, the provisions of the Atomic Energy Act, and the NRC's regulations. The staff reviewed the Communication System ITAAC in Tier 1, Table 2.4.21-2, of the U.S. EPR FSAR and found that the ITAAC does not demonstrate that there is adequate wireless coverage to support fire brigades and other operations personnel required to achieve safe plant shutdown. As such, the staff requests that the applicant to provide specific acceptance criteria within the ITAAC to verify that the portable wireless system provides adequate coverage to meet the requirements of 10 CFR 52.47(b)(1).

Response to Question 09.05.02-13:

U.S. EPR FSAR Tier 1, Section 2.4.21 was revised in U.S. EPR FSAR, Rev. 2 to include testing and analysis to verify that the portable wireless system provides adequate coverage between the main control room and locations listed in U.S. EPR FSAR Tier 1, Table 2.4.21-2—Communication System ITAAC.

FSAR Impact:

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

Question 09.05.02-14:

Provide an ITAAC to verify that sufficient electrical isolation exists between the COMS equipment and the Class 1E power system to meet the requirements of 10 CFR 52.47 (b)(1).

10 CFR 52.47 (b)(1) requires a DC application to contain the proposed inspections, tests, analyses, and acceptance criteria (ITAAC) that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met then the electrical isolation requirements are met.. The staff finds that the applicant has not provided an ITAAC to verify that sufficient electrical isolation exists between the COMS equipment and the Class 1E power system to meet the requirements of 10 CFR 52.47 (b)(1). As such, the staff requests the applicant to provide an ITAAC to verify that electrical isolation requirements are met.

Response to Question 09.05.02-14:

U.S. EPR FSAR Tier 1, Section 2.5.2 and Table 2.5.2-3—Class IE Uninterruptible Power Supply address electrical isolation between the communication system (COMS) equipment and Class IE power system. Item 5.2 in U.S. EPR FSAR Tier 1, Section 2.5.2 states:

> "Non-safety-related loads connected to the EUPS are electrically isolated from the EUPS by an isolation device."

The performance of ITAAC will confirm this commitment.

FSAR Impact:

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

Question 09.05.02-15:

Incorporate the response to RAI 36, Question 09.05.02-7 into the U.S. EPR FSAR, or its referenced documents, to address the requirements of Part IV E(9) of 10 CFR Part 50, Appendix E, Emergency Planning and Preparedness for Production and Utilization Facilities.

Part IV E(9) of 10 CFR Part 50, Appendix E requires that emergency facilities and equipment include at least onsite and one offsite communication system with each system having a backup power source. The staff requested the applicant to describe the two types of communications subsystem that are available for offsite communication and describe the methodology for testing the communications equipment in RAI 36, Question 09.05.02-7 to offsite agencies. Provided a description of the onsite and offsite facilities and the communications links used by these facilities. In addition, the applicant stated that it is the combined license applicant's responsibility to propose ITAAC for emergency planning of the facility, which includes testing of onsite and offsite communications equipment. The staff finds the response adequate. However, the staff requests the applicant to incorporate this response into the U.S. EPR FSAR, or its referenced documents.

Response to Question 09.05.02-15:

To facilitate two-way (incoming and outgoing) emergency communications from onsite to offsite facilities and agencies, a minimum of two independent communications links are provided. The onsite facilities provided with the emergency communications links are the main control room, remote shutdown station, Technical Support Center and Operations Support Center. The offsite facilities include the Emergency Operations Facility, NRC resident office, and federal, state and local government agencies as identified in the emergency response plan. COL Item 13.3-1 in U.S. EPR FSAR Tier 2, Table 1.8-2—U.S. EPR Combined License Information Items specifies that the COL applicant is responsible for providing a site-specific emergency plan:

> "A COL applicant that references the U.S. EPR design certification will provide a site-specific emergency plan in accordance with 10 CFR 50.47 and 10 CFR 50 Appendix E."

The two independent communications links are:

1. Dedicated "hotline" telephones that provide direct communications to the selected locations in an off-hook condition. The provisions for "hotline" telephones are incorporated into the design of the onsite digital telephone subsystem.
2. Provisions for two-way radio communications via the portable wireless communication subsystem for personnel with access to specific wireless radios onsite and for the offsite personnel as required by the COL applicant.

Specific details about the type of "hotline" telephone connectivity (cable or voice over IP), the number of parties to be connected, the radio frequency (UHF, VHF or microwave), normal and backup power supplies, plant security system interface, etc., for the offsite communication system is provided by the COL applicant as indicated in COL Item 9.5-21 in U.S. EPR FSAR Tier 2, Table 1.8-2—U.S. EPR Combined License Information Items.

Testing of the offsite communications system is addressed by COL Items 13.3-1 and 14.3-1 in U.S. EPR FSAR Tier 2, Table 1.8-2—U.S. EPR Combined License Information Items.

U.S. EPR FSAR Tier 2, Section 9.5.2.2.5 was revised in U.S. EPR FSAR, Rev. 2 to include this information.

FSAR Impact:

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

Question 09.05.02-16:

Incorporate the response to RAI 36, Question 09.05.02-1 into the U.S. EPR FSAR, or its referenced documents, to address the requirements of IEEE Std. 603-1991, Clause 5.6.

10 CFR 50.55a(h) incorporates by reference IEEE Std. 603-1991, Clause 5.6.3 requires that independence exists between safety and non-safety systems. The staff requested the applicant to demonstrate how the isolation device placed between the non-Class 1E COMS system and the Class 1E power supply meets IEEE Std. 603-1991, Clause 5.6.3 independence requirements. In response, the applicant provided a description of the isolation device used between the non-Class 1E COMS system and the Class 1E power supply. The staff finds this response adequate. However, the staff requests the applicant to incorporate this response into the U.S. EPR FSAR, or its referenced documents.

Response to Question 09.05.02-16:

In a letter dated March 31, 2009, AREVA NP formally requested the use of IEEE Std. 603-1998 as an alternative to the requirement in 10 CFR 50.55a(h) to use IEEE Std. 603-1991. The technical basis for this proposed alternative was provided in Section 14.1 of Topical Report ANP-10281P, "U.S. EPR Digital Protection System Topical Report." AREVA NP preformed a technical comparison of IEEE Std. 603-1991 to IEEE Std. 603-1998. This comparison is presented in Appendix B of ANP-10281P and demonstrates that the requirements contained in IEEE Std. 603-1998 meet or exceed the requirements contained in the 1991 version.

The non-Class 1E communication system (COMS) subsystems that are powered from Class 1E power sources are isolated by a single Class 1E circuit breaker or fuse.

The adequacy of this isolation device as required by IEEE Std 603-1998 Clause 5.6.3, independence between safety-related systems and other systems is demonstrated as follows:

Clause 5.6.3.1 is met by the following:

- The isolation device is classified as part of the safety-related system (Class 1E power system). The isolation device will be qualified to Class 1E standards.
- The circuit breaker or fuse used for this isolation is applied so that the maximum credible voltage or current transient applied to the non-Class 1E side of the circuit breaker or fuse does not degrade below an acceptable level the operation of the circuit on the other side of that circuit breaker or fuse, in accordance with IEEE Std 384-1992.

Clause 5.6.3.2 is met by the following:

- Following the isolation device, the COMS power circuit is treated as an "associated circuit" and routed with the division from which it originated, or it remains separated from the Class 1E circuit. The separation of Class 1E equipment shall be in accordance with IEEE Std 384-1992.

Clause 5.6.3.3 is met by the following:

- Isolation of the communication systems from Class 1E power systems prevents degrading the Class 1E power source below an acceptable level.

U.S. EPR FSAR Tier 2, Section 9.5.2.1 was revised in U.S. EPR FSAR, Rev. 2 to include this information.

U.S. EPR FSAR Tier 2, Section 9.5.2.5 was revised in U.S. EPR FSAR, Rev. 2 to include the following reference:

> "IEEE Std 603-1998, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, Inc., 1998."

FSAR Impact:

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

Question 09.05.02-17:

Demonstrate that addressing of the guidance of NRC Bulletin 80-15 within the U.S. EPR communications system design in order to meet the requirements of 10 CFR Part 50, Appendix E, Part IV.E(9).

10 CFR Part 50, Appendix E, Part IV.E (9) requires at least one onsite and one offsite communications system; each system shall have a backup power source. NRC Bulletin 80-15 provides guidance for the licensees to address Emergency Notification System (ENS) backup power requirements in case of loss-of-offsite power. The staff requested additional information to identify the backup power source in case of loss-of-offsite power to address NRC Bulletin 80-15, as documented RAI 36, Question 09.05.02-8. In response, the applicant stated that the power source for the emergency offsite communication system, including backup power, will be addressed by the COL Applicant as specified in the COL Item 9.5-21. The staff reviewed COL Item 9.5-21, but it does not specify requirements for the COL applicant to address power sources for emergency offsite communication system, and thus the applicant still needs to address NRC Bulletin 80-15. Identify the specific portions within COL Item 9.5-21 that address NRC Bulletin 80-15 (i.e., backup power source for the emergency offsite communication system).

Response to Question 09.05.02-17:

COL Item 9.5-21 in U.S. EPR FSAR Tier 2, Table 1.8-2—U.S. EPR Combined License Information Items was revised in U.S. EPR FSAR, Rev. 2 to state:

> "A COL applicant that references the U.S. EPR design certification will provide a description of the offsite communication system that interfaces with the onsite communication system, including type of connectivity, radio frequency, normal and backup power supplies and plant security system interface."

U.S. EPR FSAR Tier 2, Section 9.5.2.1.1 was revised in U.S. EPR FSAR, Rev. 2 to include this information.

FSAR Impact:

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

Question 09.05.02-18:

Incorporate the response to RAI 36, Question 09.05.02-4 into the U.S. EPR FSAR, or its referenced documents, to meet the requirements of 10 CFR 50.47(b)(8). 10 CFR 50.47(b)(8) requires that equipment and facilities exist to support emergency response.

The staff requested the applicant to provide a description of the type sirens and tones used within the PA and alarm system in RAI 36, Question 09.05.02-4. In response, the applicant provided a description of the warning tunes provided by the PA system. The staff finds this response acceptable in meeting the requirements of 10 CFR 50.47(b)(8). However, the staff requests the applicant to incorporate this response into the U.S. EPR FSAR.

Response to Question 09.05.02-18:

A tone generator produces five warning tones: (1) pulse, (2) siren, (3) yelp, (4) warble and (5) steady. Tones are activated by a number of external sources, including fire equipment, or by manually closing user-supplied contact switches. Higher priority tones can be programmed to override those of lower priority. This unit is user-programmable and is programmed by the COL applicant.

Emergency notification alarms can be broadcast manually or automatically. Each alarm is fully configurable.

U.S. EPR FSAR Tier 2, Section 9.5.2.2.3 was revised in U.S. EPR FSAR, Rev. 2 to include this information.

FSAR Impact:

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

Question 09.05.02-19:

Incorporate the response to RAI 36, Question 09.05.02-2 into the U.S. EPR FSAR to address the requirements of 10 CFR 50.55(a)(1) and 10 CFR Part 50, Appendix A, GDC 1.

10 CFR 50.55(a)(1) requires that structures, systems, and components (SSCs) to be designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with the importance of the safety function to be performed. In addition, 10 CFR Part 50 Appendix A, GDC 1 requires SSCs important to safety to be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. The staff requested additional information to evaluate the design basis of the communications subsystems to meet 10 CFR 50.55(a)(1) in RAI 36, Question 09.05.02-2. In "Response to Request for Additional Information No. 36, Supplement 1," the applicant provided a list of codes and standards applicable to the COMS design. The staff requests the applicant to incorporate this response into the U.S. EPR FSAR.

Response to Question 09.05.02-19:

U.S. EPR FSAR Tier 2, Section 9.5.2.1.4 was revised in U.S. EPR FSAR, Rev. 2 to include the following information regarding the design basis of the communication system (COMS).

The following codes and standards as applicable are utilized for the COMS design:

- IEEE Std 269-2002, "IEEE Standard Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, Handsets, and Headsets."
- IEEE Std 487-2000, "IEEE Recommended Practice for the Protection of Wire-Line Communication Facilities Serving Electric Supply Locations."
- IEEE Std 692-1997, "IEEE Standard Criteria for Security Systems for Nuclear Power Generating Stations."
- IEEE Std 1613-2003, "IEEE Standard Environmental and Testing Requirements for Communications Networking Devices in Electric Power Substations."
- NFPA 70-2005, "National Electrical Code (NEC)."
- NFPA 72-2007, "National Fire Alarm Code."
- 29 CFR Part 1910.165 Occupational Safety and Health Standards, "Employee Alarm Systems."
- EPRI TR-102323-R3, "Guidelines for Electromagnetic Interference Testing of Power Plant Equipment."
- MIL-STD-810F, "Environmental Engineering Considerations and Laboratory Tests."
- IEEE/ANSI C63.12-1999, "American National Standard Recommended Practice for Electronic Compatibility Limits."
- ANSI/TIA-603-C-2004, "Land Mobile FM or PM - Communications Equipment - Measurement and Performance Standards."
- IEC 60529-2004, "Degrees of Protection Provided by Enclosures (IP Code)."

FSAR Impact:

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

Question 09.05.02-20:

Incorporate the response to RAI 36, Question 09.05.02-3 into the U.S. EPR FSAR to address the requirements of 10 CFR 52.47(a)(9).

10 CFR 52.47(a)(9) requires, in part, that for applications for light-water cooled nuclear power plants, an evaluation of the standard plant design against the SRP revision in effect 6 months before the docket date of the application. NUREG-0800, SRP Section 9.5.2 states that while non-safety systems are not part of this regulatory guide, control of EMI/RFI from these systems is necessary to ensure that safety-related I&C systems can continue to perform properly in the nuclear power plant environment. When feasible, the emissions from non-safety-related systems should be held to the same levels as those from safety-related systems. The staff requested additional information to evaluate the EMI/RFI effects on the COMS system to address the guidance of NUREG-0800, SRP Section 9.5.2. In response, the applicant states that the COMS equipment will be factory tested to verify compliance with the emission limits specified in EPRI TR-102323-R3 for EMI/RFI Regulatory Guide 1.180, "Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems," states that the staff found EPRI TR-102323 acceptable to address EMI/RFI for safety related digital I&C systems in nuclear power plants. The staff requests the applicant to incorporate the commitment that the COMS equipment will be factory tested to verify compliance with the emission limits specified in EPRI TR-102323-R3 for EMI/RFI interference into the U.S. EPR FSAR.

Response to Question 09.05.02-20:

The guidelines provided in EPRI TR-102323-R3 for nuclear power plant emission limits and the recommended equipment susceptibility levels are used in the communication system (COMS) equipment design specifications for electromagnetic interference and radio frequency interference. The related test requirements included in the standards in the EPRI Report are specified for the COMS equipment factory testing. Also, the COMS equipment arrangement and layout design is based on the practices recommended in the EPRI guidelines for minimizing susceptibility to EMI and RFI.

U.S. EPR FSAR Tier 2, Section 9.5.2.1.4 was revised in U.S. EPR FSAR, Rev. 2 to include this information.

FSAR Impact:

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