ArevaEPRDCPEm Resource

From: BRYAN Martin (EXT) [Martin.Bryan.ext@areva.com]
Sent: Thursday, March 18, 2010 4:36 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. 298, FSAR Ch. 9, Supplement 2
Attachments: RAI 298 Supplement 2 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the seven questions in RAI No. 298 on November 20, 2009. Supplement 1 response to RAI No. 298 was sent on February 4, 2010 to address four of the seven questions.

The attached file, "RAI 298 Supplement 2 Response US EPR DC.pdf" provides a technically correct and complete response to one of the remaining three questions.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which supports the response to RAI 298 Question 09.05.01-72.

The following table indicates the respective pages in the response document, "RAI 298 Supplement 2 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 298 — 09.05.01-72	2	3

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

Question #	Response Date
RAI 298 — 09.01.02-28	April 23, 2010
RAI 298 — 09.03.02-17	May 14, 2010

Sincerely,

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

From: DUNCAN Leslie E (AREVA NP INC)
Sent: Thursday, February 04, 2010 4:12 PM
To: 'Tesfaye, Getachew'
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); KOWALSKI David J (AREVA NP INC);

ROMINE Judy (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 298, FSAR Ch. 9, Supplement 1

Getachew,

AREVA NP Inc. provided a schedule on November 20, 2009 for responding to RAI No. 298. The attached file, "RAI 298 Supplement 1 Response US EPR DC.pdf" provides technically correct and complete responses to 4 of the 7 questions. The schedule for the remaining three questions has been revised.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which supports the response to RAI 298 Questions 09.01.02-30, 09.01.02-31, and 09.01.02-32.

The following table indicates the respective pages in the response document, "RAI 298 Supplement 1 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 298 — 09.01.02-29	2	2
RAI 298 — 09.01.02-30	3	3
RAI 298 — 09.01.02-31	4	4
RAI 298 — 09.01.02-32	5	5

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

Question #	Response Date
RAI 298 — 09.01.02-28	March 18, 2010
RAI 298 — 09.03.02-17	March 18, 2010
RAI 298 — 09.05.01-72	March 18, 2010

Sincerely,

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

From: Pederson Ronda M (AREVA NP INC)
Sent: Friday, November 20, 2009 4:55 PM
To: 'Tesfaye, Getachew'
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); KOWALSKI David J (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 298, FSAR Ch. 9

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 298 Response US EPR DC.pdf" provides a response date for each of the seven questions since technically correct and complete responses cannot be provided at this time.

The following table indicates the respective page in the response document, "RAI 298 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 298 — 09.01.02-28	2	2
RAI 298 — 09.01.02-29	3	3
RAI 298 — 09.01.02-30	4	4
RAI 298 — 09.01.02-31	5	5
RAI 298 — 09.01.02-32	6	6
RAI 298 — 09.03.02-17	7	7
RAI 298 — 09.05.01-72	8	8

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

Question #	Response Date
RAI 298 — 09.01.02-28	February 4, 2010
RAI 298 — 09.01.02-29	February 4, 2010
RAI 298 — 09.01.02-30	February 4, 2010
RAI 298 — 09.01.02-31	February 4, 2010
RAI 298 — 09.01.02-32	February 4, 2010
RAI 298 — 09.03.02-17	February 4, 2010
RAI 298 — 09.05.01-72	February 4, 2010

Sincerely,

Ronda Pederson
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Licensing Manager, U.S. EPR Design Certification
AREVA NP Inc.
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From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Wednesday, October 21, 2009 2:53 PM
To: ZZ-DL-A-USEPR-DL
Cc: Hernandez, Raul; Segala, John; Bernal, Sara; Frye, Timothy; McCann, Edward; Hearn, Peter; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 298(3736,3708,3753), FSAR Ch. 9

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on September 22, 2009, and discussed with your staff on October 8 and 21, 2009. Draft RAI Question 09.01.02-30 was modified as a result of those discussions. 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: 1246

Mail Envelope Properties (BC417D9255991046A37DD56CF597DB710597FB14)

Subject: Response to U.S. EPR Design Certification Application RAI No. 298, FSAR Ch. 9, Supplement 2
Sent Date: 3/18/2010 4:35:49 PM
Received Date: 3/18/2010 4:36:00 PM
From: BRYAN Martin (EXT)

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MESSAGE	6084	3/18/2010 4:36:00 PM
RAI 298 Supplement 2 Response US EPR DC.pdf	133806	

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

Response to

Request for Additional Information No. 298, Supplement 2

10/21/2009

U.S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 09.01.02 - New and Spent Fuel Storage
SRP Section: 09.03.02 - Process and Post-Accident Sampling Systems
SRP Section: 09.05.01 - Fire Protection Program

Application Section: FSAR Chapter 9

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)
QUESTIONS for Health Physics Branch (CHPB)
QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

Question 09.05.01-72:

Follow-up to RAI Question 09.05.01-67

RG 1.189, regulatory position 4.1.7(b) guidance states that “A portable radio communications system should be provided for use by the fire brigade and other operations personnel required to achieve safe plant shutdown” and also states that "Preoperational and periodic testing should demonstrate that the frequencies used for portable radio communication will not affect the actuation of protective relays." AREVA’s response to RAI 169 Question 09.05.01-67 took exception to RG 1.189 guidance by restricting radio use in sensitive locations to prevent spurious equipment operation. The staff has noticed that other new type reactor designs do not have radio restrictions due to EMI/RFI effects and intent to follow RG 1.189 guidance. AREVA needs to follow RG 1.189 guidance to ensure radio communication is provided in all vital areas and to ensure that the radio frequencies used do not adversely affect digital equipment or provide additional details justifying not shielding digital equipment, designed, installed, and tested such that there are no adverse digital equipment EMI/RFI radio effects. Additionally, AREVA must ensure if radios are not going to be used in restricted areas that the backup communication system used is free of fire effects for any fire area that requires communication in restricted areas.

AREVA’s response to RAI 169 Question 09.05.01-67 stated that “In the context of RG 1.189, Section 4.1.7, Communications,” Rev. 1, the portable wireless system is considered the emergency system for fire fighting and operational post-fire safe shutdown activities. A dedicated fixed emergency communication system is not provided. The radios of the portable wireless system are provided with the capability to interface with both the public address and digital telephone systems which are fixed systems.” RG 1.189 Regulatory Position 4.1.7 considers the portable radio system to be separate from fixed emergency communications. RG 1.189 Regulatory Position 4.1.7 does not require a dedicated to fire protection fixed emergency communication system rather that the fixed emergency communications only needs to be independent of the normal plant communication system. Independent means a communication system that is a separate unrelated system from the normal communication system for which electrical separation does not need to be in accordance with RG 1.189 Regulatory Position 5.3. Using two independent fixed communication systems is one way to satisfy the intent of RG 1.189 Regulatory Position 4.1.7.a. AREVA needs to clarify the compliance of the FSAR with RG 1.189 Regulatory Position 4.1.7.a given the above clarification.

Response to Question 09.05.01-72:

As noted in the Response to RAI 20, Question 09.05.01-14, the portable wireless communication system is the preferred communication method for fire fighting and operational post-fire safe shutdown activities. The portable wireless communication system is designed to provide seamless coverage throughout the plant so that a fire in any one fire area does not disrupt coverage in other vital areas. Also, as stated in the Response to RAI 169, Question 09.05.01-67, radio usage can be restricted in some locations of the plant due to potential interference issues. A minimum transmitter exclusion distance is maintained based on transceiver emissions and the recommended equipment susceptibility testing levels, as required by RG 1.180. State-of-the-art low power portable radios, which have comparatively much less EMI/RFI effects on digital equipment, are used to limit or eliminate as practicable, the need for imposing exclusion zones. It is not anticipated, with the use of low power portable radios, that the exclusion zones will be wide enough to compromise effective communications within any

vital area. The intent of RG 1.189, Regulatory Position 4.1.7(b) guidance will be met in all vital areas. In the event that specific exclusion zones are identified, an alternative means of communications via one of the fixed communication systems is provided. The type and location of the required communication system devices for use in the exclusion zones is determined on an as-needed basis so that these are free of fire effects for any fire area that requires communication.

As a defense-in-depth measure commensurate with RG 1.189, Regulatory Position 4.1.7(a), the public address (PA) communication system is designated as the fixed emergency communication system for the U.S. EPR. As stated in U.S. EPR FSAR Tier 2, Section 9.5.2.1, the fixed PA communication system, installed at pre-selected locations, is independent of the plant normal fixed digital communication system. Independent means the PA communication system is a separate system from the digital communication system and electrical separation between the two systems need not be in accordance with RG 1.189 Regulatory Position 5.3. Although an interface provision is included between the fixed PA communication system and the normal fixed digital communication system, a failure of one system does not affect the capability to communicate via the other system. Thus, the PA communication system satisfies the intent of RG 1.189, Regulatory Position 4.1.7(a) guidance.

U.S. EPR FSAR Tier 2, Sections 9.5.1.2.1 and 9.5.2.2.1 will be revised to reflect this additional information and clarification.

FSAR Impact:

U.S. EPR FSAR Tier 2, Sections 9.5.1.2.1 and 9.5.2.2.1 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

Shutdown/Low Power Operations

Per RG 1.189, Revision 1, Section 5.6, shutdown operations are defined as refueling or maintenance outages. The U.S. EPR design provides reasonable assurance that fuel integrity is protected by permanent plant systems during refueling operations or maintenance outages. The primary fuel cooling systems are spent fuel cooling and the residual heat removal system. One or both systems are used depending on the location of fuel.

For the U.S. EPR, low power operations is considered to be startup. For the purposes of analysis, startup operation is considered the same as power operation. Therefore, the analysis for postfire shutdown is the same for both modes of operation.

Communications

09.05.01-72

For the purposes of fire fighting and operational post-fire safe shutdown activities, the U.S. EPR plant relies on the portable wireless communication system described in ~~Section 9.5.2.~~Section 9.5.2.2.1 The system is multi-channeled and is capable of interfacing with the public address and digital telephone systems. Use of the portable wireless communication system does not interfere with the communications capabilities of the plant security force. Fixed components of the portable wireless communication system are protected as necessary from fire damage to provide ~~seamless~~ effective communication capability in all vital plant areas. ~~with the exception of radio sensitive locations. The capability of the fire brigade or operations personnel to communicate using the portable wireless communication system from within radio sensitive locations is not desired to preclude potential spurious operation of equipment.~~Section 9.5.2.2.1 addresses capabilities of the portable wireless communication system and potential EMI/RFI effects.

RG 1.189, Regulatory Position 4.1.7 considers the portable radio communication system to be separate from the fixed emergency communication systems. The public address communication system fulfills the requirement for a fixed emergency communication system per Regulatory Position 4.1.7.a. This regulatory position does not require a fixed emergency communication system to be dedicated to fire protection. The fixed emergency communication system only needs to be independent of the normal plant communication system. Sections 9.5.2.1 and 9.5.2.2 address the public address communication system design and capabilities. The public address communication system is installed at pre-selected locations and is independent of the normal fixed digital communication system. As independent, separate, and not dedicated to fire protection, the public address communication system does not need to meet the electrical separation requirements in RG 1.189, Regulatory Position 5.3, with regard to other communication systems.

Emergency Lighting

Section 9.5.3 contains design information for the U.S. EPR lighting system.

9.5.2.1.7 10 CFR 73.55(e), Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage – Detection Aids, 10 CFR 73.55(f), Communications Subsystems, and 10 CFR 73.46(f), Fixed site Physical Protection Systems, Subsystems, Components and Procedures – Communications Subsystems

The portable wireless communication system and the digital telephone system enable guards, watchmen, or armed response individuals on duty to maintain continuous communication with individuals in continuously manned alarm stations and with law enforcement authorities, as required by 10 CFR 73.55 (e) and (f) and 10 CFR 73.46 (f). Design features required for security, including alarms and communications required by 10 CFR 73.55, are listed in Section 13.6. A physical security plan, as addressed in Section 13.6, is provided by the COL applicant per 10 CFR 52.79(a)(35) that satisfies the requirements of 10 CFR Part 73. Non-portable communications equipment required by these regulations is powered from independent power sources so that it remains operable in the event of a loss of normal power.

9.5.2.2 System Description

9.5.2.2.1 Portable Wireless Communication System

The portable wireless communication system is designed to provide a standalone method of plant-wide communication between designated personnel equipped with, or having access to, wireless two way radios. This system, illustrated in Figure 9.5.2-1—Portable Wireless Communication Systems, is provided for use by fire brigade and other operations personnel required to achieve safe plant shutdown. The radio equipment enables interface to the PA system, as well as to the digital telephone system. The portable radios can dial the digital telephone terminal extensions directly, access a paging channel, or dial to external telephone numbers via an interconnection to the public switched telephone network (PSTN).

09.05.01-72

The portable wireless communication system is comprised of transmitters, receivers, antennas, amplifiers, and radio base station equipment. Antennas and amplifiers are distributed throughout the plant to enable ~~seamless~~effective radio coverage. Radio coverage is provided throughout the plant, although radio usage in certain instrumentation and control (I&C) areas ~~are~~is restricted due to potential EMI/RFI considerations. These restricted areas are minimized based on transceiver emissions and recommended equipment susceptibility testing levels as required by Regulatory Guide 1.180, Guidelines for Evaluation of Electromagnetic and Radio Frequency Interference in Safety Related Instrumentation and Control Systems. Additionally, low powered portable radios will be used to limit, as practicable, the need for imposing restricted areas for portable radios. The~~se~~ restricted areas will have posted warning signs. The COMS system is designed, installed, and tested so that I&C system circuits are not adversely impacted by EMI/RFI from transmitting sources.