ArevaEPRDCPEm Resource

From: WELLS Russell D (AREVA NP INC) [Russell.Wells@areva.com]
Sent: Monday, February 23, 2009 4:51 PM
To: Getachew Tesfaye
Cc: Pederson Ronda M (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); SLIVA Dana (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 169, FSAR Ch 9
Attachments: RAI 169 Response US EPR DC.pdf

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 169 Response US EPR DC.pdf" provides technically correct and complete responses to 2 of the 3 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 169 Questions 09.02.05-2 and 09.05.01-67.

The following table indicates the respective pages in the response document, "RAI 169 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 169 — 09.02.05-2	2	2
RAI 169 — 09.05.01-66	3	3
RAI 169 — 09.05.01-67	4	6

A complete answer is not provided for 1 of the 3 questions. The schedule for a technically correct and complete response to this question is provided below.

Question #	Response Date
RAI 169 — 09.05.01-66	April 15, 2009

Sincerely,

(Russ Wells on behalf of)
Ronda Pederson
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Licensing Manager, U.S. EPR Design Certification
New Plants Deployment
AREVA NP, Inc.
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From: Getachew Tesfaye [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Thursday, January 22, 2009 9:01 AM
To: ZZ-DL-A-USEPR-DL
Cc: Edward McCann; Robert Radlinski; Larry Wheeler; Peter Wilson; Peter Hearn; Joseph Colaccino; Meena Khanna; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 169 (1822, 1901),FSAR Ch. 9

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on January 6, 2009, and discussed with your staff on January 15, 2009. No changes were made to the Draft RAI Questions as a result of that discussion. 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: 247

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Subject: Response to U.S. EPR Design Certification Application RAI No. 169, FSAR Ch 9
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From: WELLS Russell D (AREVA NP INC)

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Files	**Size**	**Date & Time**
MESSAGE	2550	2/23/2009 4:51:39 PM
RAI 169 Response US EPR DC.pdf	120257	

Options
Priority: Standard
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Reply Requested: No
Sensitivity: Normal
Expiration Date:
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Response to

Request for Additional Information No. 169 (1822, 1901), Revision 0

01/22/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 09.02.05 - Ultimate Heat Sink
SRP Section: 09.05.01 - Fire Protection Program

Application Section: FSAR Ch. 9

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)
QUESTIONS for Fire Protection Team (SFPT)

Question 09.02.05-2:

The Final Safety Analysis Report needs to be revised to include a conceptual design for the Raw Water Supply System (RWSS) in accordance with 10 CFR 52.47(a)(24). The conceptual design should be described in sufficient detail to establish interface requirements that must be satisfied by combined license applicants.

Response to Question 09.02.05-2:

The RWSS provides the initial source of water to the plant demineralized water, potable water and sanitary water, ultimate heat sink makeup, and fire protection systems. A description of the RWSS is provided in U.S. EPR FSAR Tier 2, Section 9.2.9. The RWSS does not supply the essential service water system. This FSAR section will be revised to reflect this correction.

The RWSS and its design requirements are site-specific and will be addressed by the COL applicant that references the U.S. EPR standard design certification. U.S. EPR FSAR Tier 2, Table 1.8-2—U.S. EPR Combined License Information Items, Item No. 9.2-3 states:

> "The raw water supply system (RWSS) and the design requirements of the RWSS are site-specific and will be addressed by the COL applicant."

FSAR Impact:

U.S. EPR FSAR Tier 2, Section 9.2.9 will be revised as described in the response and indicated on the enclosed markup.

Question 09.05.01-66:

The response to RAI No. 25 for Question 09.05.01-53 provided justification for using the fire protection system diesel fire pumps, water storage tanks, distribution piping, and associated equipment as the water supply for the standpipes and hose systems for manual fire suppression capability in all plant areas containing systems and components required for safe plant shutdown in the event of an SSE. This response stated that the U.S. EPR FPS is not Seismic Category I because it does not meet any of the criteria stated in RG 1.29, Regulatory Position 1. This response then states that "Pumps, water storage tanks, and distribution piping in the U.S. EPR FPS that provide fire protection capacity to areas of the U.S. EPR containing Seismic Category I equipment required for safe plant shutdown are classified as Seismic Category II because they meet the criteria in RG 1.29, Regulatory Position 2."

The above equipment is designated as Seismic Category II as per RG 1.29 but the system must remain functional and not just maintain structural integrity following an SSE. The above equipment could also be designed to meet the intent of RG 1.29 Seismic Category I and, therefore, be seismically qualified. This response states that the applicable FPS piping, piping supports, and valves are designed in accordance with ASME B31.1 and function following a SSE which is in accordance with RG 1.189 Regulatory Position 3.2.1 and Section B's Conditions of Fire Occurrence. Fire water storage tanks, diesel fire pumps, and associated equipment other than piping, piping supports, and valves are not within the scope of ASME B31.1.

Designate the fire water storage tanks, diesel fire pumps, and associated equipment other than piping, piping supports, and valves that are within the scope of ASME B31.1 as Seismic Category I or provide the method to seismically qualify the equipment. Ensure method considers any internal vibrational effects that could render the equipment non-functional and explain how it is different from full seismic qualification.

Response to Question 09.05.01-66:

A response to this question will be provided by April 15, 2009.

Question 09.05.01-67:

Reg Guide 1.189, Rev. 1, "Fire Protection for Nuclear Power Plants" section 4.1.7 describes the performance requirements for fire brigade communications. Communication support is required for fire brigade members and plant operators performing safe shutdown tasks. Such communication is intended to connect fire brigade members and those safe shutdown operators with each other as well as connect the fire brigade members and those safe shutdown operators with the main control room. The fire brigade needs to use portable radio communications so their fire fighting capabilities are not adversely affected by any communication delays. Update the FSAR as follows to be in accordance with the guidance given in RG 1.189:

1) Indicate which of the communication systems described in Section 9.5.2.2 is the primary or normal communication system; which are the backup communication systems; and which is the fixed emergency communication system.

2) The response to RAI NO. 20 Question 09.05.01-14 stated that "The repeaters for the portable wireless communication system do not require dedicated fire protection. Due to the diversity of the plant communication systems, at least one method of communication is available in the event of a fire." This statement does satisfy the intent of having (See Item 4 below) independent communication systems. However, as stated above the fire brigade needs to use portable radio communications so their fire fighting capabilities are not adversely affected by any communication delays. State that the portable wireless communication system is provided with protection from fire exposure for the repeaters/antennas and related cables such that continuous and total radio coverage is maintained for all vital areas even during any one fire event. As an acceptable alternative to protecting repeaters/antennas, the applicant may choose to provide additional repeaters throughout the plant vital areas to ensure the loss of any repeater(s)/antenna(s) in any one fire area will not result in degradation to the continuous and total coverage required to all vital areas. A partial loss of the portable communication system is not acceptable inside or outside the area on fire. The applicant must clearly state they meet these requirements.

3) State that the portable wireless communication system does not interfere with security communications.

4) State that the fixed emergency communication system is independent of the normal communication system and located at pre-selected stations.

5) Section 9.5.2.2.1 states that the base station equipment for the portable wireless communication is physically separated from the other subsystems equipment such as digital telephone, PA and alarm system to increase protection against a single accident or fire. Describe this physical separation and state if it meets the criteria given in RG 1.189 Regulatory Position 5.3 or provide justification for not meeting these criteria.

Response to Question 09.05.01-67:

1. The Response to RAI 20, Question 09.05.01-14 states "For the purposes of fire fighting and operational post-fire safe shutdown activities, primary reliance is placed upon the portable wireless communication system." U.S. EPR FSAR Tier 2, Section 9.5.1.2.1 will be revised to indicate that the portable wireless communication system is the preferred communication method for these functions.

Although not credited for the purposes of fire fighting and operational post-fire safe shutdown activities, other communication systems may be considered backup systems. U.S. EPR FSAR Tier 2, Section 9.5.2.2.1 states that the portable wireless communication system is designed with the capability to interface with the public address page system as well as the digital telephone system. The Response to Question 09.05.01-67, Part 4 provides information related to fixed emergency communications.

2. U.S. EPR FSAR Tier 2, Section 9.5.2.2.1 specifies that antennas and amplifiers in the portable wireless communication system are distributed throughout the plant to enable seamless radio coverage. This statement establishes a design requirement for vital plant areas that complies with RG 1.189, Section 4.1.7, "Communications," Rev. 1, with the following exception:

   > Radio use is restricted in some locations of the plant due to potential interference issues. Therefore, the capability to communicate via the portable wireless system from within the location under consideration is not desired as radio use may induce spurious operation of equipment.

   Fire fighting strategies developed as part of the operational fire protection program per RG 1.189, Section 3.5.1.3, "Procedures and Preplans," Rev.1, will address fire brigade communications for radio restricted locations. This activity will be addressed by the COL applicant that references the U.S. EPR standard design certification. U.S. EPR FSAR Tier 2, Table 1.8-2—U.S. EPR Combined License Information Items, Item No. 13.4-1 states:

   > "A COL applicant that references the U.S. EPR design certification will provide site-specific information for operational programs and schedule for implementation."

   U.S. EPR FSAR Tier 2, Section 9.5.1.2.1 will be revised to clearly specify the level of compliance with RG 1.189, Section 4.1.7, "Communications," Rev. 1.

3. U.S. EPR FSAR Tier 2, Section 9.5.1.2.1 will be revised to specify that the portable wireless communication system will not interfere with security communications.

4. 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.

5. The Response to Question 09.05.01-67, Part 2, specifies that the portable wireless communication system provides seamless communication capability in all vital plant areas with the noted exception. This statement establishes a requirement that a fire in any one fire area will not disrupt the specified coverage. While some physical separation of the portable wireless communication system from other communication systems provides a conservative design, assuring availability of the portable wireless communication system in vital plant areas precludes the need to achieve separation per RG 1.189 Position 5.3 for the portable wireless communication system against other communications systems not credited to support fire brigade or post-fire operator activities.

FSAR Impact:

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

U.S. EPR Final Safety Analysis Report Markups

9.2.9 Raw Water Supply System

09.02.05-2

The raw water supply system (RWSS) provides the initial source of water supplied to the plant demineralized water, potable and sanitary water, ~~essential service water~~ultimate heat sink makeup, and fire protection systems. The RWSS and the design requirements of the RWSS are site-specific and will be addressed by the COL applicant.

Next File

09.05.01-67

Communications

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. 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 communication capability in 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.

Emergency Lighting

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

Portable hand-held, eight-hour rated lights are provided for use by the fire brigafe in accordance with RG 1.189, Rev. 1, Section 4.1.6.2b. The egress route from the MCR to the RSS is illuminated by independent fixed, self-contained eight-hour rated battery powered lighting units. Other post-fire safe shutdown activities performed by operators outside the MCR and RSS are supported by independent fixed, self-contained eight-hour rated battery lighting units at the task locations and in access and egress routes.

An alternative approach to fixed, self-contained eight-hour rated battery powered lighting units is taken for illuminating the MCR and RSS in support of post-fire safe shutdown. Both locations are illuminated by the special emergency lighting system. The special emergency lighting system receives power from redundant emergency diesel generator backed uninterruptible power supplies, thus providing continuous illumination. Adequate lighting is available in the MCR or RSS as necessary to facilitate post-fire safe shutdown of the plant.

Ventilation System Design Considerations

The design of the heating, ventilation and air conditioning (HVAC) systems are in accordance with SRP 9.5.1 (Reference 37) and RG 1.189. Safety-related HVAC systems are also designed in accordance with NFPA 90A (Reference 16). The HVAC design provides reasonable assurance that smoke, hot gases, or fire suppression agents (e.g., gaseous suppression agents) will not migrate into other fire areas and adversely affect safe shutdown capabilities, including operator actions.

The HVAC systems ventilate, exhaust, or isolate fire areas under fire conditions so that products of combustion do not spread to other fire areas. Ducts penetrating through