ArevaEPRDCPEm Resource

From: DUNCAN Leslie E (AREVA NP INC) [Leslie.Duncan@areva.com]
Sent: Friday, December 05, 2008 6:44 PM
To: Getachew Tesfaye
Cc: John Rycyna; Pederson Ronda M (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 87, Supplement 1, FSAR Ch 9
Attachments: RAI 87 Supplement 1 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. provided responses to 10 of the 19 questions of RAI No. 87 on November 10, 2008. The attached file, "RAI 87 Supplement 1 Response US EPR DC.pdf" provides technically correct and complete responses to one of the remaining 9 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 RAI 87 Question 09.01.03-4.

The following table indicates the respective pages in the response document, "RAI 87 Supplement 1 Response US EPR DC.pdf" that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 87 — 09.01.03-4	2	2

The schedule for technically correct and complete responses to the remaining 8 questions is unchanged and provided below:

Question #	Response Date
RAI 83 — 09.01.03-7	January 21, 2009
RAI 83 — 09.01.03-10	January 20, 2009
RAI 83 — 09.02.04-1	February 13, 2009
RAI 83 — 09.05.07-2	February 20, 2009
RAI 83 — 09.05.07-5	January 9, 2009
RAI 83 — 09.05.07-6	January 9, 2009
RAI 83 — 09.05.07-7	February 20, 2009
RAI 83 — 09.05.07-8	February 20, 2009

Sincerely,

(Les Duncan on behalf of)

Ronda Pederson
ronda.pederson@areva.com
Licensing Manager, U.S. EPR Design Certification
New Plants Deployment
AREVA NP, Inc.
An AREVA and Siemens company
3315 Old Forest Road
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From: Pederson Ronda M (AREVA NP INC)
Sent: Tuesday, November 11, 2008 2:55 PM
To: 'Getachew Tesfaye'
Cc: WELLS Russell D (AREVA NP INC); DELANO Karen V (AREVA NP INC); DUNCAN Leslie E (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 87, FSAR Ch 9 Correction

Getachew,

On November 10, 2008, AREVA NP transmitted a response to RAI 87 (see below e-mail). However, the table which provided the schedule for technically complete and correct responses to the remaining questions incorrectly stated the Question #'s as "RAI 83" rather than "RAI 87." Accordingly, a corrected table providing the correct Question #'s is provided below. AREVA NP's response document, "RAI 87 Response US EPR DC.pdf" remains unchanged.

A complete answer was not provided for 9 of the 19 questions. The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 87 — 09.01.03-4	December 5, 2008
RAI 87 — 09.01.03-7	January 21, 2009
RAI 87 — 09.01.03-10	January 20, 2009
RAI 87 — 09.02.04-1	February 13, 2009
RAI 87 — 09.05.07-2	February 20, 2009
RAI 87 — 09.05.07-5	January 9, 2009
RAI 87 — 09.05.07-6	January 9, 2009
RAI 87 — 09.05.07-7	February 20, 2009
RAI 87 — 09.05.07-8	February 20, 2009

Sincerely,

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From: WELLS Russell D (AREVA NP INC)
Sent: Monday, November 10, 2008 5:48 PM
To: 'Getachew Tesfaye'
Cc: 'John Rycyna'; Pederson Ronda M (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 87, FSAR Ch 9

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 87 Response US EPR DC.pdf" provides technically correct and complete responses to 10 of the 19 questions.

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 RAI 87 Questions 09.01.03-5, 09.01.03-6, 09.01.03-8, 09.05.07-6, 09.05.07-9 and 09.05.07-10.

The following table indicates the respective pages in the response document, "RAI 87 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 87 — 09.01.03-4	2	2
RAI 87 — 09.01.03-5	3	3
RAI 87 — 09.01.03-6	4	5
RAI 87 — 09.01.03-7	6	6
RAI 87 — 09.01.03-8	7	7
RAI 87 — 09.01.03-9	8	9
RAI 87 — 09.01.03-10	10	10
RAI 87 — 09.02.04-1	11	11
RAI 87 — 09.03.02-1	12	12
RAI 87 — 09.05.07-1	13	13
RAI 87 — 09.05.07-2	14	14
RAI 87 — 09.05.07-3	15	15
RAI 87 — 09.05.07-4	16	16
RAI 87 — 09.05.07-5	17	17
RAI 87 — 09.05.07-6	18	18
RAI 87 — 09.05.07-7	19	19
RAI 87 — 09.05.07-8	20	21
RAI 87 — 09.05.07-9	22	22
RAI 87 — 09.05.07-10	23	23

A complete answer is not provided for 9 of the 19 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 83 — 09.01.03-4	December 5, 2008
RAI 83 — 09.01.03-7	January 21, 2009
RAI 83 — 09.01.03-10	January 20, 2009
RAI 83 — 09.02.04-1	February 13, 2009
RAI 83 — 09.05.07-2	February 20, 2009
RAI 83 — 09.05.07-5	January 9, 2009
RAI 83 — 09.05.07-6	January 9, 2009
RAI 83 — 09.05.07-7	February 20, 2009
RAI 83 — 09.05.07-8	February 20, 2009

Sincerely,

(Russ Wells on behalf of)

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From: Getachew Tesfaye [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Thursday, October 09, 2008 3:56 PM
To: ZZ-DL-A-USEPR-DL
Cc: Raul Hernandez; Joshua Wilson; Anne-Marie Grady; Gerard Purciarello; John Segala; Steve Campbell; Christopher Jackson; Joseph Colaccino; John Rycyna
Subject: U.S. EPR Design Certification Application RAI No. 87(1149,1124,1238,992), FSAR Ch. 9

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on September 19, 2008, and on October 8, 2008, 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: 10

Mail Envelope Properties (F322AA625A7A7443A9C390B0567503A1858A43)

Subject: Response to U.S. EPR Design Certification Application RAI No. 87, Supplement 1, FSAR Ch 9
Sent Date: 12/5/2008 6:44:07 PM
Received Date: 12/5/2008 6:44:12 PM
From: DUNCAN Leslie E (AREVA NP INC)

Created By: Leslie.Duncan@areva.com

Recipients:
"John Rycyna" <John.Rycyna@nrc.gov>
Tracking Status: None
"Pederson Ronda M (AREVA NP INC)" <Ronda.Pederson@areva.com>
Tracking Status: None
"BENNETT Kathy A (OFR) (AREVA NP INC)" <Kathy.Bennett@areva.com>
Tracking Status: None
"DELANO Karen V (AREVA NP INC)" <Karen.Delano@areva.com>
Tracking Status: None
"Getachew Tesfaye" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: AUSLYNCMX01.adom.ad.corp

Files	**Size**	**Date & Time**
MESSAGE	7292	12/5/2008 6:44:12 PM
RAI 87 Supplement 1 Response US EPR DC.pdf	48445	

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

Response to

Request for Additional Information No. 87 Supplement 1 (1149,1124,1238,992), Revision 0

10/9/2008

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 09.01.03 - Spent Fuel Pool Cooling and Cleanup System
Application Section: FSAR 9.1.3
SRP Section: 09.02.04 - Potable and Sanitary Water Systems
SRP Section: 09.03.02 - Process and Post-Accident Sampling Systems
SRP Section: 09.05.07 - Emergency Diesel Engine Lubrication System
SBPA and SPCV Branches

Question 09.01.03-4:

Regulatory Guide 1.29, Positions C.1 and C.2 provide guidance for meeting the seismic design requirements of GDC 2. The applicant states that the fuel pool cooling and purification (FPCPS) design meets the requirements of Regulatory Guide 1.29, Positions C.1 (for the safety portion) and C.2 (for the non-safety portion). The applicant also states that the system is designed to meet the requirements of Regulatory Guide 1.13, Positions C.1, C.2, and C.3.

However, FSAR Tier 2 Figure 9.1.3-2 shows the seismic qualification of non-safety portions of the purification system within the fuel building to be non-seismic category (NSC) rather than Seismic Category II. In this case, it is not clear how the design meets Position C.2 of Regulatory Guide 1.29 since the NSC design provides no assurance of piping integrity in a seismic event.

The staff requests the applicant to include in the FSAR the justification for the protection of the safety related SSCs from the failure of the NSC components.

Response to Question 09.01.03-4:

The seismic design classification of the FPCPS components is provided in U.S. EPR FSAR Tier 2, Table 3.2.2-1 and is consistent with the guidance provided in SRP 3.2.1 (see the response to RAI Batch 71, Question 03.02.01-5, for further details of the methodology for classifying SSCs). Designation of a particular non-safety-related component as Seismic Category II (as stated in RG 1.29, Regulatory Position C.2) is dependent on the potential failure modes and consequences of that component, the proximity of Seismic Category I/safety-related components, and the vulnerability of those components to the consequences of the failure mode of the particular non-safety-related component in question. Failure of the non-safety-related non-seismic portions of the fuel pool purification system (FPPS) does not prevent or degrade the functioning of any safety-related Seismic Category I component of either the FPPS or the fuel pool cooling system (FPCS).

Non-seismic lines and associated equipment are routed, to the extent possible, outside of safety-related structures and areas to avoid potentially adverse interactions. In the event that this routing is not possible and non-seismic lines must be routed in safety-related areas, the non-seismic items are evaluated for seismic interactions (refer to U.S. EPR Tier 2, Section 3.7.3.8).

Clarification has been added to U.S. EPR FSAR Tier 2, Section 9.1.3.1 to reflect the guidance in RG 1.29 for non-safety-related portions of the system.

FSAR Impact:

U.S. EPR FSAR Tier 2, Section 9.1.3.1 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

9.1.3 Fuel Pool Cooling and Purification System

The Fuel Pool Cooling and Purification System (FPCPS) is designed to maintain the spent fuel pool (SFP) water temperature and water level within prescribed limits by removing decay heat generated by the stored spent fuel assemblies, and to remove impurities from the Fuel Building pool and Reactor Building pool to maintain water clarity and to limit the specific radioactivity in the water.

The FPCPS consists of the following separate and independent subsystems:

- Fuel pool cooling system (FPCS).
- Fuel pool purification system (FPPS).

9.1.3.1 Design Basis

The FPCPS provides the following safety related functions:

- Removes decay heat from the SFP.
- Provides containment isolation of the reactor pool purification supply and return lines and fuel transfer tube.
- Precludes, by design, the drain down of the fuel pool below the required level for shielding of the spent fuel and FPCS operation.
- Provides SFP makeup capability (i.e., Seismic Category I water source, pump, and piping) to compensate for normal SFP evaporation for up to seven days. In addition, provide an independent on-site Seismic Category I back-up water source for SFP makeup.
- Provides isolation capability of non-safety related FPPS piping from the Reactor Building Transfer Compartment and Reactor Cavity and Fuel Building Transfer Compartment and cask loading pit.

The design basis requirements and design criteria are as follows:

09.01.03-4

1. The FPCPS provides containment isolation for the Reactor Building pool purification supply and return lines and for the fuel transfer tube (GDC 56).
2. The design of the FPCPS meets the guidance of RG 1.13, positions C.1 and C.2. The FPC~~P~~S components are located inside the FB structure, which is designed to withstand the effects of natural phenomena, such as earthquake, tornados, and hurricanes (GDC 2). ~~The design of the FPCPS meets the guidance of RG 1.13, positions C.1 and C.2.~~
3. The safety-related portions of the FPCPS are protected from the dynamic effects associated with pipe whip, internal missiles, and discharged fluids, and

09.01.03-4

accommodate the expected environmental conditions such that the system is capable of performing its intended safety functions (GDC 4). In addition, the design of these FPCPS components conforms to RG 1.13, position C.3.

4. The seismic design of the FPCPS ~~system~~ components meets the guidance of RG 1.29 (position C.1 for safety-related portion and position C.2 for those non-safety-related portions of which failure could reduce the functioning of any safety-related or Seismic Category I system components to an unacceptable safety level). The FPCS cooling trains are safety-related and Seismic Category I~~)~~. The quality group classification and Seismic Category of system components meet the requirements of RG 1.26 and 1.29.

5. The FPCS provides adequate cooling to the spent fuel during all heat load conditions, including full-core offloads, by maintaining a maximum SFP temperature of 140°F. In addition, the system design conforms to RG 1.13, position C9.

6. The FPCS provides SFP make-up to maintain continued SFP water level to meet cooling and shielding requirements. In addition, the system design conforms to RG 1.13, position C.8.

7. The FPCS maintains required pool water levels and uniform water temperatures during operating and accident conditions, and conforms to RG 1.13, position C6.

8. The safety functions of the FPCS can be performed assuming a single active failure or failures of non-safety-related components or systems.

9. Monitoring provisions are provided to verify correct system operation, to detect and control system leakage, detect excessive radiation levels, and to isolate portions of the system in case of excessive leakage or component malfunction. Adequate instrumentation is provided for initiating appropriate safety actions (GDC 63). In addition, the system design conforms to RG 1.13, position C.7.

10. The FPCPS design includes the following elements with respect to handling radioactive materials (GDC 61):

    A. The capability for periodic testing of components important to safety.

    B. Provisions for containment.

    C. The capability to prevent the reduction in fuel storage coolant inventory under accident conditions.

    D. The capability and capacity to remove corrosion products, radioactive materials and impurities from the pool water and reduce occupational exposure to radiation.

11. In accordance with the requirements of 10 CFR 20.1101(b), engineering controls are provided to keep radiation doses associated with the FPCPS to as low as reasonably achievable (ALARA) levels. Refer to Section 12.1 for further ALARA