

ArevaEPRDCPEm Resource

From: Pederson Ronda M (AREVA NP INC) [Ronda.Pederson@areva.com]
Sent: Monday, July 13, 2009 3:40 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. 224, FSARCh. 10
Attachments: RAI 224 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 224 Response US EPR DC.pdf" provides a technically correct and complete response to the question.

The following table indicates the respective pages in the response document, "RAI 224 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

| Question # | Start Page | End Page |
|-------------------|------------|----------|
| RAI 224 — 10.03-2 | 2 | 3 |

This concludes the formal AREVA NP response to RAI 224, and there are no questions from this RAI for which AREVA NP has not provided responses.

Sincerely,

Ronda Pederson

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Licensing Manager, U.S. EPR Design Certification

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From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]

Sent: Friday, June 12, 2009 4:56 PM

To: ZZ-DL-A-USEPR-DL

Cc: Reddy, Devender; Bloom, Steven; Segala, John; Hearn, Peter; Colaccino, Joseph; ArevaEPRDCPEm Resource

Subject: U.S. EPR Design Certification Application RAI No. 224 (2762), FSARCh. 10

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on May 11, 2009, and on June 12, 2009, 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: 646

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Subject: Response to U.S. EPR Design Certification Application RAI No. 224, FSARCh.
10
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From: Pederson Ronda M (AREVA NP INC)
Created By: Ronda.Pederson@areva.com

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| RAI 224 Response US EPR DC.pdf | | 62876 |

Options

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Response to

Request for Additional Information No. 224 (2762), Revision 0

06/12/2009

U. S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 10.03 - Main Steam Supply System

Application Section: 10.3 Main Steam Supply System

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

Question 10.03-2:

[Follow-up to RAI 106, Question No. 10.3-1 (IV)(3)]

With respect to safety-related main steam isolation valve (MSIV) actuators, the staff requested AREVA (the applicant) to provide the methodology for the protection of the actuators from environmental effects and dynamic effects (pipe whip and jet impingement forces) from a main steam line break upstream of the MSIV associated with the broken line.

In its response, the applicant stated that the main steam line between the steam generator outlet nozzle and the MSIV outside the containment is designed using the leak before break approach, which precludes a pipe break in this part of the main steam system. However, the staff finds that MSLB inside and outside containment, up stream of MSIV are analyzed and presented in FSAR Section 15.1.5. Also, the staff finds that the system and components (e.g., MSIVs) required for accident mitigation need to be designed to safety grade requirements and qualified for operation under the accident environment conditions. The staff finds that the applicant's response does not provide a clear response to the RAI, and therefore requests the applicant to address this issue since it is important to support safety analyses documented in FSAR Tier 2, Chapter 15, which remains as an open item.

Response to Question 10.03-2:

As noted in U.S. EPR FSAR Tier 2, Section 3.6.3, the U.S. EPR uses leak-before-break (LBB) methodology to eliminate consideration of breaks of main steam line (MSL) piping inside the containment (i.e., from the steam generators to the first anchor point location at the Containment Building penetration). Therefore, unlike the safety analyses described in U.S. EPR FSAR Tier 2, Section 15.0, there are no breaks considered in the MSL upstream of the containment penetration for the purpose of pipe stress analysis and pipe support design. LBB is described in U.S. EPR FSAR Tier 2, Section 10.3.3 with reference to U.S. EPR FSAR Tier 2, Section 3.6.3. The piping through the containment penetration up to the MSIV meets the requirements of ASME Boiler and Pressure Vessel Code, Section III, Subarticle NE 1120 and the maximum stress criteria as required in Branch Technical Position (BTP) 3-4, Rev. 2 for precluding breaks in the outside containment penetration area. The break exclusion for the outside containment penetration area is described in U.S. EPR FSAR Tier 2, Section 3.6.2.1.1.1.

There are no breaks considered that produce dynamic effects (e.g., pipe whip and jet impingement forces) in the main steam valve rooms, where the MSIVs are located. The MSIVs are designed to safety grade requirements for operation under accident environmental conditions postulated for the main steam valve rooms. The valve room in Safeguard Building 1 or 4, where the MSIV for each division is located, is described in U.S. EPR FSAR Tier 2, Sections 10.3.2.1, 10.3.2.2, and 10.3.3.

The safety classification for the MSIVs is described in U.S. EPR FSAR Tier 2, Table 3.2.2-1—Classification Summary; seismic classification for the MSIVs is described in U.S. EPR FSAR Tier 2, Table 3.10-1—List of Seismically and Dynamically Qualified Mechanical & Electrical Equipment; classification for environmental qualification for the MSIVs is described in U.S. EPR FSAR Tier 2, Table 3.11-1—List of Environmentally Qualified Electrical / I&C Equipment; and the inservice testing requirements for the MSIVs are described in U.S. EPR FSAR Tier 2, Table 3.9.6-2—Inservice Valve Testing Program Requirements. As stated in U.S. EPR FSAR Tier 2,

Section 3.11.1.2, the environmental conditions for equipment qualifications for the main steam valve compartments (rooms) include harsh environment, due to postulated MSLB in the valve room.

As noted in U.S. EPR FSAR Tier 2, Section 10.3.2.3.5, the MSSS is designed to meet the accident analyses in Section 15.0 including MSLB; pipe breaks upstream and downstream of the MSIV are considered. As noted in U.S. EPR FSAR Tier 2, Section 10.3.2.2, the MSIVs are designed to close and isolate flow in either direction, which includes reverse flow from a MSLB upstream of an MSIV as described in U.S. EPR FSAR Tier 2, Section 15.1.5.

As stated in U.S. EPR FSAR Tier 2, Section 10.3.3, safety-related portions of the MSSS outside of containment are located within the valve rooms inside the Safeguard Buildings and are protected from internal flooding as described in U.S. EPR FSAR Tier 2, Section 3.4.3.4. The MSIVs are located within the valve rooms and are protected from flooding.

FSAR Impact:

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