

ArevaEPRDCPEm Resource

From: Pederson Ronda M (AREVA NP INC) [Ronda.Pederson@areva.com]
Sent: Friday, November 20, 2009 6:59 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); PANNELL George L (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 309, FSARCh. 7
Attachments: RAI 309 Response US EPR DC.pdf

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information RAI 309. The attached file, "RAI 309 Response US EPR DC.pdf," provides a schedule since a technically correct and complete response to the 2 questions is not provided.

The following table indicates the respective page in the response document, "RAI 309 Response US EPR DC.pdf," that contains AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 309 — 07.09-59	2	2
RAI 309 — 07.09-60	3	3

A complete answer is not provided for the 2 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 309 — 07.09-59	January 29, 2010
RAI 309 — 07.07-60	January 29, 2010

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: Wednesday, October 21, 2009 6:14 PM

To: ZZ-DL-A-USEPR-DL

Cc: Zhang, Deanna; Spaulding, Deirdre; Jackson, Terry; Canova, Michael; Colaccino, Joseph; ArevaEPRDCPEm Resource

Subject: U.S. EPR Design Certification Application RAI No. 309 (3835), FSARCh. 7

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on October 9, 2009, and on October 21, 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: 976

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Subject: Response to U.S. EPR Design Certification Application RAI No. 309, FSARCh. 7
Sent Date: 11/20/2009 6:59:14 PM
Received Date: 11/20/2009 6:59:17 PM
From: Pederson Ronda M (AREVA NP INC)

Created By: Ronda.Pederson@areva.com

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MESSAGE	2301	11/20/2009 6:59:17 PM
RAI 309 Response US EPR DC.pdf		60857

Options

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

Response to
Request for Additional Information No. 309 (3835), Revision 1

10/21/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 07.09 - Data Communication Systems
Application Section: Section 7.1

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

Question 07.09-59:

Demonstrate how the Remote Acquisition Unit (RAU) ring network satisfies 10 CFR 50, Appendix A, General Design Criterion (GDC) 21, "Protection System Reliability and Testability," and IEEE Std. 603-1991, Clause 5.1, "Single-Failure Criterion." Specifically, within a division, given one RAU is out of service, and the other redundant RAU or Self Powered Neutron Detectors (SPNDs) suffer undetected single-failures such that the sufficient number of SPND measurements are not available to support the linear rate or departure from nucleate boiling (DNB) trips, demonstrate how the protection system has acceptable reliability.

GDC 21 states: "the protection system shall be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function and (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can be otherwise demonstrated. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred." In addition, 10 CFR 50.55a(h) incorporates by reference IEEE Std. 603-1991. IEEE Std. 603-1991, Clause 5.1, "Single-Failure Criterion" requires the safety system to perform all safety functions required for a design basis event in the presence of any single detectable failure within the safety systems concurrent with all identifiable but non-detectable failures.

The staff reviewed the "Protection System Failure Modes and Effects Analysis for U.S. EPR DCD," Revision 3, during the U.S. EPR PACS module regulatory audit. The Protection System Failure Modes and Effects Analysis (FEMA) stated that for postulated undetectable blocking failures within a RAU when the redundant RAU is out of service for maintenance or testing, Technical Specifications define the limiting condition for operation. The staff finds that the applicant has not provided sufficient information to demonstrate how loss of the required minimum redundancy does not impact the reliability of the protection system given the postulated identified undetected block failures. Provide information to demonstrate that the reliability of operation of the protection system is acceptable given the loss of the required minimum redundancy as stipulated by GDC 21. Specifically, within a division, given one RAU is out of service, and the other redundant RAU or Self Powered Neutron Detectors (SPNDs) suffer undetected single-failures such that the sufficient number of SPND measurements are not available to support the linear rate or departure from nucleate boiling (DNB) trips, demonstrate how the protection system has acceptable reliability.

Response to Question 07.09-59:

A response to this question will be provided by January 29, 2010.

Question 07.09-60:

Demonstrate how the various data networks in the main control room (MCR), in the event of a control room fire, would not affect the capability to achieve safe shutdown, given that the plant data network, the terminal data network, and other components are shared between the MCR workstations and the Remote Shutdown Station (RSS) workstations.

10 CFR 50, Appendix R, III.G, "Fire Protection of Safe Shutdown Capability," requires, in part, fire protection features be provided for structures, systems, and components important to safe shutdown. Tier 2, Section 9.5.1.1 of the U.S. EPR Final Safety Analysis Report (FSAR) states that because of the MCR physical configuration, for a fire in the MCR, an independent alternative shutdown capability (RSS) that is physically and electrically independent of the MCR is used to achieve safe shutdown conditions. Tier 2, Section 7.1.1.3.1 and Section 7.1.1.3.2 of the U.S. EPR FSAR describe the capabilities of the SICS and PICS to achieve both hot and cold shutdown conditions from the RSS in case of a fire in the MCR. However, Tier 2, Figure 7.1-5 "Process Information and Control System Architecture" depicts the terminal data network being shared by both the MCR operator workstations and the RSS operator workstations. In addition, the terminal data network is connected to the plant data network through Process Units (PUs). Demonstrate that in the event of a fire in the MCR, the terminal data network, and the plant data network will not be impacted such that the RSS workstations maintain the capability for hot and cold shutdown to meet the requirements of 10 CFR 50, Appendix R, III.G.

Response to Question 07.09-60:

A response to this question will be provided by January 29, 2010.