

ArevaEPRDCPEm Resource

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Sent: Wednesday, April 08, 2009 3:32 PM
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Cc: John Budzynski; Shanlai Lu; Joseph Donoghue; Jason Carneal; Joseph Colaccino; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 205 (2374), FSAR Ch. 4
Attachments: RAI_205_SRSB_2374.doc

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on March 20, 2009, and discussed with your staff on March 26, 2009. Draft RAI Questions 04.04-38, 04.04-42, 04.04-45, and 04.04-46 were deleted 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,
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Request for Additional Information No. 205 (2374), Revision 0

4/08/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 04.04 - Thermal and Hydraulic Design
Application Section: 4.4

QUESTIONS for Reactor System, Nuclear Performance and Code Review (SRSB)

04.04-37

The Aeroball Monitoring System (AMS) is part of the reactor coolant pressure boundary, and it is utilized to calibrate the safety-related SPNDs used for the core protection function. FSAR Section 4.4.6.2 does not address the design basis of the AMS. Provide a description of the underlying design basis for the AMS, including compliance with applicable 10 CFR 50 General Design Criteria (GDC) and conformance with applicable regulatory criteria and IEEE Standards. In addition, define the performance requirements for the AMS. The requested information is required in order to establish the appropriate design of the AMS.

04.04-38

[Question intentionally deleted due to overlap with RAI 194, Question 04.04-4 Parts 1, 3, 4, 5, 6]

04.04-39

Provide additional information describing the penetrations of the 40 Aeroball tubes through the 12 lance/yoke assemblies, including design description, drawings, and outline dimensions. The requested information is needed in order for the staff to complete its review and evaluation of the AMS.

04.04-40

In FSAR Tier 2 Section 4.4 Figure 4.4-19, the lance yoke rests on the upper core support plate. Provide an evaluation of the steady state and transient vibratory loads on the upper core support structure associated with the presence of the incore instrumentation lance yokes, including the possibility of changes in structural resonances due to movement of the lance yokes. In addition, address the possibility of adverse flow effects on the reactor internals, specifically for the reactor power level and flow design of the U.S. EPR. The requested information is needed in order to ensure that the effects of the in-core components of the AMS have been adequately evaluated by the applicant.

04.04-41

FSAR Section 2.1.6 states that the instrumentation lances are seismically qualified. Confirm that the instrumentation lances are qualified as Seismic Category I. The

requested information is needed in order to ensure proper seismic design of the instrumentation lance.

04.04-42

[Question intentionally deleted due to overlap with RAI 194, Question 04.04-4 Part 2]

04.04-43

Discuss the reliability of the solenoid stops, including associated operational experience and requirements for periodic preventive maintenance. The requested information is needed in order for the staff to complete its review and evaluation of the AMS.

04.04-44

Provide additional description of the sequence of operation of the AMS following irradiation of the Aeroballs, including:

- a. Clarification of the process “wait” period at the solenoid stop prior to transport to the measuring table,
- b. Sequencing and positioning of the four subgroups of irradiated Aeroball stacks prior to and at the measuring table, and
- c. Positioning of the Aeroballs following completion of the measurements.

The requested information is needed in order for the staff to complete its review and evaluation of the AMS.

04.04-45

[Question intentionally deleted due to overlap with RAI 194, Question 04.04-4 Part 14]

04.04-46

[Question intentionally deleted due to overlap with RAI 194, Question 04.04-4 Parts 15 and 16]

04.04-47

Provide the following information regarding the operational experience of the AMS:

- a. A listing of all the power plants currently using the AMS, including years in operation, number and type of system failures, and a general description of any key differences between the AMS design for those plants and the AMS design for the U.S. EPR. This question concerns actual plant experience.

- b. Detail description of the “excessive residual moisture” failure mechanism identified at the KKP-2 plant, including root cause and actions to prevent recurrence,
- c. Identification and description of occurrences of Aeroballs being unable to move into or out of the Aeroball incore probes,
- d. Identification and description of system failures due to inadequate maintenance,
- e. Discussion of the safety, radiological (ALARA), and operational consequences of an AMS failure, and
- f. An evaluation of the design and performance expectations of the AMS in the U.S. EPR relative to the operational experience base, given the higher reactor power level and flow conditions of U.S. EPR.

The requested information is needed in order for the staff to complete its review and evaluation of the AMS.