ArevaEPRDCPEm Resource

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Sent: Thursday, January 08, 2009 12:52 PM
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Subject: U.S. EPR Design Certification Application RAI No. 156 (1768), FSAR Ch. 14
Attachments: RAI_156_EMB2_1768.doc

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on December 12, 2008, and discussed with your staff on January 6, 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,
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Hearing Identifier: AREVA_EPR_DC_RAIs
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U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 14.03.03 - Piping Systems and Components - Inspections, Tests, Analyses, and Acceptance Criteria
Application FSAR Section: 14.3.3

QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects) (EMB2)

14.03.03-25

In the EPR FSAR Tier 1 and Tier 2 documents, the applicant indicates that the design for ASME Code Class 1, 2, 3 piping systems has not been completed. Specifically, in Tier 2, Table 1.8-2, Item No. 3.12-2, the applicant states that a COL Holder that references the EPR design certificate will perform piping and support stress analysis. In order for the staff to reach a reasonable assurance finding based on the requirements of 10 CFR 52.47, certain information is required during the NRC review of the design certification application. According to SRP 14.3 Appendix A, Design Certificate applicants may provide less than the complete design information for piping before Design Certificate because the design may depend upon as-built and as-procured information. Instead, the applicants should provide the design related process and associated design acceptance criteria (DAC) in the DCD Tier 1 that a COL applicant would follow to complete the design.

The staff requests AREVA to provide design detail for ASME Code Class 1, 2, 3 piping systems. If such design detail is not available, AREVA is requested to provide the design related processes, schedule to complete the design of piping systems available for NRC audit, and associated DAC in Tier 1.

14.03.03-26

a) Components Design Reports
For components designated as ASME Code Section III, the Acceptance Criteria (AC) of item 3.1 of Table 2.2.1-5 states that a report exists and concludes that the components have been designed and hydrostatically tested in accordance with ASME Section III requirements. In the Inspection, Test, or Analysis (ITA) column, “Inspections will be conducted of ASME design, NDE, and hydrostatic test reports for components.” However, the criterion in AC is only “a report exists and concludes…” It is not clear to the staff that what type of report and how many reports shall exist. The staff reviewed Tier 1 and Tier 2 information but the applicant did not identify what the particular reports are or the contents of the reports. SRP 14.3.3 indicates that an acceptable version of an ASME Code certified stress report is the design document required by ASME Code Section III, Subarticle NCA-3550. A certified design report provides assurance that requirements of ASME Code, Section III for design have been met and that the design complies with the design specifications.

The staff requests the applicant the revised the AC and ITA to identify the certified Design Report as discussed in Subarticle NCA-3550 or other appropriate design documents. This question is also applicable to Tier 1, Sections 2.2.2, 2.2.3, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.2.8, 2.3.3, 2.5.4, 2.6.8, 2.7.1, 2.7.2, 2.7.5, 2.7.11, 2.8.2, 2.8.6, 2.8.7, and 3.5.3.

b) Components as-built ITACC

As described in SRP 14.3.3, Piping Systems and Components – ITAAC, one ITAAC item that should be included is to require that a report exists and documents the result of an as-built reconciliation analysis confirming the components have been built in accordance with the ASME Code certified stress reports. In EPR FSAR Tier 1 Table 2.2.1-5, an ITAAC for as-built reconciliation is not included.

The staff requests the applicant to include an ITAAC to reflect that an analysis will be performed to reconcile the as-built condition of the components with approved design documents. Corresponding addition to Tier 1 section 2.2.1 under subsection 3.0 should also be made. This question is also applicable to Tier 1, Sections 2.2.2, 2.2.3, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.2.8, 2.3.3, 2.5.4, 2.6.8, 2.7.1, 2.7.2, 2.7.5, 2.7.11, 2.8.2, 2.8.6, 2.8.7, and 3.5.3.

c) Components Fabrication Installation ITAAC

For components designated as ASME Code Section III, SRP 14.3.3 identifies that a certified report provides assurance that requirements of the ASME Code, Section III for fabrication, installation, and examination have been met. In EPR FSAR Tier 1 Table 2.2.1-5, an ITAAC for fabrication and installation of components is not included.

The staff requests the applicant to include an ITAAC to reflect that an inspection of the components will be conducted. Corresponding addition to section 2.2.1 under subsection 3.0 should also be made. This question is also applicable to Tier 1, Sections 2.2.2, 2.2.3, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.2.8, 2.3.3, 2.5.4, 2.6.8, 2.7.1, 2.7.2, 2.7.5, 2.7.11, 2.8.2, 2.8.6, 2.8.7, and 3.5.3.

14.03.03-27

a) Piping design reports

For piping designated as ASME Code Section III, the ITA of item 3.4a of Table 2.2.1-5 states that an analysis of the as-designed piping will be performed in accordance with ASME Code Section III requirement for piping indicated on Figure 2.2.1-1. The AC column states that the ASME Code Section III stress reports exist and conclude that the as-design piping meets ASME Code Section III requirements.

(i) In the ITA column, an inspection of the ASME Code Design Report, as oppose to an analysis, should be conducted. This will bring consistency between this ITAAC and the components as-design ITAAC in item 3.1 of Table 2.2.1-5.

(ii) In the AC column, it is not clear to the staff that what type of reports shall exist. The staff reviewed Tier 1 and Tier 2 information but the applicant did not identify what the particular reports are or the contents of the reports. SRP 14.3.3 indicates that an acceptable version of an ASME Code certified stress report is the design document required by ASME Code Section III, Subarticle NCA-3550. A certified design report

provides assurance that requirements of ASME Code, Section III for design have been met and that the design complies with the design specifications.

The staff requests the applicant to revise the AC and ITA to identify the certified Design Report as discussed in Subarticle NCA-3550 or other appropriate design documents. These two questions are also applicable to Tier 1, Sections 2.2.2, 2.2.3, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.3.3, 2.5.4, 2.7.1, 2.7.2, 2.7.11, 2.8.2, 2.8.6, 2.8.7, and 3.5.3.

b) Piping as-built ITAAC
As described in SRP 14.3.3, one ITAAC item that should be included is to require that a report exists and documents the result of an as-built reconciliation analysis confirming the final piping systems have been built in accordance with the ASME Code certified stress reports. In EPR FSAR Tier 1 Table 2.2.1-5, an ITAAC for as-built reconciliation is not included.

The staff requests the applicant to include an ITAAC to reflect that an analysis will be performed to reconcile the as-built condition of the piping system with approved design documents. Corresponding addition to section 2.2.1 under subsection 3.0 should also be made. This question is also applicable to Tier 1, Sections 2.2.2, 2.2.3, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.3.3, 2.5.4, 2.7.1, 2.7.2, 2.7.11, 2.8.2, 2.8.6, 2.8.7, and 3.5.3.

c) Piping Fabrication Installation ITAAC
For piping designated as ASME Code Section III, SRP 14.3.3 identifies that a certified report provides assurance that requirements of the ASME Code, Section III for fabrication, installation, and examination have been met. In EPR FSAR Tier 1 Table 2.2.1-5, an ITAAC for fabrication and installation of piping is not included.

The staff requests the applicant to include an ITAAC to reflect that an inspection of the piping will be conducted. Corresponding addition to section 2.2.1 under subsection 3.0 should also be made. This question is also applicable to Tier 1, Sections 2.2.2, 2.2.3, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.3.3, 2.5.4, 2.7.1, 2.7.2, 2.7.11, 2.8.2, 2.8.6, 2.8.7, and 3.5.3.

d) Piping Support as-built ITAAC
As described in SRP 14.3.3, one ITAAC item that should be included is requiring that a report exists and documents the result of an as-built reconciliation analysis confirming the piping supports have been built in accordance with the ASME Code certified stress reports. In EPR FSAR Tier 1 Table 2.2.1-5, an ITAAC for as-built reconciliation is not included.

The staff requests the applicant to provide an ITAAC to reflect that an analysis will be performed to reconcile the as-built condition of the piping supports with approved design documents. Corresponding addition to section 2.2.1 under subsection 3.0 should also be made. This question is also applicable to Tier 1, Sections 2.2.2, 2.2.3, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.3.3, 2.5.4, 2.7.1, 2.7.2, 2.7.11, 2.8.2, 2.8.6, and 2.8.7.

14.03.03-28

In EPR FSAR Tier 1, Section 3.5-3, the applicant identifies that piping in Figure 3.5-1 as ASME Code Section III will be designed, welded, and tested in accordance with ASME Code Section III. In Table 3.5-3, associated ITAAC entries are listed also. However, the

applicant does not provide any ITAAC for piping supports, shown as ASME Code Section III, of Figure 3.5-1.

The staff requests the applicant to include ITAAC entries for piping supports, shown as ASME Code Section III, of Figure 3.5-1 or provide justification for not including any ITAAC . Corresponding changes to Tier 1 Section 3.5 under item 3.0 should also be made.

14.03.03-29

In EPR FSAR Tier 2, Section 14.3.2, the applicant indicates that the process to select Tier 1 information is based on equipment classification. Examples of equipment selection criteria include ASME BPV Code Section III, Seismic Category (SC)I, and IEEE Class 1E.

a) The Seismic Monitoring System is listed as Seismic Category (SC) I in Tier 2 Table 3.2.2-1 (sheet 89 of 177). But in Tier 1, Section 2.4.7, there is no ITAAC that addresses the Design Commitment of equipment identified as Seismic Category I can withstand a design basis seismic load without loss of function. The staff requests the applicant to provide an ITAAC for SC I equipment or justification for not including an ITAAC.

b) The High Range Dose Rate Monitors in Radiation Monitoring System are listed as Seismic Category I in Tier 2 Table 3.2.2-1 (sheet 88 of 177). But in Tier 1, Section 2.4.22, there is no ITAAC that addresses the Design Commitment that equipment identified as SC I can withstand a design basis seismic load without loss of function. The staff requests the applicant to provide an ITAAC for SC I equipment or justification for not including an ITAAC.

14.03.03-30

In EPR FSAR Tier 1, Section 2.8.5, the applicant indicates that there are no Tier 1 ITAAC entries for the Condensate System. The staff recognizes that ITAAC for all containment isolation valves are addressed in Tier 1, Section 3.5 and the equipment tag numbers provided in Table 3.5-1 and 3.5-2 are informational only. However, in Tier 2, Table 3.2.2-1 (sheets 139-144 of 177), the applicant designates a few components (not containment isolation valves) of the Condensate System as either Seismic Category (SC) I or ASME Class 2. Examples include, Leak Test Valve(s) and Pressure Relief Valve(s). The staff requests the applicant to provide appropriate ITAAC for these SC I, or ASME Class 2 components or justification for not including any ITAAC for these components.

14.03.03-31

In EPR FSAR Tier 1, Table 2.6.13-3 of the Essential Service Water Pump Building ventilation System, the applicant does not include any ITAAC for equipment listed as ASME Code Section III. In Tier 2, Table 3.2.2-1 (sheet 165 of 177), the Cooling Coil isolation valves are designated as ASME Class 3. The staff requests the applicant to provide appropriate ITAAC for the ASME Code Section III components or justification for not including any ITAAC for these components.