ArevaEPRDCPEm Resource

From: Pederson Ronda M (AREVA NP INC) [Ronda.Pederson@areva.com]
Sent: Friday, May 08, 2009 4:45 PM
To: Getachew Tesfaye
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); DUNCAN Leslie E (AREVA NP INC); OWEN Dennis E (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 210,FSAR Ch. 14
Attachments: RAI 210 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 210 Response US EPR DC.pdf," provides a schedule since technically correct and complete responses to the 4 questions are not provided.

The following table indicates the respective pages in the response document, "RAI 210 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 210 — 14.03.02-12	2	3
RAI 210 — 14.03.03-32	4	4
RAI 210 — 14.03.03-33	5	5
RAI 210 — 14.03.03-34	6	6

The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 210 — 14.03.02-12	July 24, 2009
RAI 210 — 14.03.03-32	July 24, 2009
RAI 210 — 14.03.03-33	July 24, 2009
RAI 210 — 14.03.03-34	July 24, 2009

Sincerely,

Ronda Pederson
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From: Getachew Tesfaye [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Wednesday, April 08, 2009 7:19 PM
To: ZZ-DL-A-USEPR-DL
Cc: David Jeng; Jim Xu; Ching Ng; Jennifer Dixon-Herrity; Michael Miernicki; Joseph Colaccino; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 210 (2441, 2299),FSAR Ch. 14

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on April 2, 2009, and on April 8, 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: 460

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Subject: Response to U.S. EPR Design Certification Application RAI No. 210,FSAR Ch. 14
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From: Pederson Ronda M (AREVA NP INC)

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MESSAGE	2407	5/8/2009 4:45:13 PM
RAI 210 Response US EPR DC.pdf	78737	

Options
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Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Response to

Request for Additional Information No. 210 (2441, 2299), Revision 0

4/08/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 14.03.02 - Structural and Systems Engineering - Inspections, Tests, Analyses, and Acceptance Criteria
SRP Section: 14.03.03 - Piping Systems and Components - Inspections, Tests, Analyses, and Acceptance Criteria

Application Section: FSAR Section 14.3

QUESTIONS for Structural Engineering Branch 2 (ESBWR/ABWR Projects) (SEB2)
QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects) (EMB2)

Question 14.03.02-12:

In the ITAAC tables of FSAR Section 2, Tier 1, there is inconsistent wording and meaning of the ITAAC items related to the seismic qualification of equipment and to the design of Seismic Category I structures for design basis loads. Examples of this with respect to the seismic qualification of equipment include Table 2.2.1-5 (item 3.3), Table 2.2.2-3 (item 3.3) and Table 2.10.1-2 (item 3.1). The commitment wording for these items generally state that equipment identified as Seismic Category I can withstand design basis seismic loads without loss of safety function. However, in some instances, the word safety is not included (see Tables 2.2.1-1 and Table 2.2.2-3 as examples). In the Inspection Test or Analysis column of these tables, it generally states that:

a) An inspection will be performed of the equipment identified as Seismic Category I, and

b) Type tests, tests, and analyses, or a combination of tests and analyses will be performed.

In Table 2.2.1-5 under this same column a third action under item c) is added which states that an inspection will be performed. This is in addition to item a) which states that an inspection will be performed. In table 2.10.1-2 in addition to item b) under item c) it states that inspection will be performed verifying that the as-installed equipment, including anchorage, is seismically bounded by the tested or analyzed conditions. In addition to the inconsistent wording it is not clear how an item is to be inspected and what it will be inspected against. It also is not clear what tests or analyses are to be performed and how the results of the tests or analyses are to be used to verify the ability of the equipment to withstand design basis seismic loads.

Under Acceptance Criteria it typically states that

c) The equipment designated as Seismic Category I is installed as designed, and

d) The equipment designated as Seismic Category I can withstand a design basis seismic load without loss of function.

In other instances it states that a) a report exists and concludes that equipment designated as Seismic Category I is installed as designed and b) a report exists and concludes that the equipment designated as Seismic Category I can with stand a design basis seismic load without loss of safety function. It is not clear if the reports are existing reports or are to be developed as a result of the Inspection Test or Analysis.

With respect to Seismic Category I structures, examples are found in Table 2.1.1-7 (item 4.2), Table 2.1.2-2 (item 4.3), and Table 2.1.5-2 (item 4.3). Under the commitment wording in Table 2.1.1-7 it states that the NI structures are constructed to withstand design basis loads while in the other two tables it states that the structures are *designed* and constructed to withstand design basis loads. In addition, in each table it states the structures can withstand the design basis loads without loss of structural integrity, when in fact they must be designed to withstand design basis loads without loss of their safety function. In the Inspection Test or Analysis column of these tables, it states that either a verification inspection of the structures seismic design analysis versus the construction records will be performed (Table 2.1.1-7) or a verification inspection of the design analysis versus construction records will be performed (Tables 2.1 2-2 and 2.1.5-2). The wording is inconsistent and it is not clear how this inspection meets the intent of the commitment wording. Under the Acceptance Criteria column of these tables it states that the structures conform to the approved design and will withstand the design

basis loads without loss of structural integrity. Again there is no mention of the structure's safety function and no requirement for documenting the fact that the acceptance criteria have been met.

The ITAAC wording should be specific to a safety-related item, consistent for similar safety-related items and unambiguous in its wording for inspection analysis and testing requirements, and for demonstrating that the acceptance criteria have been met. The applicant is requested to review the ITAAC tables as they pertain to the seismic qualification of safety-related equipment and the design of Seismic Category I structures for design basis loads and revise the tables to meet these requirements.

Response to Question 14.03.02-12:

A response to this question will be provided by July 24, 2009.

Question 14.03.03-32:

This is the supplemental RAI S01 for RAI 156, 14.03.03-25

i) AREVA stated that in response to RAI 148, 14.03.03-23, the piping design ITAAC will be changed to "ASME Code Section III stress reports exist and conclude that as-designed piping identified in the figure as ASME Code Section III meets ASME Code Section III design requirement". The staff requests the applicant to identify the "ASME Code Section III stress reports" in the AC as "ASME Code Section III Design Reports (NCA-3550)". This will bring consistency between the AC for piping and component design as in RAI 14.03.03-26.

ii) The staff acknowledged that COL Information Item No 3.12-2 stated that a piping and support stress analysis will be performed by COL applicants referencing the EPR design certificate. The column with the heading "Action Required by COL Holder" was marked for this COL Information Item. AREVA also stated, and the staff recognized, that the schedule for completion of the design ITAAC is the responsibility of the licensee and 10CFR 52.99 (a) addressed schedule information requirement for ITAAC.

However, the staff does not find that the response completely addresses the problem associated with the level of design detail in the piping design. In particular, when the design of the piping system is not complete, SRP 14.3 Appendix A indicates that the DC applicant should provide the plan to complete the design and associated Design Acceptance Criteria (DAC). RG 1.206 Section C.III.5 provides guidance regarding DAC. DAC should, at least, consist of i) piping design methodology identified in DCD, ii) sufficient ITAAC to address the design of the piping as well as the verification of the as-built reconciliation of the piping design, or a combination of ITAAC and COL Information Item to address design as well as the as-built reconciliation, and iii) a description of the approach taken on the piping design.

The design ITAAC presented in Tier 1 and COL Information Item No 3.12-2 addressed part of the staff's concern regarding the incomplete piping design during the DC application. What is remaining to be resolved is a plan or schedule to address the completion of the piping design by COL applicants. From the success in previous DC applications, the staff would accept a COL Information Item, in Section 3.12, to allow COL applicants to devise a plan or schedule to address the completion of piping design ITAAC. It is crucial that the NRC staff have timely access to detailed design information to resolve any potential issues during the COL application stage.

The staff requests AREVA i) to document, in Tier 2, the process of using Design Acceptance Criteria in lieu of completing the piping design; ii) to include a COL Information Item in Section 3.12 to allow each COL applicant to identify the strategy to address piping design review schedule and audit opportunity for NRC.

Response to Question 14.03.03-32:

A response to this question will be provided by July 24, 2009.

Question 14.03.03-33:

This is the supplemental RAI S01 for RAI 156, 14.03.03-26

a) In the response, the applicant identified that the ITAAC entry will be modified to reference ASME Code Section III Design Reports (NCA-3550) in the Acceptance Criteria column as part of the resolution of RAI #14.03.03-23. The staff found this portion of the response acceptable. However, the staff disagrees that the Commitment Wording of the ITAAC on design, welding, and hydrostatic testing should be combined. To enhance clarity of the entry, using Item 3.1 of Table 2.2.1-5 as an example, the Commitment Wording should be separated into 3.1a, 3.1b, and 3.1c to address, design, welding, and testing respectively. The applicant is requested to modify the ITAAC entry.

b) The applicant stated in the response that an as-built reconciliation ITAAC is not necessary because as-built reconciliation analyses are part of the process to develop ASME Code Section III Design Reports (NCA-3550). The staff disagrees. To verify that the piping was designed in accordance with the methodology called out in the code and the DCD, the staff verifies that the piping design (through review of the design report prior to construction), then that the plant was built in accordance with that design (through review of the as built reconciliation of the design report). SRP 14.3.3 specifically indicates that a distinct ITAAC should require that the as-built reconciliation analysis of the component using as-designed and as-built information and ASME Code certified Design Reports will be performed. Addition of a separate ITAAC to review the design of the piping would be in response to the need for Piping DAC because the staff did not have the opportunity to review the design prior to certification. The staff requests the applicant to include an ITAAC to verify that an analysis was performed to reconcile the as-built condition of the components with the approved design documents.

c) In the response, the applicant stated that proper installation of ASME Code components is covered by the welding and hydrostatic testing ITAAC. The staff found this response to be inadequate because the scope of assuring the components are fabricated, installed, and inspected is broader than that of the welding and hydrostatic testing ITAAC. The staff requests the applicant to include an ITAAC to reflect that an inspection of the components will be conducted. The AC would be such that ASME Code Data Reports and inspection reports exist and conclude that the components identified as ASME Code Section III is fabricated, installed, and inspected in accordance with ASME Code Section III requirements.

Response to Question 14.03.03-33:

A response to this question will be provided by July 24, 2009.

Question 14.03.03-34:

This is the supplemental RAI S01 for RAI 156, 14.03.03-31

AREVA identified a few sections of SRP 14.3A as the bases of not including ITAAC for the ASME Code Section III Class 3 components. However, those sections are guidance for including figures in Tier 1. They do not explain why the component should be excluded. Furthermore, the Essential Service Water Pump Building Ventilation System (ESWPBVS) and its cooling coil isolation valves are classified as safety-related in Tier 2, Table 3.2.2-1. It should be noted that ITAAC are in place for ASME Code Section AG-1 components as well as equipment classified as Seismic Category I of the ESWPBVS in Tier 1. The staff requests the applicant to provide appropriate ITAAC for the ASME Code Section III components of the ESWPBVS.

Response to Question 14.03.03-34:

A response to this question will be provided by July 24, 2009.