ArevaEPRDCPEm Resource

From: Tesfaye, Getachew
Sent: Friday, June 05, 2009 6:53 PM
To: 'usepr@areva.com'
Cc: Jenkins, Joel; Terao, David; Roy, Tarun; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 232 (2761), FSAR Ch. 5
Attachments: RAI_232_CIB1_2761.doc

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on May 19, 2009, and discussed with your staff on June 5, 2009. Draft RAI Question 05.03.01-10 (b)(2) was modified 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,
Getachew Tesfaye
Sr. Project Manager
NRO/DNRL/NARP
(301) 415-3361

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Created By: Getachew.Tesfaye@nrc.gov

Recipients:
"Jenkins, Joel" <Joel.Jenkins@nrc.gov>
Tracking Status: None
"Terao, David" <David.Terao@nrc.gov>
Tracking Status: None
"Roy, Tarun" <Tarun.Roy@nrc.gov>
Tracking Status: None
"Colaccino, Joseph" <Joseph.Colaccino@nrc.gov>
Tracking Status: None
"ArevaEPRDCPEm Resource" <ArevaEPRDCPEm.Resource@nrc.gov>
Tracking Status: None
"'usepr@areva.com'" <usepr@areva.com>
Tracking Status: None

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Request for Additional Information No. 232 (2761), Revision 0

6/05/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 05.03.01 - Reactor Vessel Materials
Application Section: 5.3.1

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects) (CIB1)

05.03.01-10

In response to RAI No. 64, Question 05.03.01-2, the applicant clarified that the surfaces of the SA-508 alloy steel reactor vessel in contact with the reactor coolant are clad with stainless steel and NiCrFe. The cladding is deposited by weld overlay. The applicant's response to RAI No. 202, Question 05.03.01-7 further clarified that Type (Alloy) 308L/309L stainless steel is used for cladding, except that in areas of the Alloy 690 radial key attachments, the weld overlay cladding of the reactor vessel is made using Alloy 52/52M/152. The staff notes that Alloy 308L/309L welded over Alloy 52/52M/152 may introduce defects, and therefore proper sequencing of the weld overlay can affect the integrity of the reactor vessel, cladding and the structural attachment weld (i.e., radial keys). Therefore, because two different materials are used to clad the reactor vessel, describe and include in the FSAR additional information to clarify the following areas:

a) Identify the specific areas of the reactor vessel that are clad with Alloy 308L/309L, and the areas that are clad with Alloy 52/52M/152. Information similar to your response to RAI No. 202, Question 05.03.01-7 should also be included in the FSAR.

b) Discuss the sequencing of the Alloy 308L/309L and Alloy 52/52M/152 weld overlay cladding to ensure that defects are not introduced in the weld overlay cladding or adjacent reactor vessel material. The discussion should include the following:

   1) Is Alloy 308L/309L applied first to the reactor vessel, except for at the radial key locations, and then Alloy 52/52M/152 is applied directly to the RPV material (SA-508 alloy steel) at the radial key locations?

   2) Is Alloy 308L/309L applied first to the entire reactor vessel, and then Alloy 52/52M/152 is applied to the Alloy 308L/309L cladding at the radial key locations?

c) Clarify how the cladding thickness of 0.295 inches in the applicant's response to RAI 64, Question 05.03.01-2 applies to the Alloy 308L/309L cladding, the Alloy 52/52M/152 cladding, or to the combined cladding (if Alloy 52/52M/152 cladding is deposited on top of the 308L/309L cladding).

05.03.01-11

The Alloy 52/52M/152 weld overlay on the SA-508 alloy steel reactor vessel provides both corrosion resistance for the reactor vessel in contact with the reactor coolant, and structurally attaches the radial keys to the reactor vessel via the radial key attachment weld. The radial keys carry the structural load for the core support (i.e., radial key inserts). Discuss and incorporate into the FSAR additional information to address the following areas:

a) Confirm that the weld procedure and welders for the Alloy 52/52M/152 weld overlay are qualified for both corrosion resistance cladding and a structural weld in accordance with the ASME Code, Section IX.

b) Concerning the attachment weld of the radial key to the Alloy 52/52M/152 weld overlay cladding, confirm that a low heat input weld process will be used to prevent embrittlement of the SA-508 alloy steel reactor vessel. This commitment is necessary to ensure that the integrity of the reactor vessel is not adversely affected, since your response to RAI No. 50, Question 04.05.02-6 states that the reactor vessel will not be post weld heat-treated after the attachment weld of the radial key to the Alloy 52/52M/152 weld overlay cladding. Also, include in the FSAR how the reactor vessel is heat-treated, similar to your response to RAI No. 50, Question 04.05.02-6.

c) Provide the joint design for the attachment weld of the radial key to the Alloy 52/52M/152 weld overlay cladding specifically addressing whether it is a full-penetration weld joint and the welding processes to be used.