ArevaEPRDCPEm Resource

From: WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]
Sent: Wednesday, November 30, 2011 4:57 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); WELLS Russell (AREVA)
Subject: Response to U.S. EPR Design Certification Application RAI No. 522 (6100, 6107), FSAR Ch. 3, Supplement 1
Attachments: Batch 522 Supplement 1 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for the 2 questions of RAI No. 522 on November 28, 2011. The attached file, "RAI 522 Supplement 1 Response US EPR DC .pdf" provides a technically correct and complete final response to 1 of the remaining 2 questions, as committed.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 522 Question 03.09.05-31.

The following table indicates the respective pages in the response document, "RAI 522 Supplement 1 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 522 — 03.09.05-31	2	2

The schedule for a technically correct and complete final response to the remaining question is unchanged as provided below.

Question #	Response Date
RAI 522 — 03.09.02-170	February 28, 2012

Sincerely,

Dennis Williford, P.E.
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
7207 IBM Drive, Mail Code CLT 2B
Charlotte, NC 28262
Phone: 704-805-2223
Email: Dennis.Williford@areva.com

From: WILLIFORD Dennis (RS/NB)
Sent: Monday, November 28, 2011 4:31 PM
To: Getachew.Tesfaye@nrc.gov
Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); WELLS Russell (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 522 (6100, 6107), FSAR Ch. 3

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 522 Response US EPR DC.pdf" provides a schedule since technically correct and complete responses to the two questions cannot be provided at this time.

The following table indicates the respective pages in the response document, "RAI 522 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 522 — 03.09.02-170	2	2
RAI 522 — 03.09.05-31	3	3

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

Question #	Response Date
RAI 522 — 03.09.02-170	February 28, 2012
RAI 522 — 03.09.05-31	February 28, 2012

Sincerely,

Dennis Williford, P.E.
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
7207 IBM Drive, Mail Code CLT 2B
Charlotte, NC 28262
Phone: 704-805-2223
Email: Dennis.Williford@areva.com

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Thursday, October 27, 2011 6:17 PM
To: ZZ-DL-A-USEPR-DL
Cc: Wong, Yuken; Spicher, Terri; Dixon-Herrity, Jennifer; Miernicki, Michael; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 522 (6100, 6107), FSAR Ch. 3

Attached please find the subject request for additional information (RAI). A draft of the RAI was provided to you on October 26, 2011, and on October 27, 2011, 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: 3594

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Subject: Response to U.S. EPR Design Certification Application RAI No. 522 (6100, 6107), FSAR Ch. 3, Supplement 1
Sent Date: 11/30/2011 4:56:40 PM
Received Date: 11/30/2011 4:57:36 PM
From: WILLIFORD Dennis (AREVA)

Created By: Dennis.Williford@areva.com

Recipients:
"BENNETT Kathy (AREVA)" <Kathy.Bennett@areva.com>
Tracking Status: None
"DELANO Karen (AREVA)" <Karen.Delano@areva.com>
Tracking Status: None
"ROMINE Judy (AREVA)" <Judy.Romine@areva.com>
Tracking Status: None
"RYAN Tom (AREVA)" <Tom.Ryan@areva.com>
Tracking Status: None
"WELLS Russell (AREVA)" <Russell.Wells@areva.com>
Tracking Status: None
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: auscharmx02.adom.ad.corp

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MESSAGE	4017	11/30/2011 4:57:36 PM
Batch 522 Supplement 1 Response US EPR DC.pdf	903821	

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

Response to

Request for Additional Information No. 522 (6100, 6107), Revision 0
Supplement 1

10/27/2011

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 03.09.02 - Dynamic Testing and Analysis of Systems Structures and Components
SRP Section: 03.09.05 - Reactor Pressure Vessel Internals

Application Section: 3.9

QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects) (EMB2)
QUESTIONS for Engineering Mechanics Branch 1 (AP1000/EPR Projects) (EMB1)

Question 03.09.05-31:

OPEN ITEM

Follow-up RAI 149, Question 03.09.05-8

In the January 29, 2009 response to RAI 149, Question 03.09.05-8, the applicant provided Figure 03.09.05-8-1 that illustrates the clearance among the radial keys, radial key inserts, the LSP, and the reactor vessel shell. The applicant proposed to revise US-EPR FSAR Tier 2, Sections 3.9.5.3.1.2 and 3.9.5.1.2.5 to clarify the support functions of the radial keys. The staff finds that FSAR update and the RAI response provide sufficient description of the function and load paths of the radial keys. However, the applicant did not include Figure 03.09.05-8-1 in Rev 2 of the FSAR. Please provide in the FSAR, Figure 03.09.05-8-1.

Response to Question 03.09.05-31:

U.S. EPR FSAR Tier 2, Section 3.9.5, will be revised to add new Figure 3.9.5-8 which reflects Figure 03.09.05-8-1 from RAI 149, Question 03.09.05-8.

FSAR Impact:

U.S. EPR FSAR Tier 2, Section 3.9.5, will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

outlet nozzle diameter in order to reduce, as much as possible, the outlet nozzle gap, which reduces the bypass flow at full power conditions. The annulus between the heavy reflector and the core barrel allows a flow velocity that meets the cooling needs of the heavy reflector.

3.9.5.3.1.2 Controlled Cold Gaps

The controlled cold gaps for the RPV internals are described below:

- The diameters of the core barrel flange and the upper support assembly flange are customized to the RPV flange ledge in order to reduce the relative displacements between the top of the internals and the RPV.
- The heavy reflector bottom includes a lip that fits in a ledge machined in the LSP. The reduced radial gap between the ledge and the lip avoids sliding of the heavy reflector.
- The diameter of the UCP is customized to the corresponding core barrel shell inner diameter. This gap is also controlled in order to reduce possible lateral displacement.
- The radial key inserts are customized to the corresponding LSP grooves to maintain controlled lateral, circumferential, and vertical clearances, see Figure 3.9.5-8. Additional information on the radial keys is provided in Section 3.9.5.1.2.5.

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3.9.5.3.2 Displacement Limits

The displacement limit for functionality of the CRGA is a maximum of 0.787 inches of the UCP displacement relative to the USP. This displacement limit is based on full scale CRGA loss of function testing.

3.9.5.4 BWR Reactor Pressure Vessel Internal Including Steam Dryer

This section does not apply to the U.S. EPR.

3.9.5.5 References

1. ASME Boiler and Pressure Vessel Code, Section III, “Rules for Construction of Nuclear Power Plant Components,” The American Society of Mechanical Engineers, 2004.

Figure 3.9.5-8—Illustration of the Radial Keys and Clearances

RAI 522,
Q. 03.09.05-31