ArevaEPRDCPEm Resource

From: WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]
Sent: Wednesday, May 09, 2012 9:01 AM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); KOWALSKI David (AREVA)
Subject: Response to U.S. EPR Design Certification Application RAI No. 504 (5982), FSAR Ch. 3, Supplement 4
Attachments: RAI 504 Supplement 4 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. provided a schedule for a technically correct and complete response to the question in RAI No. 504 on September 28, 2011. Supplement 1 and Supplement 2 responses to RAI No. 504 were sent on November 18, 2011 and February 24, 2012, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 504 was sent on April 24, 2012 to provide a technically correct and complete final response to Question 03.02.02-14.

The attached file, "RAI 504 Supplement 4 Response US EPR DC.pdf" provides a revised final response to Question 03.02.02-14, which corrects and supersedes the response to this question provided in Supplement 3.

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 504 Question 03.02.02-14.

The following table indicates the respective pages in the response document, "RAI 504 Supplement 4 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 504 — 03.02.02-14	2	4

This concludes the formal AREVA NP response to RAI 504, and there are no questions from this RAI for which AREVA NP has not provided responses.

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: Tuesday, April 24, 2012 4:18 PM
To: Getachew.Tesfaye@nrc.gov
Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); KOWALSKI David (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 504 (5982), FSAR Ch. 3, Supplement 3

Getachew,

AREVA NP Inc. provided a schedule for a technically correct and complete response to the single question in RAI No. 504 on September 28, 2011. Supplement 1 and Supplement 2 responses to RAI No. 504 were sent on November 18, 2011 and February 24, 2012, respectively, to provide a revised schedule.

The attached file, "RAI 504 Supplement 3 Response US EPR DC.pdf" provides a technically correct and complete final response to Question 03.02.02-14.

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 504 Question 03.02.02-14.

The following table indicates the respective pages in the response document, "RAI 504 Supplement 3 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 504 — 03.02.02-14	2	4

This concludes the formal AREVA NP response to RAI 504, and there are no questions from this RAI for which AREVA NP has not provided responses.

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: Friday, February 24, 2012 5:04 PM
To: Getachew.Tesfaye@nrc.gov
Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); KOWALSKI David (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 504 (5982), FSAR Ch. 3, Supplement 2

Getachew,

AREVA NP Inc. provided a schedule for a technically correct and complete response to the one question in RAI No. 504 on September 28, 2011. Supplement 1 response to RAI No. 504 was sent on November 18, 2011 to provide a revised schedule.

The schedule for a technically correct and complete response to Question 03.02.02-14 has been changed as provided below.

Question #	Response Date
RAI 504 — 03.02.02-14	**April 25, 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: Friday, November 18, 2011 3:48 PM
To: Getachew.Tesfaye@nrc.gov
Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); KOWALSKI David (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 504 (5982), FSAR Ch. 3, Supplement 1

Getachew,

AREVA NP Inc. provided a schedule for a technically correct and complete response to the one question in RAI No. 504 on September 28, 2011.

The schedule has been revised as provided below.

Question #	Response Date
RAI 504 — 03.02.02-14	**March 23, 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: Wednesday, September 28, 2011 4:48 PM
To: 'Tesfaye, Getachew'
Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); KOWALSKI David (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 504 (5982), FSAR Ch. 3

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 504 Response US EPR DC," provides a schedule since a technically correct and complete response to the question cannot be provided at this time.

The following table indicates the respective pages in the response document, "RAI 504 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 504 — 03.02.02-14	2	3

The schedule for a technically correct and complete response to this question is provided below.

Question #	Response Date
RAI 504 — 03.02.02-14	November 22, 2011

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: Tuesday, August 30, 2011 2:59 PM
To: ZZ-DL-A-USEPR-DL
Cc: McNally, Richard; Dixon-Herrity, Jennifer; Miernicki, Michael; Clark, Phyllis; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 504 (5982), FSAR Ch. 3

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on August 12, 2011, and discussed with your staff on August 30, 2011. No change is made to the draft RAI as a result of this 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

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 3912

Mail Envelope Properties (2FBE1051AEB2E748A0F98DF9EEE5A5D4C3B6FC)

Subject: Response to U.S. EPR Design Certification Application RAI No. 504 (5982), FSAR Ch. 3, Supplement 4
Sent Date: 5/9/2012 9:01:15 AM
Received Date: 5/9/2012 9:00:29 AM
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
"KOWALSKI David (AREVA)" <David.Kowalski@areva.com>
Tracking Status: None
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: auscharmx02.adom.ad.corp

Files	**Size**	**Date & Time**
MESSAGE	7824	5/9/2012 9:00:29 AM
RAI 504 Supplement 4 Response US EPR DC.pdf	574325	

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

Response to

Request for Additional Information No. 504 (5982), Supplement 4

8/30/2011

U.S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 03.02.02 - System Quality Group Classification
Application Section: 3.2.2

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

Question 03.02.02-14:

OPEN ITEM

FSAR Table 3.2.2-1 Revision 2 adds the RPV Refueling Cavity Seal and classifies this component as non-safety-related Safety Class NS-AQ, Quality Group (QG) D and Seismic Category I. The response from AREVA to RAI 337, Question 09.01.04-14 changes the name of the seal to "ring" and revises the classification from QG D to N/A. The response also clarifies that the cavity ring is a mechanical component designed in accordance with ASME Section III, Subsection ND and quality group does not apply to the cavity ring since it is not a pressure-retaining component. The seismic classification as Seismic Category I with QA to 10 CFR 50 Appendix B is consistent with a safety-related SSC and RG 1.29 and RG 1.13. However, the QG classification for a non-safety-related mechanical component appears to be inconsistent with RG 1.26, the seismic Category I classification and the ASME Code Class such that additional information is needed regarding the basis for the QG classification.

I. Explain why the refueling cavity seal/ring is not considered a structural or pressure-retaining component and describe the extent that codes and standards are applied.

II. Explain the specific function of the cavity seal/ring, such as precluding leakage of radioactive fluids and the differential design pressure it can withstand.

III. If the ring serves the same purpose as the pool liner structure and is not considered pressure-retaining, explain why this item is not considered a structural component.

IV. Specifically describe the extent of certification and stamping and explain why this component is classified as QG N/A rather than QG C. A component designed to ASME Section III Subsection ND is normally designated as QG C.

V. Mechanical components that contain radioactive materials are normally QG C or QG D. The basis for the classification as QG N/A and NS-AQ has not been justified. In particular the following information is needed to evaluate.

   a. Establish if the cavity seal/ring is defined as safety-related or important to safety using the definitions in 10 CFR 50 and Appendix A and clarify if the seal is on the QA list required by 10 CFR 50.34 and 10 CFR 50 Appendix B.

   b. Describe the specific safety function and the basis for the designation as safety-related, important to safety or non-safety-related.

   c. Clarify if the ring/seal contains radioactive fluids and if this QG classification as N/A is an exception to RG 1.26 and, if so, include the technical justification in the DCD.

   d. Since the seal/ring is classified as Seismic Category I with an Appendix B QA Program that is normally used for safety-related SSCs, explain why the seal/ring classified as QG N/A is not also considered safety-related.

   e. If the seal/ring is considered safety-related, the basis for the classification as QG N/A should be described.

f. If the seal/ring is defined as non-safety-related, but is important to safety concerning the risk to health and safety of the public, describe the evaluation of risk-significance.

g. If the seal/ring is considered non-safety-related, explain why this is a nonessential component and clarify if this is an exception to SRP 9.1.2 or 9.1.3.

Response to Question 03.02.02-14:

Item I:

The reactor pressure vessel (RPV) refueling cavity ring does not provide a structural or pressure-retaining function, and therefore, is considered neither a structural or pressure-retaining component. The cavity ring provides a liquid-retaining barrier to prevent water from leaking from the refueling cavity. Since the refueling cavity is open to the atmosphere of the Containment Building, it is not pressurized. Such components are leak tested rather than pressure tested. Structural support for the cavity ring is provided by the reactor cavity concrete floor and reactor vessel.

The cavity ring base metal and weld materials are consistent with specifications in ASME BPVC, Section II. The cavity ring is designed to meet the stress limits of ASME BPVC, Section III. Welding procedures and welders will be qualified in accordance with ASME BPVC, Section IX. Welds will be examined in accordance with ASME BPVC, Section V.

Item II:

The cavity ring provides a liquid retaining barrier to prevent water from leaking from the refueling cavity into the gap between the RPV flange and cavity liner. The cavity ring is designed for a hydrostatic water head of 40 feet.

Item III:

The reactor cavity pool liner is a fluid-retaining component. The reactor cavity concrete floor is the structure supporting the pool liner.

Item IV:

Only pressure-retaining components receive a quality group classification (QGC). Refer to U.S. EPR FSAR Tier 2, Section 3.2.2. The cavity ring is not certified and stamped as an ASME Section III component.

Item V:

a. The safety classification of the RPV refueling cavity ring is safety-related. This is different than the safety classification identified in the Response to RAI 337, Supplement 17, Question 09.01.04-14. The cavity ring is subject to the quality assurance program requirements of 10CFR50, Appendix B, Quality Assurance Program.

b. The refueling cavity ring is classified as a safety-related component. The safety-related function is to maintain a fluid boundary so that the level of water in the reactor

cavity, which is assumed in the fuel handling accident (U.S. EPR FSAR Tier 2, Section 15.0.3.10), is maintained.

c. The refueling cavity liner and ring can be considered as a component that could contain radioactive fluids. As described in RG 1.26 and SRP Section 3.2.2, quality group classifications apply to pressure-retaining components. The cavity ring is not a pressure-retaining component.

d. The cavity ring is classified as a safety-related component.

e. Quality group classifications apply to pressure-retaining components. The cavity ring is not a pressure-retaining component.

f. The cavity ring is classified as a safety-related component.

g. The cavity ring is classified as a safety-related component.

U.S. EPR FSAR Tier 2, Table 3.2.2-1—Classification Summary and Table 3.10-1—List of Seismically and Dynamically Qualified Mechanical and Electrical Equipment, will be revised to reflect the safety classification of the refueling cavity ring changing from supplemented grade (NS-AQ) to safety-related.

FSAR Impact:

U.S. EPR FSAR Tier 2, Table 3.2.2-1 and Table 3.10-1 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

Table 3.2.2-1—Classification Summary
Sheet 8 of 194

KKS System or Component Code	SSC Description	Safety Classification (Note 15)	Quality Group Classification	Seismic Category (Note 16)	10 CFR 50 Appendix B Program (Note 5)	Location (Note 17)	Comments/ Commercial Code
30JAH10 BU	Reactor Coolant System Insulation	NS-AQ	N/A	II	Yes	UJA	
30JAA10 BB001	Reactor Pressure Vessel Pressure Boundary	S	A	I	Yes	UJA	ASME Class 1[1]
30JAA10BB001	Reactor Pressure Vessel (Radial Keys)	S	B	I	Yes	UJA	ASME Class CS[4]
30JAA10	RPV High Point Vent Piping & Valves (downstream of Valve 30JAA10 AA502)	NS-AQ	D	II	Yes	UJA	ANSI/ASME B31.1[6], ANSI/ASME B16.34[7]
30JAA10	RPV High Point Vent Piping (upstream of Valve 30JAA10 AA501)	S	A	I	Yes	UJA	ASME Class 1[1]
30JAA10 AA501/502	RPV High Point Vent Valves	S	A	I	Yes	UJA	ASME Class 1[1]
JAC	RPV Internals - Control Rod Drive Mechanism Adaptor Thermal Sleeves	NS-AQ	N/A	II	Yes	UJA	ASME Class CS[4] (Internal Structure)
30JAB	RPV Refueling Cavity Ring	~~NS-AQ~~S	N/A	I	Yes	UJA	

03.02.02-14

Table 3.10-1—List of Seismically and Dynamically Qualified Mechanical and Electrical Equipment
Sheet 1 of 200

Name Tag (Equipment Description)	Tag Number	Local Area KKS ID (Room Location)	EQ Environment (Note 1)	Radiation Environment Zone (Note 2)	EQ Designated Function (Note 3)	Safety Class (Note 4)		EQ Program Designation (Note 5)	
FLUID SYSTEMS									
Reactor Coolant System (RCS)									
RPV									
Reactor Pressure Vessel	30JAA10BB001	30UJA11001	H	H	SI	S			Y (5)
RPV O-ring Leakoff Vlv #1	30JAA10AA003	30UJA15005	H	H	SII	NS-AQ	C/NM	Y (4)	Y (5)
RPV O-ring Leakoff Vlv #2	30JAA10AA004	30UJA15005	H	H	SII	NS-AQ	C/NM	Y (4)	Y (5)
RPV O-ring Leakoff Drain Vlv	30JAA10AA301	30UJA15005	H	H	SII	NS-AQ	C/NM	Y (4)	Y (5)
RPV O-ring Leakoff Press Iso Vlv	30JAA10AA302	30UJA15005	H	H	SII	NS-AQ	C/NM	Y (4)	Y (5)
RPV High Point Vent Vlv #1	30JAA10AA501	30UJA18019	H	H	SI	S	C/NM	Y (4)	Y (5)
RPV High Point Vent Vlv #2	30JAA10AA502	30UJA18019	H	H	SI	S	C/NM	Y (4)	Y (5)
RPV High Point Vent Vlv #3	30JAA10AA506	30UJA18019	H	H	SII	NS-AQ	C/NM	Y (4)	Y (5)
RPV High Point Vent Vlv #4	30JAA10AA505	30UJA18019	H	H	SII	NS-AQ	C/NM	Y (4)	Y (5)
RPV High Point Vent Vlv #5	30JAA10AA507	30UJA18019	H	H	SII	NS-AQ	C/NM	Y (4)	Y (5)
RPV High Point Vent Vlv #6	30JAA10AA503	30UJA18019	H	H	SII	NS-AQ	C/NM	Y (4)	Y (5)
RPV High Point Vent Vlv #7	30JAA10AA504	30UJA18019	H	H	SII	NS-AQ	C/NM	Y (4)	Y (5)
Post Acc RPV High Pt Vent Vlv #1	30JAA10AA508	30UJA18019	H	H	SI	S	C/NM	Y (4)	Y (5)
Post Acc RPV High Pt Vent Vlv #2	30JAA10AA509	30UJA18019	H	H	SI	S	C/NM	Y (4)	Y (5)
Post Acc RPV High Pt Vent Vlv #3	30JAA10AA510	30UJA18019	H	H	SI	S	C/NM	Y (4)	Y (5)
Post Acc RPV High Pt Vent Vlv #4	30JAA10AA511	30UJA18019	H	H	SI	S	C/NM	Y (4)	Y (5)
Post Acc High Pt Vent Flow Restrictor	30JAA10BP001	30UJA18019	H	H	SII	NS-AQ			Y (5)
Vlv AA503 Position Sensor (M)	30JAA10CG503B	30UJA18019	H	H	SII	NS-AQ			Y (5)
Vlv AA504 Position Sensor (M)	30JAA10CG504B	30UJA18019	H	H	SII	NS-AQ			Y (5)
Vlv AA505 Position Sensor (M)	30JAA10CG505B	30UJA18019	H	H	SII	NS-AQ			Y (5)
RPV Inner O-Ring Press Sensor (PB)	30JAA10CP050	30UJA15005	H	H	SII	NS-AQ			Y (5)
RPV Inner O-Ring Temp Sensor (PB)	30JAA10CT050	30UJA15005	H	H	SII	NS-AQ			Y (5)
RPV Refueling Cavity ~~Seal~~Ring	30JAB	30UJA11001	H	H	SI	~~NS-AQ~~S			Y(5)
CRDMs									
CRDM #1 Latch Mechanism	30JDA01AE	30UJA11001	H	H	SI	S			Y (5)
CRDM #1 Pressure Housing	30JDA01AE	30UJA11001	H	H	SI	S	C/NM	Y (4)	Y (5)
CRDM #1 Position Sensor (M)	30JDA01CG801	30UJA11001	H	H	SI	S			Y (5)
CRDM #1 Top Position Limit Sensor (M)	30JDA01CG802	30UJA11001	H	H	SII	NS-AQ			Y (5)

03.02.02-14