

ArevaEPRDCPEm Resource

From: WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]
Sent: Tuesday, April 03, 2012 1:37 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (AREVA); DELANO Karen (AREVA); HATHCOCK Phillip (AREVA); LEIGHLITER John (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); KOWALSKI David (AREVA); HARRINGTON James (AREVA)
Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No. 492 (5815), FSAR Ch. 9, Question 09.03.04-25
Attachments: RAI 492 Q.09.03.04-25 Response MASTER - DRAFT.pdf
Importance: High

Getachew,

Attached is a DRAFT response to Question 09.03.04-25 in RAI No. 492 (FSAR Ch. 9) in advance of the April 18, 2012 final date.

Let me know if the staff has any questions or if this response can be sent as final.

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, March 30, 2012 9:06 AM
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. 492 (5815), FSAR Ch. 9, Supplement 5
Importance: High

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the six questions in RAI No. 492 on July 6, 2011. Supplement 1 and Supplement 2 responses to RAI No. 492 were sent on November 11, 2011 and December 16, 2011, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 492 was sent on February 15, 2012 to provide a technically correct and complete response to one question (Question 09.03.04-24). Supplement 4 response to RAI No. 492 was sent on February 24, 2012 to provide a revised schedule.

The attached file, "RAI 492 Supplement 5 Response US EPR DC.pdf" provides a technically correct and complete final response to Questions 09.03.04-22 and 09.03.04-26.

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 492 Questions 09.03.04-22 and 09.03.04-26.

The following table indicates the respective pages in the response document, "RAI 492 Supplement 5 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 492 — 09.03.04-22	2	3
RAI 492 — 09.03.04-26	4	4

The schedule for the remaining three questions has not changed and is provided below.

Question #	Response Date
RAI 492 — 09.03.04-21	April 18, 2012
RAI 492 — 09.03.04-23	August 17, 2012
RAI 492 — 09.03.04-25	April 18, 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, February 24, 2012 5:00 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. 492 (5815), FSAR Ch. 9, Supplement 4
Importance: High

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the 6 questions in RAI No. 492 on July 6, 2011. Supplement 1 and Supplement 2 responses to RAI No. 492 were sent on November 11, 2011 and December 16, 2011, respectively, to provide a revised schedule. Supplement 3 response to RAI No. 492 was sent on February 15, 2012 to provide a technically correct and complete response to one question (Question 09.03.04-24).

The schedule for technically correct and complete responses to Questions 09.03.04-22 and 09.03.04-26 has changed as provided below. The schedule for the other 3 questions has not changed.

Question #	Response Date
RAI 492 — 09.03.04-21	April 18, 2012
RAI 492 — 09.03.04-22	April 18, 2012
RAI 492 — 09.03.04-23	August 17, 2012
RAI 492 — 09.03.04-25	April 18, 2012
RAI 492 — 09.03.04-26	April 18, 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
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From: WILLIFORD Dennis (RS/NB)
Sent: Wednesday, February 15, 2012 9:56 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. 492 (5815), FSAR Ch. 9, Supplement 3
Importance: High

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the six questions in RAI No. 492 on July 6, 2011. Supplement 1 and Supplement 2 responses were sent on November 11, 2011 and December 16, 2011, respectively, to provide a revised schedule.

The attached file, "RAI 492 Supplement 3 Response US EPR DC.pdf" provides a technically correct and complete final response to Question 09.03.04-24. 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 Question 09.03.04-24.

The following table indicates the respective pages in the response document, "RAI 492 Supplement 3 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 492 — 09.03.04-24	2	2

The schedule for technically correct and complete responses to the remaining five questions has changed as provided below.

Question #	Response Date
RAI 492 — 09.03.04-21	April 18, 2012
RAI 492 — 09.03.04-22	March 29, 2012

RAI 492 — 09.03.04-23	August 17, 2012
RAI 492 — 09.03.04-25	April 18, 2012
RAI 492 — 09.03.04-26	March 29, 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, December 16, 2011 9:29 AM
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. 492 (5815), FSAR Ch. 9, Supplement 2

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the six questions in RAI No. 492 on July 6, 2011. Supplement 1 response to RAI No. 492 was sent on November 11, 2011 to provide a revised schedule.

The schedule for technically correct and complete responses to the six questions has changed as provided below.

Question #	Response Date
RAI 492 — 09.03.04-21	February 15, 2012
RAI 492 — 09.03.04-22	February 15, 2012
RAI 492 — 09.03.04-23	February 15, 2012
RAI 492 — 09.03.04-24	February 15, 2012
RAI 492 — 09.03.04-25	February 15, 2012
RAI 492 — 09.03.04-26	February 15, 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: RYAN Tom (RS/NB)
Sent: Friday, November 11, 2011 11:16 AM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); KOWALSKI David (RS/NB); WILLIFORD Dennis (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 492 (5815), FSAR Ch. 9, Supplement 1

Getachew,

AREVA NP Inc. provided a schedule for technically correct and complete responses to the six questions in RAI No. 492 on July 6, 2011.

The schedule for technically correct and complete responses to the six questions has been changed and is provided below.

Question #	Response Date
RAI 492 — 09.03.04-21	December 16, 2011
RAI 492 — 09.03.04-22	December 16, 2011
RAI 492 — 09.03.04-23	December 16, 2011
RAI 492 — 09.03.04-24	December 16, 2011
RAI 492 — 09.03.04-25	December 16, 2011
RAI 492 — 09.03.04-26	December 16, 2011

Sincerely,

*Tom Ryan for
Dennis Williford, P.E.
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.*

7207 IBM Drive, Mail Code CLT 2B
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From: WILLIFORD Dennis (RS/NB)
Sent: Wednesday, July 06, 2011 5:26 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. 492 (5815), FSAR Ch. 9

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 492 Response US EPR DC," provides a schedule since technically correct and complete responses to the six questions cannot be provided at this time.

The following table indicates the respective pages in the response document, "RAI 492 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 492 — 09.03.04-21	2	2
RAI 492 — 09.03.04-22	3	3
RAI 492 — 09.03.04-23	4	4
RAI 492 — 09.03.04-24	5	5
RAI 492 — 09.03.04-25	6	6
RAI 492 — 09.03.04-26	7	7

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

Question #	Response Date
RAI 492 — 09.03.04-21	November 11, 2011
RAI 492 — 09.03.04-22	November 11, 2011
RAI 492 — 09.03.04-23	November 11, 2011
RAI 492 — 09.03.04-24	November 11, 2011
RAI 492 — 09.03.04-25	November 11, 2011
RAI 492 — 09.03.04-26	November 11, 2011

Sincerely,

Dennis Williford, P.E.
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.

7207 IBM Drive, Mail Code CLT 2B
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Email: Dennis.Williford@areva.com

From: Tesfaye, Getachew [<mailto:Getachew.Tesfaye@nrc.gov>]
Sent: Friday, June 03, 2011 7:22 PM
To: ZZ-DL-A-USEPR-DL
Cc: Sastre, Eduardo; Terao, David; Hearn, Peter; Clark, Phyllis; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 492 (5815), FSAR Ch. 9

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on May 21, 2011, and on June 1, 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: 3860

Mail Envelope Properties (2FBE1051AEB2E748A0F98DF9EEE5A5D4BAFB0E)

Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No. 492
(5815), FSAR Ch. 9, Question 09.03.04-25
Sent Date: 4/3/2012 1:36:49 PM
Received Date: 4/3/2012 1:35:11 PM
From: WILLIFORD Dennis (AREVA)

Created By: Dennis.Williford@areva.com

Recipients:

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Tracking Status: None
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Tracking Status: None
"LEIGHLITER John (AREVA)" <John.Leighliter@areva.com>
Tracking Status: None
"ROMINE Judy (AREVA)" <Judy.Romine@areva.com>
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Tracking Status: None
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Tracking Status: None
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Tracking Status: None

Post Office: auscharm02.adom.ad.corp

Files	Size	Date & Time
MESSAGE	11755	4/3/2012 1:35:11 PM
RAI 492 Q.09.03.04-25 Response MASTER - DRAFT.pdf		540302

Options

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

Response to
Request for Additional Information No. 492(5815), DRAFT
Question 09.03.04-25

6/03/2011

U.S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 09.03.04 - Chemical and Volume Control System (PWR) (Including
Boron Recovery System)
Application Section: 9.3.4

QUESTIONS for Component Integrity, Performance, and Testing Branch 2
(ESBWR/ABWR Projects) (CIB2)

Question 09.03.04-25:

RAI 200, Question 09.03.04-20 requested that a pre-operational functional test of the evaporator system demonstrating its capabilities be performed. The applicant responded that such a test "will be requested as part of the supplier's functional shop testing (or equivalent) prior to owner equipment acceptance and release for shipment (to the site)."

Therefore, the Staff requests that the applicant describe the pre-operation functional test of the evaporator system in the FSAR.

Response to Question 09.03.04-25:

Boron recovered by the Coolant Treatment System (CTS) is used for operational boron management and is not used to perform any safety functions. The CTS is a subsystem of the Chemical and Volume Control System (CVCS), which also includes the following subsystems: Coolant Supply and Storage System (CSSS) and Reactor Boron and Water Makeup System (RBWMS).

The Extra Borating System (EBS), which is described in U.S. EPR FSAR Tier 2, Sections 4.6.4 and 6.8, provides a safety-related source of enriched boron. Only fresh ^{10}B enriched boric acid, using clean demineralized water, can be supplied to the EBS.

Reactor coolant, which is letdown from the CVCS and used for reactivity control, is initially stored in one of six CSSS tanks. If boron recovery is desired, reactor coolant is routed to the CTS for processing and returned to a tank in the CSSS for use, as demineralized reactor coolant that is injected into the reactor coolant system (RCS) through the CVCS.

As described in U.S. EPR FSAR Tier 2, Sections 4.6.4 and 9.3.4, the RBWMS contains two 24,300 gallon boric acid storage tanks (BAST) that are used to supply concentrated enriched boric acid (7000 ppm boron) to the RCS during plant operation. The RBWMS does not perform any safety functions. The storage capacity is sufficient to satisfy operational requirements (start-up, shut-down and refueling). The RBWMS also has a function of adding fresh boric acid to the BAST. Fresh boric acid with 100 percent ^{10}B enriched boric acid can be used to compensate for ^{10}B depletion by neutron absorption in the core.

At the beginning of the fuel cycle, prior to deboration to criticality, one BAST has sufficient stored boric acid to reach cold shutdown without using any safety-related sources. The second BAST is empty and available to receive recovered boric acid from the evaporator system during the fuel cycle.

The operation of the evaporator is described in U.S. EPR FSAR Tier 2, Section 9.3.4, as part of the CVCS. Preoperational testing of the evaporator is identified in U.S. EPR FSAR Tier 2, Section 9.3.4.4, in test abstract #006.

U.S. EPR FSAR Tier 2, Section 14.2.12.1.6, describes the CSSS (Test #006). Sections 3.3 through 3.9, and Section 5.1.2 in Test #006, address preoperational testing of the evaporator (boric acid column) and its interface with other portions of the CSSS and RBWMS.

This response does not require any changes to the U.S. EPR FSAR.

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

DRAFT