

ArevaEPRDCPEm Resource

From: BRYAN Martin (EXT) [Martin.Bryan.ext@areva.com]
Sent: Friday, March 05, 2010 3:11 PM
To: Tesfaye, Getachew
Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); ROMINE Judy (AREVA NP INC); PANNELL George L (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 285, FSAR Ch 7, Supplement 5
Attachments: RAI 285 Supp 5 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 4 of the 20 questions of RAI No. 285 on November 11, 2009. AREVA NP submitted Supplement 1 to the response on December 17, 2009 to address 6 of the remaining 16 questions. AREVA NP submitted Supplement 2 to the response on January 22, 2010 to provide a revised schedule for the remaining questions. AREVA NP submitted Supplement 3 to the response on February 19, 2010 which provided responses to 7 of the 10 remaining questions. AREVA NP submitted Supplement 4 to the response on Feb. 26, 2010 which provided responses to 1 of the remaining 3 questions. The attached file, "RAI 285 Supplement 5 Response US EPR DC.pdf" provides technically correct and complete responses to 1 of the remaining 2 questions. This submittal completes responses to 15 of the 16 questions for RAI 285.

The following table indicates the respective pages in the response document, "RAI 285 Supplement 5 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 285 — 07.01-15	2	4

The schedule for technically correct and complete response to question 07.03-21 is provided below.

Question #	Response Date
RAI 285 — 07.03-21	April 16, 2010

Sincerely,

Martin (Marty) C. Bryan
Licensing Advisory Engineer
AREVA NP Inc.
Tel: (434) 832-3016
Martin.Bryan@areva.com

From: DUNCAN Leslie E (AREVA NP INC)
Sent: Friday, February 26, 2010 3:27 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); ROMINE Judy (AREVA NP INC);

PANNELL George L (AREVA NP INC); BRYAN Martin (EXT)

Subject: Response to U.S. EPR Design Certification Application RAI No. 285, FSAR Ch 7, Supplement 4

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 4 of the 20 questions of RAI No. 285 on November 11, 2009. AREVA NP submitted Supplement 1 to the response on December 17, 2009 to address 6 of the remaining 16 questions. AREVA NP submitted Supplement 2 to the response on January 22, 2010 to provide a revised schedule for the remaining questions. AREVA NP submitted Supplement 3 to the response on February 19, 2010 which provided responses to 7 of the 10 remaining questions. The attached file, "RAI 285 Supplement 4 Response US EPR DC.pdf," provides a technically correct and complete response to 1 of the remaining 3 questions.

The following table indicates the respective pages in the response document, "RAI 285 Supplement 4 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 285 — 07.03-25	2	3

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

Question #	Response Date
RAI 285 — 07.01-15	March 5, 2010
RAI 285 — 07.03-21	April 16, 2010

Sincerely,

Les Duncan
Licensing Engineer
AREVA NP Inc.
An AREVA and Siemens Company
Tel: (434) 832-2849
Leslie.Duncan@areva.com

From: DUNCAN Leslie E (AREVA NP INC)

Sent: Friday, February 19, 2010 4:57 PM

To: 'Teshfaye, Getachew'

Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); ROMINE Judy (AREVA NP INC); PANNELL George L (AREVA NP INC)

Subject: Response to U.S. EPR Design Certification Application RAI No. 285, FSAR Ch 7, Supplement 3

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 4 of the 20 questions of RAI No. 285 on November 11, 2009. AREVA NP submitted Supplement 1 to the response on December 17, 2009 to address 6 of the remaining 16 questions. AREVA NP submitted Supplement 2 to the response on January 22, 2010 to provide a revised schedule for the remaining questions. The attached file, "RAI 285 Supplement 3 Response US EPR DC.pdf" provides technically correct and complete responses to 7 of the remaining 10 questions. The schedule for a technically correct and complete response to question 07.03-25 remains unchanged, and the schedule for technically correct and complete responses to questions 07.01-15 and 07.03-21 has been changed.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which supports the response to RAI 285 Supplement 3 Questions 07.01-16, 07.03-27, 07.04-11, and 07.04-13.

The following table indicates the respective pages in the response document, "RAI 285 Supplement 3 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 285 — 07.01-13	2	3
RAI 285 — 07.01-16	4	5
RAI 285 — 07.01-17	6	8
RAI 285 — 07.03-26	9	11
RAI 285 — 07.03-27	12	13
RAI 285 — 07.04-11	14	14
RAI 285 — 07.04-13	15	17

The schedule for a technically correct and complete response to question 07.03-25 remains unchanged and provided below. The schedule for technically correct and complete responses to questions 07.01-15 and 07.03-21 has been changed and is provided below.

Question #	Response Date
RAI 285 — 07.01-15	March 5, 2010
RAI 285 — 07.03-21	April 16, 2010
RAI 285 — 07.03-25	February 26, 2010

Sincerely,

Les Duncan
Licensing Engineer
AREVA NP Inc.
An AREVA and Siemens Company
Tel: (434) 832-2849
Leslie.Duncan@areva.com

From: DUNCAN Leslie E (AREVA NP INC)
Sent: Friday, January 22, 2010 6:27 PM
To: 'Tefaye, Getachew'
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); PANNELL George L (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 285, FSAR Ch 7, Supplement 2

Getachew,

AREVA NP Inc. provided responses to 4 of the 20 questions of RAI No. 285 on November 11, 2009. AREVA NP submitted Supplement 1 to the response on December 17, 2009 to address 6 of the remaining 16 questions.

AREVA NP is unable to provide a response to the 9 RAI No. 285 questions with a commitment date of January 22, 2010. The commitment date for these nine questions has been changed to February 19, 2010 to allow time to incorporate comments and feedback from the upcoming 1/25/10-1/26/10 meeting with the NRC related to U.S. EPR FSAR Chapter 7.

The schedule for a technically correct and complete response to RAI 285 Question 07.03-25 is unchanged and provided below. The schedule for technically correct and complete responses to the other nine RAI questions has been changed and is provided below:

Question #	Response Date
RAI 285 — 07.01-13	February 19, 2010
RAI 285 — 07.01-15	February 19, 2010
RAI 285 — 07.01-16	February 19, 2010
RAI 285 — 07.01-17	February 19, 2010
RAI 285 — 07.03-21	February 19, 2010
RAI 285 — 07.03-25	February 26, 2010
RAI 285 — 07.03-26	February 19, 2010
RAI 285 — 07.03-27	February 19, 2010
RAI 285 — 07.04-11	February 19, 2010
RAI 285 — 07.04-13	February 19, 2010

Sincerely,

Les Duncan
 Licensing Engineer
AREVA NP Inc.
 An AREVA and Siemens Company
 Tel: (434) 832-2849
Leslie.Duncan@areva.com

From: WELLS Russell D (AREVA NP INC)
Sent: Thursday, December 17, 2009 1:26 PM
To: 'Getachew Tesfaye'
Cc: Pederson Ronda M (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 285, FSAR Ch 7, Supplement 1

Getachew,

AREVA NP Inc. provided responses to 4 of the 20 questions of RAI No. 285 on November 11, 2009. The attached file, "RAI 285 Supplement 1 Response US EPR DC.pdf" provides technically correct and complete responses to 6 of the remaining 16 questions, as committed.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which supports the response to RAI 285 Questions 07.02-31 and 07.03-23.

The following table indicates the respective pages in the response document, "RAI 285 Supplement 1 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 285 — 07.01-12	2	2
RAI 285 — 07.02-31	3	3
RAI 285 — 07.03-22	4	5
RAI 285 — 07.03-23	6	6
RAI 285 — 07.03-24	7	8
RAI 285 — 07.05-9	9	9

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

Question #	Response Date
RAI 285 — 07.01-13	January 22, 2010
RAI 285 — 07.01-15	January 22, 2010
RAI 285 — 07.01-16	January 22, 2010
RAI 285 — 07.01-17	January 22, 2010
RAI 285 — 07.03-21	January 22, 2010
RAI 285 — 07.03-25	February 26, 2010
RAI 285 — 07.03-26	January 22, 2010
RAI 285 — 07.03-27	January 22, 2010
RAI 285 — 07.04-11	January 22, 2010
RAI 285 — 07.04-13	January 22, 2010

Sincerely,

(Russ Wells on behalf of)

Ronda Pederson

ronda.pederson@areva.com

Licensing Manager, U.S. EPR Design Certification

New Plants Deployment

AREVA NP, Inc.

An AREVA and Siemens company

3315 Old Forest Road

Lynchburg, VA 24506-0935

Phone: 434-832-3694

Cell: 434-841-8788

From: Pederson Ronda M (AREVA NP INC)

Sent: Wednesday, November 11, 2009 6:11 PM

To: Tesfaye, Getachew

Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); PANNELL George L (AREVA NP INC)

Subject: Response to U.S. EPR Design Certification Application RAI No. 285, FSAR Ch. 7

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information RAI 285. The attached file, "RAI 285 Response US EPR DC.pdf" provides technically correct and complete responses to 4 of the 20 questions.

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 285 Questions 07.01-14 and 07.04-12.

The following table indicates the respective page(s) in the response document, "RAI 285 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 285 — 07.01-12	2	2
RAI 285 — 07.01-13	3	3
RAI 285 — 07.01-14	4	4
RAI 285 — 07.01-15	5	5

RAI 285 — 07.01-16	6	6
RAI 285 — 07.01-17	7	8
RAI 285 — 07.02-30	9	10
RAI 285 — 07.02-31	11	11
RAI 285 — 07.03-21	12	12
RAI 285 — 07.03-22	13	13
RAI 285 — 07.03-23	14	14
RAI 285 — 07.03-24	15	15
RAI 285 — 07.03-25	16	16
RAI 285 — 07.03-26	17	17
RAI 285 — 07.03-27	18	18
RAI 285 — 07.04-10	19	19
RAI 285 — 07.04-11	20	20
RAI 285 — 07.04-12	21	21
RAI 285 — 07.04-13	22	23
RAI 285 — 07.05-9	24	24

A complete answer is not provided for 16 of the 20 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 285 — 07.01-12	December 18, 2009
RAI 285 — 07.01-13	January 22, 2010
RAI 285 — 07.01-15	January 22, 2010
RAI 285 — 07.01-16	January 22, 2010
RAI 285 — 07.01-17	January 22, 2010
RAI 285 — 07.02-31	December 18, 2009
RAI 285 — 07.03-21	January 22, 2010
RAI 285 — 07.03-22	December 18, 2009
RAI 285 — 07.03-23	December 18, 2009
RAI 285 — 07.03-24	December 18, 2009
RAI 285 — 07.03-25	February 26, 2010
RAI 285 — 07.03-26	January 22, 2010
RAI 285 — 07.03-27	January 22, 2010
RAI 285 — 07.04-11	January 22, 2010
RAI 285 — 07.04-13	January 22, 2010
RAI 285 — 07.05-9	December 18, 2009

Sincerely,

Ronda Pederson

ronda.pederson@areva.com

Licensing Manager, U.S. EPR Design Certification

AREVA NP Inc.

An AREVA and Siemens company

3315 Old Forest Road

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Phone: 434-832-3694
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From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]

Sent: Tuesday, October 13, 2009 4:49 PM

To: ZZ-DL-A-USEPR-DL

Cc: Spaulding, Deirdre; Truong, Tung; Morton, Wendell; Cheung, Calvin; Jackson, Terry; Canova, Michael; Guardiola, Maria; Colaccino, Joseph; ArevaEPRDCPEm Resource

Subject: U.S. EPR Design Certification Application RAI No. 285(3560,3507,3552,3564,3565), FSAR Ch. 7

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on August 25, 2009, and discussed with your staff on September 3, 2009. Draft RAI Question 07-01-13 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

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 1214

Mail Envelope Properties (BC417D9255991046A37DD56CF597DB7105787017)

Subject: Response to U.S. EPR Design Certification Application RAI No. 285, FSAR Ch 7, Supplement 5
Sent Date: 3/5/2010 3:10:36 PM
Received Date: 3/5/2010 3:10:39 PM
From: BRYAN Martin (EXT)

Created By: Martin.Bryan.ext@areva.com

Recipients:

"DELANO Karen V (AREVA NP INC)" <Karen.Delano@areva.com>
Tracking Status: None
"BENNETT Kathy A (OFR) (AREVA NP INC)" <Kathy.Bennett@areva.com>
Tracking Status: None
"ROMINE Judy (AREVA NP INC)" <Judy.Romine@areva.com>
Tracking Status: None
"PANNELL George L (AREVA NP INC)" <George.Pannell@areva.com>
Tracking Status: None
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Tracking Status: None

Post Office: AUSLYNCMX02.adom.ad.corp

Files	Size	Date & Time
MESSAGE	13671	3/5/2010 3:10:39 PM
RAI 285 Supp 5 Response US EPR DC.pdf		67536

Options

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

Response to

**Request for Additional Information No. 285 Supplement 5 (3560, 3507, 3552, 3564,
3565), Revision 1**

10/13/2009

U.S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 07.01 - Instrumentation and Controls - Introduction

SRP Section: 07.02 - Reactor Trip System

SRP Section: 07.03 - Engineered Safety Features Systems

SRP Section: 07.04 - Safe Shutdown Systems

SRP Section: 07.05 - Information Systems Important to Safety

Application Section: FSAR Ch. 7

**QUESTIONS for Instrumentation, Controls and Electrical Engineering 1
(AP1000/EPR Projects) (ICE1)**

Question 07.01-15:

Follow-up to RAI Question 07.01-6

Provide revisions to Table 1.9-3 and include the missing Instrumentation and Controls (I&C) issues as discussed below. Also, provide detailed information as to how the I&C issues in Table 1.9-3 are addressed and include drawings as appropriate. Additionally, provide corresponding updates to the U.S. EPR FSAR.

10 CFR 52.47(a)(22) requires design certification applications to include information necessary to demonstrate how operating experience insights have been incorporated into the plant design. The staff reviewed the applicant's Table 1.9-3, as well as NUREG-0933 dated July 31, 2007. In the original RAI, the staff provided one example of a generic issue that was missing from the applicant's table. It is incumbent on the applicant to ensure inclusion of all the issues related to I&C; this information was not provided in the response to the original RAI 07.01-6. The staff identified that the following issues are missing from the applicant's Table 1.9-3. Additional information is needed on the following:

- Issue 3 – Set Point Drift In Instrumentation
- Issue 45 – Inoperability of Instrumentation Due to Extreme Cold Weather
- Issue 64 – Identification of Protection System Instrument Sensing Lines
- Issue 142 – Leakage Through Electrical Isolators in Instrumentation Circuits
- Issue 145 – Actions to Reduce Common Cause Failures
- Issue 160 – Spurious Actuations of Instrumentation Upon Restoration of Power
- Issue 161 – Use of Non-Safety Related Power Supplies in Safety-Related Circuits
- Issue 200 – Tin Whiskers

The applicant states, "During development of the U.S. EPR FSAR, additional generic issues were evaluated ... however, these are not included in the table since they were either ranked "resolved" or "drop." The applicant needs to include the generic issues in their Table 1.9-3 even if they are designated as "resolved generic issues." The applicant mentions the designations "medium and high priority." Per NUREG-0933, as of 1999, the use of the safety priority rankings was discontinued. Although an issue has been "dropped" as a generic issue, it is still an issue important to safety, and needs to be addressed. An example of an issue important to safety pertains to Issue 200, "Tin Whiskers." The staff notes that component failure due to tin whiskers have occurred at nuclear power plants, ranging in severity from spurious alarms and faulty signals in protection systems to reactor trips.

Response to Question 07.01-15:

10 CFR 52.47(a)(21) addresses generic safety issues as follows:

"Proposed technical resolutions of those **Unresolved Safety Issues** and **medium- and high-priority generic safety issues** which are identified in the version of NUREG-0933 current on the date up to 6 months before the docket date of the application and which are technically relevant to the design;" [emphasis added]

Consistent with 10 CFR 52.47(a)(21), NUREG-0800 "Standard Review Plan", Section 1.0.1.9 "Conformance to Regulatory Guidance" states that the review of a design certification application includes a review of:

“Generic issues and Three Mile Island requirements

A table that identifies proposed technical resolutions for those **Unresolved Safety Issues** and **medium- and high-priority generic safety issues** that are identified in the version of NUREG-0933 current on the date up to 6 months before the submittal date of the application...” [emphasis added]

During a public meeting held January 25-26, 2010, the NRC and AREVA NP agreed that the GSI cited in this RAI will not be included in U.S. EPR FSAR Tier 2, Table 1.9-3 because they do not satisfy 10 CFR 52.47(a)(21) criteria cited above.

Also during the public meeting, the NRC indicated that issues 3, 145, 160, and 161 have been incorporated into the NRC guidance that is already addressed in the U.S. EPR FSAR, and do not need to be included in this RAI response. Other issues identified in the RAI are addressed as follows.

Issue 45:

NUREG-0933 states that Sections 7.1, 7.5, and 7.7 of the Standard Review Plan were revised to incorporate changes associated with the issue. This issue was resolved and requirements were issued.

Sections 7.1, 7.5, and 7.7 of the U.S. EPR FSAR address guidance contained in the corresponding SRP sections. Therefore, AREVA NP believes that this issue has been adequately addressed.

Issue 64:

NUREG-0933 states that the NRC imposes a requirement that protection system instrument sensing lines are identified as being associated with the protection system. However, the NRC internally concluded that there would be minimal safety benefit to the proposed requirement, and it was rejected. The issue was resolved with no change in requirements. AREVA NP agrees with this resolution and thus makes no specific commitments regarding identification of protection system instrument sensing lines.

As stated in U.S. EPR FSAR Tier 2, Section 7.1.2.6.22, the safety-related I&C systems will be distinctively marked to satisfy the identification requirements of IEEE Std 603-1998 Clause 5.11.

Issue 142:

NUREG-0933 indicates that the issue was resolved with no new requirements. This was based on the NRC determination from operating experience that isolation devices perform satisfactorily in the operating environment and have not been exposed to failure mechanisms that resulted in signal leakage. This resolution indicates that the NRC found existing requirements and guidance, relative to isolation devices, to be adequate. AREVA NP agrees with this resolution and believes that by addressing BTP 7-11 “Guidance on application and qualification of isolation devices”, issue 142 has been adequately addressed.

U.S. EPR FSAR Tier 2, Section 7.1.2.5.9 addresses conformance with BTP 7-11. Extensive use of optical isolation in modern digital systems greatly reduces the likelihood of failures due to electrical signal leakage.

Issue 200:

NUREG-0933 states that the issue has been dropped as a generic safety issue. This was based on the low number of reported events associated with this issue, the lack of any increasing trend, and the lack of any apparent decrease in reliability of systems or components due to tin whiskers. The resolution also indicates that this issue is more appropriately addressed under existing requirements and programs (10 CFR Part 21, the maintenance rule, and the Reactor Oversight Program). AREVA NP agrees with this resolution and thus believes the issue is most appropriately addressed under the NRC-identified requirements and programs rather than in the design certification application.

FSAR Impact:

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