

## ArevaEPRDCPEm Resource

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**From:** WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]  
**Sent:** Thursday, September 01, 2011 7:51 AM  
**To:** Tesfaye, Getachew  
**Cc:** BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); GUCWA Len (EXTERNAL AREVA)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 480 (5625, 5440,5613, 5573), FSAR Ch. 6, Supplement 3  
**Attachments:** RAI 480 Supplement 3 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to the five questions in RAI 480 on April 18, 2011. Supplement 1 response to RAI 480 was sent on June 22, 2011 with a revised response schedule for the five questions. The schedule for responding to Questions 06.01.02-10, 06.01.02-11, 06.02.02-89 and 06.03-17 was revised as described in the GSI-191 Closure Plan (AREVA NP Inc. letter NRC:11:092 dated August 25, 2011) and as provided in Supplement 2 response to RAI 480, dated August 31, 2011.

The attached file, "RAI 480 Supplement 3 Response US EPR DC.pdf" provides a technically correct and complete response to 2 of the remaining 5 questions. Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the responses to RAI 480 Question 06.01.02-10 and Question 06.01.02-11.

The following table indicates the respective pages in the response document, "RAI 480 Supplement 3 Response US EPR DC.pdf" that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 480 — 06.01.02-10	2	2
RAI 480 — 06.01.02-11	3	3

The schedule for technically correct and complete responses to the remaining 3 questions is unchanged as provided below:

Question #	Response Date
RAI 480 — 06.02.02-88	September 7, 2011
RAI 480 — 06.02.02-89	November 18, 2011
RAI 480 — 06.03-17	November 18, 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](mailto:Dennis.Williford@areva.com)

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**From:** WILLIFORD Dennis (RS/NB)

**Sent:** Wednesday, August 31, 2011 4:41 PM

**To:** Getachew.Tesfaye@nrc.gov

**Cc:** BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); GUCWA Len (External RS/NB)

**Subject:** Response to U.S. EPR Design Certification Application RAI No. 480 (5625, 5440,5613, 5573), FSAR Ch. 6, Supplement 2

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to the five questions in RAI 480 on April 18, 2011. Supplement 1 response to RAI 480 was sent on June 22, 2011 with a revised response schedule for the five questions.

The schedule for responding to Questions 06.01.02-10, 06.01.02-11, 06.02.02-89 and 06.03-17 has been revised as described in the GSI-191 Closure Plan (AREVA NP Inc. letter NRC:11:092 dated August 25, 2011) and as provided below. The schedule for Question 06.02.02-88 is unchanged.

Question #	Response Date
RAI 480 — 06.01.02-10	<b>November 18, 2011</b>
RAI 480 — 06.01.02-11	<b>November 18, 2011</b>
RAI 480 — 06.02.02-88	September 7, 2011
RAI 480 — 06.02.02-89	<b>November 18, 2011</b>
RAI 480 — 06.03-17	<b>November 18, 2011</b>

Sincerely,

***Dennis Williford, P.E.***

***U.S. EPR Design Certification Licensing Manager***

**AREVA NP Inc.**

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**From:** WILLIFORD Dennis (RS/NB)

**Sent:** Wednesday, June 22, 2011 9:53 AM

**To:** Tesfaye, Getachew

**Cc:** BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); GUCWA Len (External RS/NB)

**Subject:** Response to U.S. EPR Design Certification Application RAI No. 480 (5625, 5440,5613, 5573), FSAR Ch. 6, Supplement 1

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to the five questions in RAI 480 on April 18, 2011.

The schedule has been changed as provided below:

<b>Question #</b>	<b>Response Date</b>
RAI 480 — 06.01.02-10	<b>August 31, 2011</b>
RAI 480 — 06.01.02-11	<b>August 31, 2011</b>
RAI 480 — 06.02.02-88	<b>September 7, 2011</b>
RAI 480 — 06.02.02-89	<b>September 21, 2011</b>
RAI 480 — 06.03-17	<b>September 21, 2011</b>

*Sincerely,*

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

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Charlotte, NC 28262  
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**From:** WELLS Russell (RS/NB)  
**Sent:** Monday, April 18, 2011 4:42 PM  
**To:** Tesfaye, Getachew  
**Cc:** GUCWA Len (External RS/NB); BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 480 (5625, 5440,5613, 5573), FSAR Ch. 6

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 480 Response US EPR DC.pdf" provides a schedule since technically correct and complete responses to the 5 questions are not provided.

The following table indicates the respective pages in the response document, "RAI 480 Response US EPR DC.pdf" that contain AREVA NP's responses to the subject questions.

<b>Question #</b>	<b>Start Page</b>	<b>End Page</b>
RAI 480 — 06.01.02-10	2	2
RAI 480 — 06.01.02-11	3	3
RAI 480 — 06.02.02-88	4	4
RAI 480 — 06.02.02-89	5	5
RAI 480 — 06.03-17	6	6

A complete answer is not provided for the 5 questions. The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 480 — 06.01.02-10	June 22, 2011
RAI 480 — 06.01.02-11	June 22, 2011
RAI 480 — 06.02.02-88	June 22, 2011
RAI 480 — 06.02.02-89	June 22, 2011
RAI 480 — 06.03-17	June 22, 2011

*Sincerely,*

*Russ Wells*

*U.S. EPR Design Certification Licensing Manager*

*AREVA NP, Inc.*

*3315 Old Forest Road, P.O. Box 10935*

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*[Russell.Wells@Areva.com](mailto:Russell.Wells@Areva.com)*

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**From:** Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]

**Sent:** Thursday, March 17, 2011 7:29 PM

**To:** ZZ-DL-A-USEPR-DL

**Cc:** Sastre, Eduardo; Terao, David; Jensen, Walton; Ashley, Clinton; Jackson, Christopher; McKirgan, John; Budzynski, John; Lu, Shanlai; Donoghue, Joseph; Carneal, Jason; Colaccino, Joseph; ArevaEPRDCPEm Resource

**Subject:** U.S. EPR Design Certification Application RAI No. 480 (5625, 5440,5613, 5573), FSAR Ch. 6

Attached please find the subject request for additional information (RAI). A draft of the RAI was provided to you on March 11, 2011, and on March 16, 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:** 3389

**Mail Envelope Properties** (2FBE1051AEB2E748A0F98DF9EEE5A5D486D642)

**Subject:** Response to U.S. EPR Design Certification Application RAI No. 480 (5625, 5440,5613, 5573), FSAR Ch. 6, Supplement 3  
**Sent Date:** 9/1/2011 7:50:40 AM  
**Received Date:** 9/1/2011 7:51:59 AM  
**From:** WILLIFORD Dennis (AREVA)

**Created By:** Dennis.Williford@areva.com

**Recipients:**

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<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	7451	9/1/2011 7:51:59 AM
RAI 480 Supplement 3 Response US EPR DC.pdf		113609

**Options**

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

**Response to**

**Request for Additional Information No. 480, Supplement 3**

**3/17/2011**

**U. S. EPR Standard Design Certification**

**AREVA NP Inc.**

**Docket No. 52-020**

**SRP Section: 06.01.02 - Protective Coating Systems (Paints) - Organic Materials**

**SRP Section: 06.02.02 - Containment Heat Removal Systems**

**SRP Section: 06.03 - Emergency Core Cooling System**

**Application Section: 6.1.2**

**QUESTIONS for Component Integrity, Performance, and Testing Branch 1**

**(AP1000/EPR Projects) (CIB1)**

**QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects)**

**(SPCV)**

**QUESTIONS for Reactor System, Nuclear Performance and Code Review (SRSB)**

**Question 06.01.02-10:**

**OPEN ITEM**

As defined in the current design certification rules, COL information items typically identify matters that must be addressed in the combined license FSAR and constitute information requirements but are not the only acceptable set of information in the FSAR. COL Information Item 6.1-2 does not appear to conform to this definition.

Therefore, the staff requests that the applicant revise the description of COL Information Item 6.1-2 to require that the COL applicant describe its plans for addressing components that cannot be procured with DBA qualified coatings.

**Response to Question 06.01.02-10:**

COL Information Item 6.1-2 will be revised in U.S. EPR FSAR Tier 2, Table 1.8-2 and Section 6.1.2.3.2 to state: "A COL applicant that references the U.S. EPR design certification will define a coating application and maintenance program for components that cannot be procured with design basis accident qualified coatings in accordance with 10 CFR 50, Appendix B, Criterion IX."

**FSAR Impact:**

U.S. EPR FSAR Tier 2, Table 1.8-2 and Section 6.1.2.3.2 will be revised as described in the response and indicated on the enclosed markup.

**Question 06.01.02-11:**

**OPEN ITEM**

FSAR Tier 2, Section 6.1.2.2.2, "Coating Repairs and Limitations on Coating Thickness," describes a maintenance program for coatings that ensures maintenance and repairs of coatings are performed following approved procedures. FSAR Tier 2, Section 6.1.2.3.5, "Protective Coating and Organic Materials Program," states that the maintenance program complies with 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." The Staff considers that the description and implementation of the coatings program are the responsibility of the COL applicant and are to be addressed by the COL applicant.

Therefore, the staff requests that the applicant provide a COL information item to require that the COL applicant describe the coatings program and its implementation, including maintenance and repair of coatings.

**Response to Question 06.01.02-11:**

A COL information item will be added to U.S. EPR FSAR Tier 2, Table 1.8-2 and Section 6.1.2.2.2 to state: "A COL applicant that references the U.S. EPR design certification will define the coatings program and its implementation, including maintenance and repair of coatings."



**FSAR Impact:**

U.S. EPR FSAR Tier 2, Table 1.8-2 and Section 6.1.2.2.2 will be revised as described in the response and indicated on the enclosed markup.



# U.S. EPR Final Safety Analysis Report Markups

**Table 1.8-2—U.S. EPR Combined License Information Items**  
**Sheet 19 of 40**

Item No.	Description	Section
6.1-1	A COL applicant that references the U.S. EPR design certification will review the fabrication and welding procedures and other QA methods of ESF component vendors to verify conformance with RGs 1.44 and 1.31.	6.1.1.1 <span style="border: 1px solid red; padding: 2px;">06.01.02-10</span> 
6.1-2	<p><del>If components cannot be procured with DBA-qualified coatings applied by the component manufacturer, a COL applicant that references the U.S. EPR design certification must do one of the following: procure the component as uncoated and apply a DBA-qualified coating system in accordance with 10 CFR 50 Appendix B, Criterion IX; confirm that the DBA-unqualified coating is removed and the component is recoated with DBA-qualified coatings in accordance with 10 CFR 50 Appendix B, Criterion IX; or add the quantity of DBA-unqualified coatings to a list that documents those DBA-unqualified coatings already existing within containment.</del></p> <p><u>A COL applicant that references the U.S. EPR design certification will define a coating application and maintenance program for components that cannot be procured with DBA qualified coatings in accordance with 10 CFR 50 Appendix B, Criterion IX.</u></p>	6.1.2.3.2
6.1-3	<u>A COL applicant that references the U.S. EPR design certification will define the coatings program and its implementation, including maintenance and repair of coatings.</u>	<u>6.1.2.2.2</u>
6.1-4	<u>A COL applicant that references the U.S. EPR design certification will limit the amount of aluminum inside containment that can potentially be submerged to less than 3000ft<sup>2</sup>.</u>	<u>6.1.1.2</u> <span style="border: 1px solid red; padding: 2px;">06.01.02-11</span> 
6.2-1	A COL applicant that references the U.S. EPR design certification will identify the implementation milestones for the CLRT program described under 10 CFR 50, Appendix J.	6.2.6
6.3-1	A COL applicant that references the U.S. EPR design certification will describe the containment cleanliness program which limits debris within containment.	6.3.2.2.2
6.4-1	Deleted.	Deleted
6.4-2	A COL applicant that references the U.S. EPR design certification will provide written emergency planning and procedures in the event of a radiological or a hazardous chemical release within or near the plant, and will provide training of control room personnel.	6.4.3

Service Level III coatings are qualified as safety related, but are not DBA qualified. Therefore, they are selected for use outside of containment in areas where detachment could adversely affect the function of a safety-related SSC.

In addition to failure and delamination, protective coatings can be a source of combustible hydrogen under certain conditions. The production of hydrogen from coatings and other organic and inorganic materials is addressed in Section 6.2.5. The evaluation assesses the potential for formation of coating decomposition products under DBA conditions, and also examines radiation and chemical effects.

In addition to coatings, other organic materials used in the plant are evaluated for their potential interaction with ESFs to confirm that safety functions are not affected.

**6.1.2.2.2 Coating Repairs and Limitations on Coating Thickness**

Approved maintenance and repair techniques are used on protective coatings, as documented in maintenance procedures specific to each coating system and type. This is particularly important with respect to coating thickness because the performance of coatings repairs hold the potential for increasing coating thicknesses beyond the qualified or manufacturer-recommended thicknesses. Therefore, localized repairs are performed in accordance with approved procedures, and do not generally involve over-coating. Coatings repair and maintenance are tracked by the coatings program, and these records are available for any required IRWST sump recirculation evaluations or other safety analyses.

06.01.02-11

A COL applicant that references the U.S. EPR design certification will define the coatings program and its implementation, including maintenance and repair of coatings.

**6.1.2.3 Quality Assurance**

Quality assurance programs provide confidence that safety-related coating systems inside and outside containment will perform as intended. This assurance is achieved through program control of procurement, application, and monitoring of Service Level I, II, and III coating systems. The quality assurance requirements for Service Level I coatings conform to the requirements of ASME NQA-1-1994 (Reference 7), ASTM D3843-00 (Reference 8), and 10 CFR 50, Appendix B, Criterion IX. The quality assurance requirements for Service Level III coatings conform to the requirements of ASME NQA-1-1994 and 10 CFR 50, Appendix B, Criterion IX.

The service level classifications of coatings are generally consistent with the guidance in RG 1.54, Revision 1 and associated standards, with the exception of the use of the Service Level II classification in some areas inside containment. Exceptions to RG 1.54, Revision 1 are identified in Section 6.1.2.4 and primarily involve the use of industry standards updated subsequent to the release of RG 1.54, Revision 1.

**6.1.2.3.1 Special Processes**

In accordance with ASTM D5144-00, the performance of Service Level I and III coatings work is considered a special process, as defined in 10 CFR 50, Appendix B, Criterion IX.

**6.1.2.3.2 Service Level I Coatings**

Service Level I coating systems must be DBA qualified, providing reasonable assurance that the coating will not detach under normal or accident conditions when properly applied and maintained. Additional testing of Service Level I coatings is performed as part of the coating selection process to verify performance in other specific service environments. To preclude the use of DBA-unqualified coatings in Service Level I areas, the procurement of Service Level I coatings used inside containment is considered a safety-related activity. Therefore, 10 CFR 50, Appendix B applies to Service Level I coatings procurement.

To the extent practical, all carbon steel vendor-manufactured components used within containment that require Service Level I protective coatings are procured coated in accordance with 10 CFR 50, Appendix B, Criterion IX (including pipe hangers,

06.01.02-10

lighting, electrical panels, pumps, motors, and valve operators). ~~If components cannot be procured with DBA-qualified coatings applied by the component manufacturer, a COL applicant that references the U.S. EPR design certification must do one of the following:~~

- ~~• Procure the component as uncoated and apply a DBA-qualified coating system in accordance with 10 CFR 50, Appendix B, Criterion IX.~~
- ~~• Confirm that the DBA-unqualified coating is removed and that the component is recoated with DBA-qualified coatings in accordance with 10 CFR 50, Appendix B, Criterion IX.~~
- ~~• Add the quantity of DBA-unqualified coatings to a list that documents those DBA-unqualified coatings already existing within containment.~~

A COL applicant that references the U.S. EPR design certification will define a coating application and maintenance program for components that cannot be procured with DBA-qualified coatings in accordance with 10 CFR 50, Appendix B, Criterion IX.

**6.1.2.3.3 Service Level II Coatings**

Service Level II coating systems are not DBA qualified, but must be tested for resistance to ionizing radiation. As necessary, qualified plant personnel evaluate Service Level II coatings for suitability to specific service environments. Procurement of Service Level II coatings used inside and outside containment is not considered a safety-related activity.