## ArevaEPRDCPEm Resource

**From:** WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]
**Sent:** Monday, September 26, 2011 4:30 PM
**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. 507 (5964), FSAR Ch. 6
**Attachments:** RAI 507 Response US EPR DC.pdf

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 507 Response US EPR DC.pdf" provides a schedule since technically correct and complete responses to the 4 questions cannot be provided at this time.

The following table indicates the respective pages in the response document, "RAI 507 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

| Question # | Start Page | End Page |
|---|---|---|
| RAI 507 — 06.02.02-120 | 2 | 2 |
| RAI 507 — 06.02.02-121 | 3 | 3 |
| RAI 507 — 06.02.02-122 | 4 | 4 |
| RAI 507 — 06.02.02-123 | 5 | 5 |

A complete answer is not provided for the 4 questions. The schedule for technically correct and complete responses to these questions is provided below.

| Question # | Response Date |
|---|---|
| RAI 507 — 06.02.02-120 | November 18, 2011 |
| RAI 507 — 06.02.02-121 | November 18, 2011 |
| RAI 507 — 06.02.02-122 | February 29, 2012 |
| RAI 507 — 06.02.02-123 | November 18, 2011 |

Sincerely,

***Dennis Williford, P.E.***
***U.S. EPR Design Certification Licensing Manager***
**AREVA NP Inc.**
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Charlotte, NC 28262
Phone: 704-805-2223
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**From:** Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
**Sent:** Friday, August 26, 2011 8:53 AM
**To:** ZZ-DL-A-USEPR-DL

**Cc:** Ashley, Clinton; Peng, Shie-Jeng; Jackson, Christopher; McKirgan, John; Carneal, Jason; Colaccino, Joseph; ArevaEPRDCPEm Resource
**Subject:** U.S. EPR Design Certification Application RAI No. 507 (5964), FSAR Ch. 6

Attached please find the subject request for additional information (RAI). A draft of the RAI was provided to you on August 22, 2011, and on August 24, 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:** 3427

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**Subject:** Response to U.S. EPR Design Certification Application RAI No. 507 (5964), FSAR Ch. 6
**Sent Date:** 9/26/2011 4:29:42 PM
**Received Date:** 9/26/2011 4:29:54 PM
**From:** WILLIFORD Dennis (AREVA)

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

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| Files | Size | Date & Time |
|---|---|---|
| MESSAGE | 2534 | 9/26/2011 4:29:54 PM |
| RAI 507 Response US EPR DC.pdf | 19210 | |

**Options**
**Priority:** Standard
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**Response to**

**Request for Additional Information No. 507(5964) Revision 0**

**8/26/2011**

**U. S. EPR Standard Design Certification**
**AREVA NP Inc.**
**Docket No. 52-020**
**SRP Section: 06.02.02 - Containment Heat Removal Systems**
**Application Section: 6.3**

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

**Question 06.02.02-120:**

Since the submission of technical report ANP-10293 Revision 3, NRC staff have been informed by AREVA personnel that one side of the retaining basket is mounted flush against the IRWST wall facing the annular space and this side will not contain a debris screen/filtering surface. The retaining basket provides debris screen/filtering surfaces on the three remaining sides and the bottom of the basket (top of the basket is open). The two sides and bottom of the retaining basket that terminate at the IRWST wall are attached to the IRWST wall with a "tightening device."

Per ANP-10293 Section 2.2, the retaining basket screen mesh size is designed to catch small debris that is carried through the trash rack and minimize fine debris that may bypass the screen and impact downstream component performance. The staff seeks assurance that the retaining basket tightening device, under design basis accident conditions and/or a seismic event, is not breached or gaps/openings are developed that will enhance debris bypass and impair the functionality of the basket.

The staff requests AREVA describe the design basis and performance requirements of the tightening device in the DCD-FSAR or FSAR incorporated references. As part of this information, the staff request AREVA describe/provide the tightening device materials of construction and provide an evaluation of the designs performance relative to GSI-191 debris transport and debris accumulation. Include in the discussion performance requirements at attachment points to the retaining basket, IRWST wall, and within the device itself; and debris filtering capability of the device (if applicable). In addition, describe the qualification of this device, to include testing, if applicable.

**Response to Question 06.02.02-120:**

A response to this question will be provided by November 18, 2011.

**Question 06.02.02-121:**

**Follow-up to RAI 434, Question 06.02.02-72 (specific to 'upstream effects' evaluation)**

NEI 04-07 GR section 7.2 discusses upstream effects. This review [upstream effects] should look for locations where debris might collect and either retard or block the flow to the sump. The concern to be addressed for upstream effects is the hold-up of inventory away from the containment sump.

The NEI 04-07 GR states that certain holdup or choke points may exist which could reduce flow to and possibly cause blockage upstream of the sump. Such areas within containment are: (1) narrowing of hallways or passages - pieces of debris may gather on the floor in these areas and form a debris “mound”, (2) gates or screens that restrict access to areas of containment, such as behind the bioshield or crane wall - debris may form behind the screen or grate, restricting flow to the containment sump and (3) the refueling canal drain - the collection of debris on the floor drain should be evaluated to determine if this path to the containment sump may be blocked.

The items listed above are typical areas of concern that are generally applicable to all containments. However, each containment design has unique geometric features, as well as a plant-specific insulation installation. An upstream effects evaluation should include and address these plant-specific features.

In section 3.2.5 of ANP-10293, AREVA describes the US EPR water holdup analysis and discusses water holdup due to steam, condensate on walls, and water retained on floors due to weirs or curbs. The staff did not find a discussion on whether debris might collect and either retard or block flow to the sump. The staff request that AREVA assess upstream effects using industry and regulatory guidance contained in NEI-04-07 and document the upstream effects evaluation in ANP-10293.

**Response to Question 06.02.02-121:**

A response to this question will be provided by November 18, 2011.

**Question 06.02.02-122:**

In RAI 416, Question 06.02.01-94, the staff requested demonstration testing of the CONVECT system. In a November 2010 response the applicant indicated that vendor-specific testing was not possible because the vendor had not been selected. In RAI 468, Question 06.02.02-83 the staff again requested demonstration testing of the CONVECT system. The staff noted that vendor-specific testing was not necessary but proof-of-concept testing was necessary for the first-of-a-kind application. In July of 2011 the applicant responded and did not include proof of concept testing in the response. The response provided a general description of "behaviors that are based on simple physics." The response is not sufficient for the staff to make a finding that the foils and dampers used in CONVECT system are capable of accomplishing the safety function as described in FSAR. Since the staff is unaware of any testing or operating experiences associated with the foils and dampers as described in FSAR, proof of concept testing is needed for the foils and dampers in this first-of-a-kind application. Specifically, the staff requests testing to demonstrate the capability of the foils and dampers.

**Response to Question 06.02.02-122:**

A response to this question will be provided by February 29, 2012.

**Question 06.02.02-123:**

Tier 1, Table 2.1.1-8 “Reactor Building ITAAC,” commitment item 2.8 has provisions to inspect the reactor compartment for water flow to the IRWST, as shown in Figure 2.1.1-4 “Reactor Building Plan Elevation -8ft” and Figure 2.1.1-5 “Reactor Building Plan Elevation +5 ft.” Figure 2.1.1-4 shows two wall openings. Response to RAI 434 Question 06.02.02-71 and associated DCD Section 6.3.2.2.2 Rev 3 – interim markup indicate there are more than two openings for water flow to the IRWST (related to a change that now has all 4 retaining baskets receiving water flow from annular space whereas previously only 2 retaining baskets received water flow from the annular space). ANP-10293 Revision 3, Figure 3-2 also details four additional openings provided to direct break water to the IRWST that are not shown on Figure 2.1.1-5. Therefore, the staff request that AREVA document these additional wall openings and inspect all wall openings that are provided for water flow to the IRWST, pertaining to commitment 2.8 and Figures 2.1.1-4 and 2.1.1-5.

**Response to Question 06.02.02-123:**

A response to this question will be provided by November 18, 2011.