

## ArevaEPRDCPEm Resource

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**From:** Pederson Ronda M (AREVA NP INC) [Ronda.Pederson@areva.com]  
**Sent:** Tuesday, July 14, 2009 9:50 AM  
**To:** Tesfaye, Getachew  
**Cc:** BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); GUCWA Len T (EXT)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 242 (2974), FSARCh. 6  
**Attachments:** RAI 242 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 242 Response US EPR DC.pdf" provides 0 responses to the 1 question.

The following table indicates the respective pages in the response document, "RAI 242 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 242 — 06.02.02-31	2	3

A complete answer is not provided for the 1 question. The schedule for a technically correct and complete response to this question is provided below.

Question #	Response Date
RAI 242 — 06.02.02-31	October 14, 2009

Sincerely,

*Ronda Pederson*

[ronda.pederson@areva.com](mailto:ronda.pederson@areva.com)

Licensing Manager, U.S. EPR Design Certification

**AREVA NP Inc.**

An AREVA and Siemens company

3315 Old Forest Road

Lynchburg, VA 24506-0935

Phone: 434-832-3694

Cell: 434-841-8788

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**From:** Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]  
**Sent:** Monday, June 15, 2009 8:24 PM  
**To:** ZZ-DL-A-USEPR-DL  
**Cc:** Ashley, Clinton; Jackson, Christopher; Carneal, Jason; Colaccino, Joseph; ArevaEPRDCPEm Resource  
**Subject:** U.S. EPR Design Certification Application RAI No. 242 (2974), FSARCh. 6

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on June 5, 2009, and on June 15, 2009, 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:** 655

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**Sent Date:** 7/14/2009 9:49:51 AM  
**Received Date:** 7/14/2009 9:49:54 AM  
**From:** Pederson Ronda M (AREVA NP INC)

**Created By:** Ronda.Pederson@areva.com

**Recipients:**

"BENNETT Kathy A (OFR) (AREVA NP INC)" <Kathy.Bennett@areva.com>  
Tracking Status: None  
"DELANO Karen V (AREVA NP INC)" <Karen.Delano@areva.com>  
Tracking Status: None  
"GUCWA Len T (EXT)" <Len.Gucwa.ext@areva.com>  
Tracking Status: None  
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>  
Tracking Status: None

**Post Office:** AUSLYNCMX02.adom.ad.corp

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MESSAGE	2133	7/14/2009 9:49:54 AM
RAI 242 Response US EPR DC.pdf		62099

**Options**

**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
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**Response to**

**Request for Additional Information No. 242 (2947), Revision 0**

**6/15/2009**

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

**AREVA NP Inc.**

**Docket No. 52-020**

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

**Application Section: 6.3.2.2.2 and 6.5.3.1 and 15.0.3.12**

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

**Question 06.02.02-31:**

This question is a follow-up question to RAI 111, question 06.02.02-8K3 and question 06.02.02-8K6

For its evaluation of the offsite radiological consequences, the applicant is using the guidance of RG 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," as indicated in DCD Tier 2 Table 1.9-2—"U.S. EPR Conformance with Regulatory Guides," and DCD Tier 2 Section 15.0.3. Appendix A Item 2 to RG 1.183 identifies the need for the containment sump pH to be greater than 7.0 for the assumptions for iodine speciation in the regulatory guide to remain valid, thus preventing iodine re-evolution.

RAI 06.02.02-8K3 response states:

"The tri-sodium phosphate (TSP) baskets are located in the containment heavy floor opening below the IRWST trash racks. Figure 06.02.02-8-2 shows the location of the TSP basket for each of the four heavy floor openings and its relation to the ECCS sump blockage mitigation design features."

RAI 06.02.02-8K6 response states:

"...if a break occurs in the pressurizer compartment, the loss of coolant accident (LOCA) water would drain down to the steam generator blowdown system (SGBS) rooms, flow to the annular space, and drain into the small compartments of the double compartment retaining baskets."

From the above RAI responses, it appears that a LOCA could occur and result in break water bypassing the heavy floor and TSP baskets. Therefore, the staff is concerned that the water from a break in the pressurizer compartment would not interact with the chemical buffering agent.

Further, it is unclear to the staff if there are other postulated pipe breaks for which the break flow would bypass the heavy floor openings and the TSP baskets. It is also unclear to the staff the extent of the areas of the containment that do not drain to the IRWST resulting in retained pools of water or "hold up volumes." The water in these hold up volumes would likely not be buffered so could have a pH below 7.0, which would need to be accounted for in the analysis of radiological consequences.

**Requested Information**

1. Describe how the US-EPR design controls sump (IRWST) pH under all design basis accident conditions. For example, in the event of a pipe break in the pressurizer compartment, how would the buffer be dissolved since the leakage flow path appears to bypass the heavy floor openings where the TSP baskets are located.
2. List and describe all postulated pipe breaks in which the flow from the break would bypass the heavy floor opening and therefore bypass the TSP baskets. In the event of such breaks that bypass the TSP baskets, describe the resulting pH of the IRWST water and the effect on the radiological consequence analyses.

3. Provide a numerical estimate (volume) of the volume of water that would be retained in areas of the containment that do not drain to the IRWST (hold-up volumes or ineffective pools). In the response discuss the amount of expected holdup in the reactor cavity and refueling cavity.

Provide a numerical estimate of the pH of the various hold-up volumes and the effect on the radiological consequence analyses.

**Response to Question 06.02.02-31:**

A response to this question will be provided by October 14, 2009.