

ArevaEPRDCPEm Resource

From: Tesfaye, Getachew
Sent: Monday, June 15, 2009 8:24 PM
To: 'usepr@areva.com'
Cc: Ashley, Clinton; Jackson, Christopher; Carneal, Jason; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 242 (2974), FSAR Ch. 6
Attachments: RAI_242_SPCV_2974.doc

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: 582

Mail Envelope Properties (C56E360E9D804F4B95BC673F886381E71FBABE9CA6)

Subject: U.S. EPR Design Certification Application RAI No. 242 (2974), FSAR Ch. 6
Sent Date: 6/15/2009 8:24:29 PM
Received Date: 6/15/2009 8:24:29 PM
From: Tesfaye, Getachew

Created By: Getachew.Tesfaye@nrc.gov

Recipients:

"Ashley, Clinton" <Clinton.Ashley@nrc.gov>
Tracking Status: None
"Jackson, Christopher" <Christopher.Jackson@nrc.gov>
Tracking Status: None
"Carneal, Jason" <Jason.Carneal@nrc.gov>
Tracking Status: None
"Colaccino, Joseph" <Joseph.Colaccino@nrc.gov>
Tracking Status: None
"ArevaEPRDCPEm Resource" <ArevaEPRDCPEm.Resource@nrc.gov>
Tracking Status: None
"usepr@areva.com" <usepr@areva.com>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	Size	Date & Time
MESSAGE	788	6/15/2009 8:24:29 PM
RAI_242_SPCV_2974.doc	33786	

Options

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

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)

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