





ArevaEPRDCPEm Resource

From: Snyder, Amy
Sent: Friday, February 08, 2013 7:17 AM
To: usepr@areva.com
Cc: Gleaves, Bill; Grady, Anne-Marie; McKirgan, John; Segala, John
Subject: FINAL- U.S. EPR Design Certification Application RAI No. 566 (6955), FSAR Ch. 6
Attachments: FINAL RAI_566_SCVB_6955.doc

Attached, please find the subject requests for additional information (RAI). An advanced RAI was provided to you on November 30, 2012, and discussed with your staff on December 14, 2012, and January 7, 2013. The advanced RAI was modified as a result of those discussions. On January 31, 2013, you informed us that the advanced RAI is clear and no further clarification is needed and that the RAI does not contain any proprietary information. 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 or March 11, 2013**, 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.”

Thank You,

Amy

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Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 4177

Mail Envelope Properties (Amy.Snyder@nrc.gov20130208071700)

Subject: FINAL- U.S. EPR Design Certification Application RAI No. 566 (6955), FSAR Ch.
6
Sent Date: 2/8/2013 7:17:23 AM
Received Date: 2/8/2013 7:17:00 AM
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Files	Size	Date & Time
MESSAGE	1370	2/8/2013 7:17:00 AM
FINAL RAI_566_SCVB_6955.doc		33790

Options

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

Request for Additional Information 566

Issue Date: 2/8/2013

Application Title: U. S. EPR Standard Design Certification - Docket Number 52-020

Operating Company: AREVA NP Inc.

Docket No. 52-020

Review Section: 06.02.05 - Combustible Gas Control in Containment

Application Section: 6.2.5

QUESTIONS

06.02.05-32

The confirmatory evaluation of U.S. EPR™ CGCS performance under design basis accident conditions was carried out using the MELCOR code, with input based on the recent AREVA model. The comparison of MELCOR and AREVA results showed that the MELCOR predicted containment hydrogen concentration is approximately 45% to 73% higher than the AREVA prediction for the design basis scenario in which PARs are not credited, and exceeds 4 %.

This discrepancy may be due to the differences in boundary conditions (break mass and energy and hydrogen sources from core oxidation, radiolysis, and corrosion of zinc and aluminum) between the MELCOR and AREVA calculations, and to a lesser degree due to the MELCOR and AREVA thermal-hydraulic model differences.

In order to resolve these differences, the following clarifications regarding the boundary conditions used in the AREVA calculations are requested.

1. Hydrogen Source Rate and Location

The following hydrogen sources are considered in the design basis calculations documented in the FSAR:

1% Core Oxidation

Radiolysis of reactor coolant system (RCS) and In-Containment Refueling Water Storage Tank (IRWST) water plus the radiolysis of Hypalon and PVC jacketed cable in the containment.

Corrosion of zinc and aluminum in containment

Volumetric rates of these sources are provided in the FSAR, where adequate information on the pressures and temperatures at which these sources are calculated is not. Furthermore, the locations or distribution of these sources in the MAAP calculations are not known. For example, it is not clear whether the 1% core oxidation source was added to the RCS or directly into the containment volumes. Therefore, please provide, for each hydrogen source, the following:

Mass rate of injection

Location or distribution of source in AREVA model computational nodes

2. Break Mass and Energy Release Rate to the Containment

Section 6.2.5.3 of the FSAR indicates that the design basis analysis was performed for a LOCA scenario. Please provide the break mass and energy release rates to the containment and the associated model nodes.

Please elaborate on any additional assumptions used in the AREVA analysis.