ArevaEPRDCPEm Resource

From: WELLS Russell (AREVA) [Russell.Wells@areva.com]
Sent: Wednesday, March 09, 2011 4:56 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); GUCWA Len (EXTERNAL AREVA); HALLINGER Pat (EXTERNAL AREVA); WILLIFORD Dennis (AREVA); RANSOM James (AREVA); BROWNSON Doug (AREVA); BALLARD Bob (AREVA)
Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No.457, FSAR Ch. 6, Question 06.02.01.02-7
Attachments: RAI 457 Draft Response Q.6.2.1.2-7 MASTER.pdf

Getachew,

Attached is a draft response for RAI No. 457, Question 06.02.01.02-7 in advance of the final response date of April 6, 2011 as shown below.

Let me know if the staff has questions or if this can be sent as a final response.

Sincerely,

Russ Wells
U.S. EPR Design Certification Licensing Manager
AREVA NP, Inc.
3315 Old Forest Road, P.O. Box 10935
Mail Stop OF-57
Lynchburg, VA 24506-0935
Phone: 434-832-3884 (work)
434-942-6375 (cell)
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Russell.Wells@Areva.com

From: BRYAN Martin (External RS/NB)
Sent: Thursday, January 27, 2011 5:39 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); GUCWA Len (External RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No.457, FSAR Ch. 6

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file provides a schedule since a technically correct and complete response to the 5 questions is not provided.

The following table indicates the respective pages in the response document, "RAI 457 Response US EPR DC.pdf," that contains AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 457 — 06.02.02-80	2	2
RAI 457 — 06.02.02-81	3	3

RAI 457 — 06.02.01.02-5	4	5
RAI 457 — 06.02.01.02-6	6	6
RAI 457 — 06.02.01.02-7	7	7

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

Question #	Response Date
RAI 457 — 06.02.02-80	May 4, 2011
RAI 457 — 06.02.02-81	May 19, 2011
RAI 457 — 06.02.01.02-5	May 19, 2011
RAI 457 — 06.02.01.02-6	May 19, 2011
RAI 457 — 06.02.01.02-7	April 6, 2011

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
Tel: (434) 832-3016
702 561-3528 cell
Martin.Bryan.ext@areva.com

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Tuesday, December 21, 2010 10:39 AM
To: ZZ-DL-A-USEPR-DL
Cc: Strnisha, James; Terao, David; Ashley, Clinton; Jensen, Walton; Jackson, Christopher; McKirgan, John; Carneal, Jason; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No.457(5169,5195,5202), FSAR Ch. 6

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on October 29, 2010, and discussed with your staff on December 17, 2010. Draft RAI Question 06.02.02-81 was modified as a result of that discussion. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs, excluding the time period of **December 24, 2010 thru January 3, 2011, to account for the holiday season** as discussed with AREVA NP Inc. For any RAIs that cannot be answered **within 45 days**, it is expected that a date for receipt of this information will be provided to the staff within the 40-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: 2679

Mail Envelope Properties (1F1CC1BBDC66B842A46CAC03D6B1CD410412C622)

Subject: DRAFT Response to U.S. EPR Design Certification Application RAI No.457, FSAR Ch. 6, Question 06.02.01.02-7
Sent Date: 3/9/2011 4:56:12 PM
Received Date: 3/9/2011 4:56:19 PM
From: WELLS Russell (AREVA)

Created By: Russell.Wells@areva.com

Recipients:
"BENNETT Kathy (AREVA)" <Kathy.Bennett@areva.com>
Tracking Status: None
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Tracking Status: None
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Tracking Status: None
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Tracking Status: None

Post Office: AUSLYNCMX02.adom.ad.corp

Files	**Size**	**Date & Time**
MESSAGE	3557	3/9/2011 4:56:19 PM
RAI 457 Draft Response Q.6.2.1.2-7 MASTER.pdf	234219	

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

Response to

Request for Additional Information No. 457(5169, 5195, 5202), Revision 0

12/21/2010

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 06.02.02 - Containment Heat Removal Systems
SRP Section: 06.02.01.02 - Subcompartment Analysis
Application Section: 6.2.2

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects) (CIB1)
QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)

Draft

Question 06.02.01.02-7:

Follow-up question to RAI 266, Question 06.02.01.02-3

The supplement 8 response to RAI 266, Question 06.02.01.02-3 indicates that higher than expected initial air temperatures were assumed in the equipment area and in the service area. Higher initial temperatures would result in a lower initial air mass. Justify that the initial temperatures are conservative relative to if cooler initial air temperatures were assumed.

Response to Question 06.02.01.02-7:

The SRP Acceptance Criteria in SRP 6.2.1.2 identifies that the maximum allowable temperature should be used to maximize the resultant differential pressure:

> *Initial Thermodynamic Conditions. The initial atmospheric conditions within a subcompartment should maximize the resultant differential pressure. An acceptable model would assume air at the maximum allowable temperature, minimum absolute pressure, and zero percent relative humidity. If the assumed initial atmospheric conditions differ from this model, the selected values should be justified by the applicant.*

A sensitivity study was performed using the 4-Cell subdivided volume model with the critical flow option set to "HEM." The initial temperature was set at 140°F in the reference run and at 104°F in the sensitivity run. The results summarized in Table 06.02.01.02-7-1 and illustrated in Figure 06.02.01.02-7-1 show that the average pressure increased slightly with low initial temperature. This is attributed to the density of the fluid initially contained in the break compartment. With decreasing initial temperature there is a tendency for the density and the heat capacity of the fluid to increase. The increased heat capacity slows the pressure rise but is counteracted by the increased density which increases the pressure losses. The balance between these competing factors is problem-specific and cannot be generalized. Considering the small difference between the two cases, and consistent with the SRP guidance, the high initial temperature of 140°F was used.

FSAR Impact:

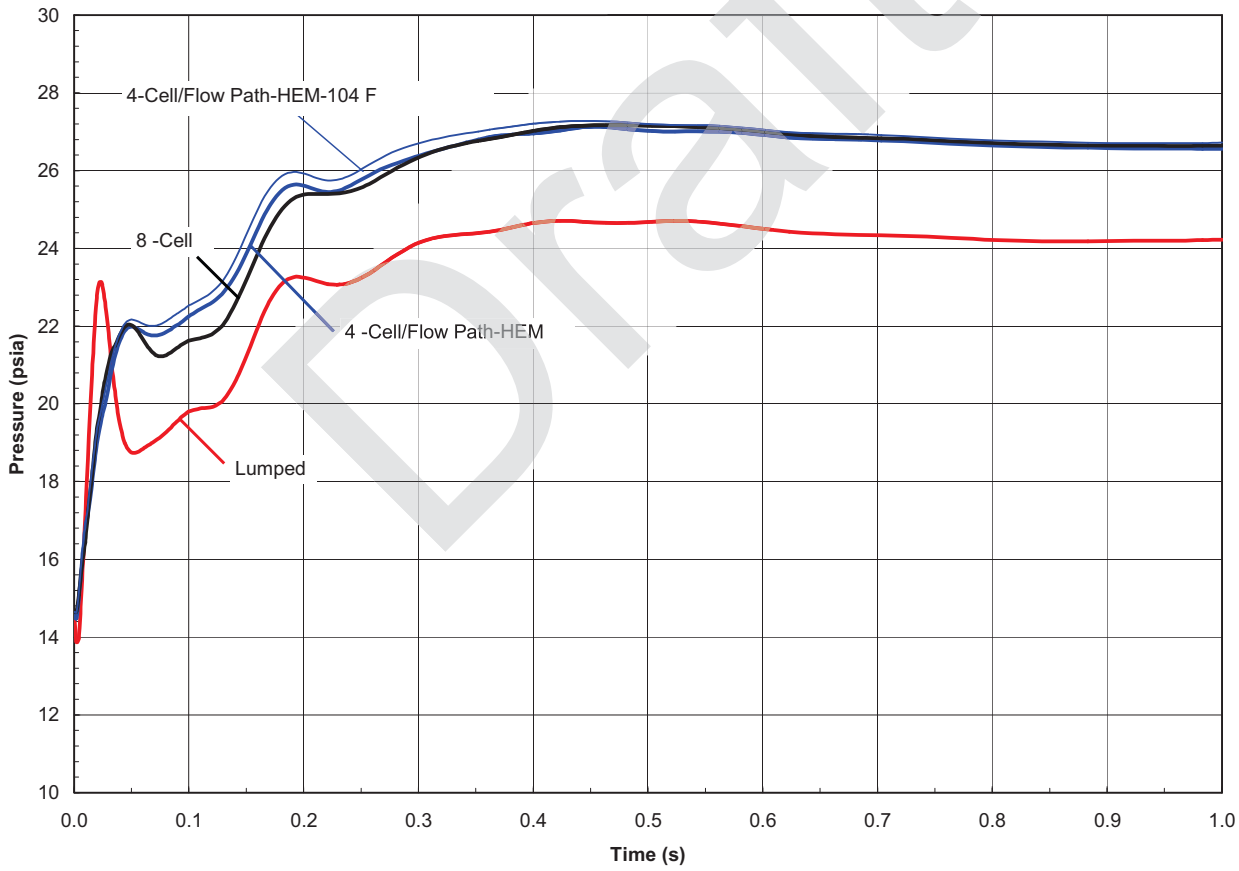
The U.S. EPR FSAR will not be changed as a result of this question.

Draft

Table 06.02.01.02-7-1—Initial Temperature Sensitivity Results

	Number of Cells	Break Orientatio	Break Location (Cell No)	Initial Temp (F)	Max Time Step	Blowdown (lb/s)	P_{av} (psia)	P_{peak} (psia)	% Difference
Initial Temperature									
SDV 23-3_4c_FP_CH	4	+X	4	140	0.001	59701	27.1	35.6	-
SDV 23-3_4c_FP_CH_LT	4	+X	4	104	0.001	59701	27.3	35.6	0.6%

Figure 06.02.01.02-7-1—Effect of Initial Temperature



Draft