ArevaEPRDCPEm Resource

From: BRYAN Martin (EXT) [Martin.Bryan.ext@areva.com]
Sent: Wednesday, April 07, 2010 2:05 PM
To: Tesfaye, Getachew
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); GUCWA Len T (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 372, FSAR Ch. 6
Attachments: RAI 372 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 372 Response US EPR DC.pdf" provides a schedule since a technically correct and complete response to the 3 questions cannot be provided at this time.

The following table indicates the respective pages in the response document, "RAI 372 Response US EPR DC.pdf," that contains AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 372 — 06.02.04-9	2	2
RAI 372 — 06.02.05-15	3	4
RAI 372 — 06.02.06-4	5	5

A complete answer is not provided for 3 of the 3 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 372 — 06.02.04-9	May 27, 2010
RAI 372 — 06.02.05-15	July 15, 2010
RAI 372 — 06.02.06-4	May 27, 2010

Sincerely,

Martin (Marty) C. Bryan
Licensing Advisory Engineer
AREVA NP Inc.
Tel: (434) 832-3016
Martin.Bryan.ext@areva.com

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Tuesday, March 09, 2010 1:15 PM
To: ZZ-DL-A-USEPR-DL
Cc: Grady, Anne-Marie; Jackson, Christopher; Snodderly, Michael; Carneal, Jason; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 372(4388,4328,4389), FSAR Ch. 6

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on February 25, 2010, and discussed with your staff on March 8, 2010. No changes were made to the draft RAI 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. 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: 1298

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Subject: Response to U.S. EPR Design Certification Application RAI No. 372, FSAR Ch. 6
Sent Date: 4/7/2010 2:04:51 PM
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From: BRYAN Martin (EXT)

Created By: Martin.Bryan.ext@areva.com

Recipients:
"DELANO Karen V (AREVA NP INC)" <Karen.Delano@areva.com>
Tracking Status: None
"ROMINE Judy (AREVA NP INC)" <Judy.Romine@areva.com>
Tracking Status: None
"BENNETT Kathy A (OFR) (AREVA NP INC)" <Kathy.Bennett@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

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Files	**Size**	**Date & Time**
MESSAGE	2272	4/7/2010 2:04:57 PM
RAI 372 Response US EPR DC.pdf	68995	

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

Response to

Request for Additional Information No. 372(4388, 4328, 4389), Revision 1

3/09/2010

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 06.02.04 - Containment Isolation System
SRP Section: 06.02.05 - Combustible Gas Control in Containment
SRP Section: 06.02.06 - Containment Leakage Testing
Application Section: 6.2

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

Question 06.02.04-9:

AREVA has reevaluated its exemption request from the 10 CFR 50.34(f)(3)(iv) requirement for a dedicated containment penetration. This reevaluation has lead to a decision to use an existing containment penetration to meet this requirement for a dedicated containment penetration. The withdrawal of the exemption request is provided in the following letter:

Letter, Ronnie L. Gardner (AREVA NP Inc.) to Document Control Desk (NRC), "Withdrawal of 10 CFR 50.34(f)(3)(iv) Exemption Request for the U.S. EPR Standard Design Certification," NRC:09:056, May 13, 2009.

AREVA has stated that "an existing containment penetration will be used to meet the requirement of 10 CFR 50.34(f)(3)(iv). The penetration will have a diameter of 36 inches, which is the required diameter opening. Both ends of the penetration will have welded caps. Since the requirements of 10 CFR 50.34(f)(3)(iv) are met with such a penetration, no further analysis or identification of alternative systems or components will be performed."

Staff requests that AREVA address the following:

1. Identify the 36" penetration by equipment number.
2. Add the 36" penetration to the FSAR Table 6.2.4-1, Containment Isolation Valve and Actuator Data
3. Compliance with GDC 53 requires that the reactor containment be designed to permit (a) periodic inspection of penetrations, (b) an appropriate surveillance program, and (c) periodic testing of the leak tightness of penetrations. Therefore, provide an FSAR drawing which shows the penetration design, similar to figures 3.8-29-3.8-31, which depict the existing penetration configurations. Provide an FSAR drawing which shows the location of the 36" penetration
4. If both ends of the intended penetration are welded, describe how Type B leak rate testing will be performed.
5. In the response to RAI No. 133 Supplement 5, Question 19-243, AREVA provided a detailed description of the Operational Strategy for Severe Accidents (OSSA) Methodology, which states that the goal of the severe accident mitigation concept of the U.S. EPR design is to provide reasonable assurance of the function of the containment even in case of a severe accident. A dedicated severe-accident containment vent is identified as one of the design features intended to address severe accident challenges in the U.S. EPR. Containment venting would be available to avoid late failure due to containment over-pressurization. Containment venting would be a backup response in the event that there is a complete loss of containment heat removal capability. Is the 36"penetration the intended location for the dedicated severe accident containment vent?
6. If the 36" penetration is not the intended location for the dedicated severe accident containment vent, identify the containment vent location and penetration on Table 6.2.4-1.

Response to Question 06.02.04-9:

A response to this question will be provided by May 27, 2010.

Question 06.02.05-15:

In the response to RAI 69, Q 6.2.5-3, the applicant states that their response to RAI 6, Q 19-113 explains how the Combustible Gas Control System and other equipment relied upon to mitigate a beyond design basis accident meets the equipment survivability requirements of 10 CFR 50.44(c)(3).

Further, in response to RAI 6, Q19-113, the applicant states that the highest adiabatic, isochoric complete combustion (AICC) pressure and temperature resulting from the analysis of the data obtained from the 59 cases is 105.9 psi and 1634F. And, an assessment of the extended operational range with respect to a pressure spike of 105.9 psi and 1652F will be made for relevant equipment and instrumentation that needs to remain operational after a potential hydrogen combustion.

The staff review of the above response to Q 19-113 seems to indicate that the applicant only intends to address how CGCS meets the requirements of survivability at the conditions of a hydrogen burn.

10 CFR 50.44(c)(3) requires all equipment and instrumentation in containment needed to establish and maintain safe shutdown and containment structural integrity must be capable of performing their function during and after exposure to the environmental conditions created by the burning of hydrogen, in an amount equivalent to that generated from a fuel clad-coolant reaction involving 100% of the fuel cladding.

In the US EPR DCD, chapter 19.2.3.3.7.1, the applicant identifies the systems specifically designed for the environmental conditions during a severe accident in the containment, as the primary depressurization system (PDS) valves; the core melt stabilization system (CMSS); the combustible gas control system (CGCS); and severe accident hear removal system (SAHRS) equipment located in the containment.

In the US EPR DCD, chapter 19.2.4.4.5.2, the applicant lists the equipment and instrumentation in containment which must withstand the conditions expected to occur during a severe accident. This equipment is also identified in Table 19.2-2, SAHRS Design and Operating Parameters, (Containment Spray Nozzles and Passive Outflow Restrictor only), and in Table 19.2-3, Severe Accident Instrumentation and Equipment, (in containment equipment and instrumentation only).

In the US EPR DCD, chapter 19.2.3.3.7.1, the applicant states that the containment isolation valves, containment penetrations, air locks, hatches and gaskets are required to maintain their leak tightness during a severe accident.

Justify that the equipment and instrumentation, in the containment only, identified in Tables 19.2-2 and 19.2-3, will perform their severe accident function during and following a severe accident in containment at the environmental conditions created by hydrogen burning. Justify that the containment isolation valves, containment penetrations, air locks, hatches and gaskets will maintain their leak tightness during and following the environmental conditions created by hydrogen burning.

Provide the pressure and temperature conditions in containment during hydrogen burning that these instruments and components would be subject to. Identify design features, test results, or analyses which would confirm the equipment survivability.

Provide a response that addresses 10 CFR 50.44(c)(3), Equipment Survivability, including an FSAR markup for inclusion into the US EPR DCD, chapter 6.2.5.

Response to Question 06.02.05-15:

A response to this question will be provided by July 15, 2010.

Question 06.02.06-4:

General Design Criterion 53 (GDC 53), "Provisions for Containment Testing and Inspection," requires the reactor containment being designed to permit appropriate inspection of important areas (such as penetrations), an appropriate surveillance program, and leakage rate testing at the containment design pressure of penetrations having resilient seals and expansion bellows.

Compliance with GDC 53 requires that the reactor containment be designed to permit (a) periodic inspection of penetrations, (b) an appropriate surveillance program, and (c) periodic testing of the leak tightness of penetrations.

Staff must confirm that all penetrations have been listed in the Containment Leak Rate Test Program. This includes all Type B penetrations, including electrical penetrations and spare penetrations. The program should identify any penetration not requiring leakage rate testing, and the reason for not requiring a test should be stated. Staff must confirm that those penetrations not requiring testing cannot result in leakage to the atmosphere during a design basis LOCA.

1. Add each electrical penetration to FSAR Table 6.2.4-1, Containment Isolation Valve and Actuator Data. Indicate that each electrical penetration will be Type B tested.
2. Revise FSAR 14.2.12, Individual Test Descriptions, Containment Electrical Penetration Assemblies (Test #026), TEST METHOD, to read: “Perform a 10 CFR 50, Appendix J, Type B LRT at 100 percent of design basis accident pressure for each electrical penetration identified in FSAR Table 6.2.4-1.”
3. Add each spare penetration to FSAR Table 6.2.4-1, Containment Isolation Valve and Actuator Data. Indicate that each spare penetration will be Type B tested.
4. Revise FSAR 14.2.12, Containment Isolation Valves Leakage Rate (Test #028), TEST METHOD, to read: “Perform a 10 CFR 50, Appendix J, Type B LRT at 100 percent of design basis accident pressure for each spare penetration identified in FSAR Table 6.2.4-1.”

Response to Question 06.02.06-4:

A response to this question will be provided by May 27, 2010.