

ArevaEPRDCPEm Resource

From: BRYAN Martin (EXT) [Martin.Bryan.ext@areva.com]
Sent: Friday, April 09, 2010 7:24 PM
To: Tesfaye, Getachew
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); VAN NOY Mark (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 377,FSAR Ch. 3, OPEN ITEMS
Attachments: RAI 377 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 377 Response US EPR DC.pdf" provides technically correct and complete responses to 2 of the 2 questions.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 377 Question 03.04.01-13.

The following table indicates the respective pages in the response document, "RAI 377 Response US EPR DC.pdf" that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 377 — 03.04.01-13	2	2
RAI 377 —03.12-23	3	3

This concludes the formal AREVA NP response to RAI 377 and there are no questions from this RAI for which AREVA NP has not provided responses.

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 16, 2010 4:03 PM
To: ZZ-DL-A-USEPR-DL
Cc: Li, Chang; Lee, Samuel; Hsu, Kaihwa; Dixon-Herrity, Jennifer; Miernicki, Michael; Colaccino, Joseph
Subject: U.S. EPR Design Certification Application RAI No. 377 (4472,4462),FSAR Ch. 3, OPEN ITEMS

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on March 11, 2010, and on March 16, 2010, 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 questions in this RAI are OPEN ITEMS in the safety evaluation report for Chapter 3, Group 1 sections in Phases 2 and 3 reviews. 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: 1308

Mail Envelope Properties (BC417D9255991046A37DD56CF597DB7105CCAE44)

Subject: Response to U.S. EPR Design Certification Application RAI No. 377,FSAR Ch. 3,
OPEN ITEMS
Sent Date: 4/9/2010 7:24:24 PM
Received Date: 4/9/2010 7:24:29 PM
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

"VAN NOY Mark (EXT)" <Mark.Vannoy.ext@areva.com>

Tracking Status: None

"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>

Tracking Status: None

Post Office: AUSLYNCMX02.adom.ad.corp

Files	Size	Date & Time
MESSAGE	2329	4/9/2010 7:24:29 PM
RAI 377 Response US EPR DC.pdf		52982

Options

Priority: Standard

Return Notification: No

Reply Requested: No

Sensitivity: Normal

Expiration Date:

Recipients Received:

Response to

Request for Additional Information No. 377 (4472, 4462), Revision 0

3/16/2010

U. S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 03.04.01 - Internal Flood Protection for Onsite Equipment Failures

SRP Section: 03.12 - ASME Code Class 1, 2, and 3 Piping Systems and Piping

Components and Their Associated Supports

Application: FSAR Chapter 3

QUESTIONS for Balance of Plant Branch 2 (SBPB)

Question 03.04.01-13:

Open Item

Follow-up to RAI 218, Question 03.04.01-10

In response to Question 03.04.01-10, the applicant stated that implementation of the maintenance program is the responsibility of the combined license (COL) applicant. The staff agrees with the applicant's determination. Based on this determination, U.S. EPR FSAR needs to identify a COL information item so that the COL applicant will be required to address the issue of watertight doors in the COL application.

Response to Question 03.04.01-13:

U.S. EPR FSAR Tier 2, Section 3.4.1 will be revised to remove the words "tested to verify proper functionality" and replace them with the words "maintained so that they remain capable of performing their intended function." This change considers watertight door design variations. Some doors may provide for testing and some may not, depending on design. In either case, the appropriate means of assuring door functionality will be provided by the manufacturer's recommended maintenance procedure, which will be incorporated into the COL applicant's maintenance program.

U.S. EPR FSAR Tier 2, Section 3.4.1 will be revised to state:

"Watertight doors are designed to functional requirements such as leak-rate limits, door-closure indication, door-seal aging-degradation characteristics, and maintainability. Maintenance requirements are based on manufacturer recommendations and maintenance procedures are written by COL applicants in accordance with their respective regulatory approved maintenance programs.

A COL applicant that references the U.S. EPR design certification will include in its maintenance program appropriate watertight door preventive maintenance in accordance with manufacturer recommendations so that each Safeguards Building watertight door above elevation +0 feet remains capable of performing its intended function."

U.S. EPR FSAR Tier 2, Table 1.8-2 will be revised by adding a new COL information item to state:

"A COL applicant that references the U.S. EPR design certification will include in its maintenance program appropriate watertight door preventive maintenance in accordance with manufacturer recommendations so that each Safeguards Building watertight door above elevation +0 feet remains capable of performing its intended function."

FSAR Impact:

U.S. EPR FSAR Tier 2, Table 1.8-2 and Section 3.4.1 will be revised as described in the response and indicated on the enclosed markup.

Question 03.12-23:**Open Item****Follow-up to RAI 331, Question 03.12-22**

The response to Question 03.12-22 does not provide technical basis to address SRP 3.12. Please provide technical justification to address the following question:

In FSAR Section 3.12.6.11, AREVA referenced Section 6.11 of ANP-10264NP-A to address pipe support gaps and clearances used in the design of pipe supports. AREVA states that the normal design practice for the U.S. EPR will be to use a normal cold condition gap of one-sixteenth inch on each side of the pipe in the restrained direction.

SRP 3.12 states that this gap must account for the diameter expansion of the pipe due to temperature and pressure. The acceptance criteria for the minimum gap (total of opposing sides) between the pipe and the support will be reviewed on a case by case basis.

1. The staff noted that 1/16" cold condition gap on each side of pipe in the restrained direction may not provide sufficient radial expansion of the pipe in the restrained direction for Class 1&2 large bore piping. The staff requests AREVA to demonstrate that 1/16" gap has accounted for radial expansion.
2. The staff also noted that 1/16" cold gap indicates the pipe is not supported vertically during cold condition. The staff requests AREVA to demonstrate that the pipe support design with 1/16" cold gap is adequate during cold condition.

Response to Question 03.12-23:

The data questioned by this RAI is taken from the NRC-approved Topical Report ANP-10264NP-A, as discussed in the Response to RAI 331, Supplement 1, Question 03.12-22. The following information addresses the two items of this question:

1. U.S. EPR piping was evaluated to determine maximum radial thermal expansion. This evaluation showed total main steam piping thermally induced diametrical expansion to be 0.120 inches at its design temperature. The total diametrical gap of 0.125 inches will adequately accommodate U.S. EPR piping radial expansion.
2. Under cold conditions, U.S. EPR piping design provides zero gap in the downward direction for horizontal piping where gapped vertical supports are required for dynamic restraint. This is standard practice and is done to provide required deadweight support.

FSAR Impact:

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

U.S. EPR Final Safety Analysis Report Markups

Table 1.8-2—U.S. EPR Combined License Information Items
Sheet 12 of 48

Item No.	Description	Section	Action-Required by COL Applicant	Action-Required by COL Holder
3.4-3	A COL applicant that references the U.S. EPR design certification will define the need for a site-specific permanent dewatering system.	3.4.3.11	☒	
3.4-4	A COL applicant that references the U.S. EPR design certification will perform internal flooding analyses prior to fuel load for the Safeguard Buildings and Fuel Building to demonstrate that the impact of internal flooding is contained within the Safeguard Building or Fuel Building division of origin.	3.4.1		☒
3.4-5	A COL applicant that references the U.S. EPR design certification will perform an internal flooding analysis prior to fuel load for the Reactor Building and Reactor Building Annulus to demonstrate that the essential equipment required for safe shutdown is located above the internal flood level or is designed to withstand flooding.	3.4.1		☒
3.4-6	<u>A COL applicant that references the U.S. EPR design certification will include in its maintenance program appropriate watertight door preventive maintenance in accordance with manufacturer recommendations so that each Safeguards Building watertight door above elevation +0 feet remains capable of performing its intended function.</u>	<u>3.4.1</u>		← 03.04.01-13
3.5-1	A COL applicant that references the U.S. EPR design certification will describe controls to confirm that unsecured maintenance equipment, including that required for maintenance and that are undergoing maintenance, will be removed from containment prior to operation, moved to a location where it is not a potential hazard to SSC important to safety, or seismically restrained to prevent it from becoming a missile.	3.5.1.2.3	☒	

contained within the division of hazard origin and are not allowed to propagate to other divisions. Consequently, in a large internal flooding event in buildings with divisional separation safety-related SSC within the affected division are assumed to be flooded. The principal protective measure for Seismic Category I buildings is physical separation of the redundant safe shutdown systems and components. The plant arrangement provides divisional separation walls to physically separate the redundant trains of safe shutdown systems and components. A combination of fluid diversion flow paths and passive features contain the water within the affected division. ~~A COL applicant that references the U.S. EPR design certification will perform internal flooding analyses prior to fuel load for the Safeguard Buildings and Fuel Building to demonstrate that the impact of internal flooding is contained within the Safeguard Building or Fuel Building division of origin. Features credited in the analysis will be verified by walk-down.~~

Division walls below elevation +0 feet, 0 inches (hereinafter +0 feet) provide 03.04.01-13 separation and serve as flood barriers to prevent flood waters spreading to adjacent divisions. These division walls are watertight, have no doors, and a minimal number of penetrations. Water is directed within one division to the building elevations below +0 feet, where it is stored. Above elevation +0 feet, a combination of watertight doors and openings for water flow to the lower building levels prevent water ingress into adjacent divisions. Watertight doors have position indicators for control of the closed position and are periodically inspected and maintained so that they remain capable of performing their intended function. Existing openings (e.g., stair cases, elevator shafts, and ~~building drain~~equipment openings) are credited as water flow paths ~~when available.~~ Watertight doors are designed to functional requirements such as leak-rate limits, door-closure indication, door-seal aging-degradation characteristics, and maintainability. Maintenance requirements are based on manufacturer recommendations and maintenance procedures are written by COL applicants in accordance with their respective regulatory approved maintenance programs.

03.04.01-13

A COL applicant that references the U.S. EPR design certification will include in its maintenance program appropriate watertight door preventive maintenance in accordance with manufacturer recommendations so that each Safeguards Building watertight door above elevation +0 feet remains capable of performing its intended function.

Flooding pits with burst openings collect and direct water flow to lower building levels. Rooms within divisions have interconnections so that the maximum released water volume can be distributed and stored in the lower building levels of the affected division. Interconnections include doors with flaps, wall openings, and other wall penetrations that are not required to be sealed. Elevated thresholds, curbs, and pedestals are provided as necessary.