ArevaEPRDCPEm Resource

From: Pederson Ronda M (AREVA NP INC) [Ronda.Pederson@areva.com]
Sent: Tuesday, March 03, 2009 2:49 PM
To: Getachew Tesfaye
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); SALAS Pedro (AREVA NP INC); LANIER Dave (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 139, Supplement 1
Attachments: RAI 139 Supplement 1 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. provided a schedule for a technically correct and complete response to RAI No. 139 on January 19, 2009. The attached file, "RAI 139 Supplement 1," provides technically correct and complete responses to the remaining questions, as committed.

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 139 Questions 06.02.02-18 through 06.02.02-21, inclusive.

The following table indicates the respective pages in the response document, "RAI 139 Supplement 1," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 139 — 06.02.02-18	2	2
RAI 139 — 06.02.02-19	3	3
RAI 139 — 06.02.02-20	4	4
RAI 139 — 06.02.02-21	5	5

This concludes the formal AREVA NP response to RAI 139, and there are no questions from this RAI for which AREVA NP has not provided responses.

Sincerely,

Ronda Pederson
ronda.pederson@areva.com
Licensing Manager, U.S. EPR Design Certification
AREVA NP Inc.
An AREVA and Siemens company
3315 Old Forest Road
Lynchburg, VA 24506-0935
Phone: 434-832-3694
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From: Pederson Ronda M (AREVA NP INC)
Sent: Monday, January 19, 2009 6:01 PM
To: 'Getachew Tesfaye'
Cc: LANIER Dave (EXT); SALAS Pedro (AREVA NP INC); DELANO Karen V (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 139 (1566), FSARCh. 6

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 139 Response US EPR DC.pdf" provides the schedule for responses since a technically correct and complete response to none of the four (4) questions can be provided at this time.

The following table indicates the respective page in the response document, "RAI 137 Response US EPR DC.pdf," that contains AREVA NP's schedule for response to the subject questions..

Question #	Start Page	End Page
RAI 139 — 06.02.02-18	2	2
RAI 139 — 06.02.02-19	3	3
RAI 139 — 06.02.02-20	4	4
RAI 139 — 06.02.02-21	5	5

The schedule for a technically correct and complete response to these 4 questions is provided below.

Question #	Response Date
RAI 139 — 06.02.02-18	March 04, 2009
RAI 139 — 06.02.02-19	March 04, 2009
RAI 139 — 06.02.02-20	March 04, 2009
RAI 139 — 06.02.02-21	March 04, 2009

Sincerely,

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From: Getachew Tesfaye [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Friday, December 05, 2008 9:49 AM
To: ZZ-DL-A-USEPR-DL
Cc: Clinton Ashley; Christopher Jackson; Michael Miernicki; Joseph Colaccino; John Rycyna; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 139 (1566), FSARCh. 6

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on November 7, 2008, and discussed with your staff on December 3, 2008. No change was made to the draft RAI as a result of that discussions. 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 20, 2008 thru January 1, 2009, 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 45-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: 283

Mail Envelope Properties (5CEC4184E98FFE49A383961FAD402D31B88E95)

Subject: Response to U.S. EPR Design Certification Application RAI No. 139, Supplement 1
Sent Date: 3/3/2009 2:48:30 PM
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From: Pederson Ronda M (AREVA NP INC)

Created By: Ronda.Pederson@areva.com

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Tracking Status: None

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MESSAGE	4195	3/3/2009 2:48:37 PM
RAI 139 Supplement 1 Response US EPR DC.pdf	132529	

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

Response to

Request for Additional Information No. 139, Supplement 1

12/5/2008

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

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

Question 06.02.02-18:

Consistent with guidance listed in RG 1.82 and GL 2004-02, provide a description of how permanent and temporary modifications to structures, systems, and components inside containment are programmatically controlled so changes to the analytical inputs and assumptions of the licensee analyses ensures ECCS remains in compliance with 10 CFR 50.46 and related regulatory requirements.

Response to Question 06.02.02-18:

The programmatic controls for permanent and temporary modifications to structures, systems and components inside containment are the responsibility of the COL applicant. The COL applicant will establish programmatic controls so that changes to their analytical inputs and assumptions will confirm that the emergency core cooling system (ECCS) remains in compliance with 10 CFR 50.46, related regulatory requirements, and is consistent with guidance from RG 1.82 and GL 2004-02, to limit debris within containment. The containment cleanliness program description in U.S. EPR FSAR Tier 2, Section 6.3.2.2.2 will be expanded to reflect this program objective as follows:

“This program consists of the following elements:

- Controls of permanent and temporary modifications so that changes to analytical inputs and assumptions confirm that the ECCS remains in compliance with 10 CFR 50.46, related regulatory requirements, and is consistent with guidance in RG 1.82 and GL 2004-02.
- Controls for foreign material exclusion to limit the introduction of foreign material and debris sources into containment.
- Controls to assess and manage maintenance activities, including associated temporary changes, to confirm that ECCS function is not reduced by associated changes in analytical inputs or assumptions, or other activities that could introduce debris or potential debris sources into containment.
- Controls on the introduction of coating materials into containment and to address deficiencies of coating materials used in containment.”

FSAR Impact:

U.S. EPR FSAR TIer 2, Section 6.3.2.2.2 will be revised as described in the response and indicated on the enclosed markup.

Question 06.02.02-19:

Regarding programmatic controls taken to limit debris sources in containment, provide a summary of the foreign material exclusion programmatic controls in place to control the introduction of foreign material into the containment.

Response to Question 06.02.02-19:

The programmatic controls for foreign material exclusion to limit the introduction of foreign material and debris sources into containment are the responsibility of the COL applicant. In accordance with COL Item No. 6.3-1, a COL applicant that references the U.S. EPR design certification will describe the containment cleanliness program which limits debris within containment. The containment cleanliness program description in U.S. EPR FSAR Tier 2, Section 6.3.2.2.2 will be expanded to reflect this program objective.

FSAR Impact:

The Response to Question 06.02.02-18 addresses this question, which includes an FSAR impact. There is no additional FSAR impact.

Question 06.02.02-20:

Regarding programmatic controls taken to limit debris sources in containment, provide a description of how maintenance activities including associated temporary changes are assessed and managed in accordance with the Maintenance Rule, 10 CFR 50.65.

Response to Question 06.02.02-20:

The programmatic controls taken to limit debris sources in containment including the assessment and management of maintenance activities such as those associated with temporary changes that are conducted in accordance with the Maintenance Rule, 10 CFR 50.65, are the responsibility of the COL applicant. In accordance with COL Item No. 6.3-1, a COL applicant that references the U.S. EPR design certification will describe the containment cleanliness program which limits debris within containment. The containment cleanliness program description in U.S. EPR FSAR Tier 2, Section 6.3.2.2.2 will be expanded to reflect this program objective.

FSAR Impact:

The Response to Question 06.02.02-18 addresses this question, which includes an FSAR impact. There is no additional FSAR impact.

Question 06.02.02-21:

Regarding programmatic controls taken to limit debris sources in containment, provide a summary of the protective coating programmatic controls in place to control the introduction and use of coating material in containment and address coating deficiencies.

Response to Question 06.02.02-21:

The programmatic controls taken to limit debris sources in containment, including the protective coating programmatic controls in place to control the introduction and use of coating material in containment and addressing coating deficiencies is a responsibility of the COL applicant. In accordance with COL Item No. 6.3-1, a COL applicant that references the U.S. EPR design certification will describe the containment cleanliness program which limits debris within containment. The containment cleanliness program description in U.S. EPR FSAR Tier 2, Section 6.3.2.2.2 will be expanded to reflect this program objective.

FSAR Impact:

The Response to Question 06.02.02-18 addresses this question, which includes an FSAR impact. There is no additional FSAR impact.

U.S. EPR Final Safety Analysis Report Markups

reflective metal insulation (RMI), which is not subject to transport to the SIS sumps, in the U. S. EPR design in place of most or all of the fibrous or micro-porous insulation assumed in the evaluation further reduces the potential for post-accident blockage of the sumps.

The features of the IRWST screen design conform to RG 1.82 and address the issues of GSI-191, as further described in Section 6.3.2.5. Technical Report ANP-10293, "U.S. EPR Design Features to Address GSI-191" (Reference 19) provides additional description of the U.S. EPR design features that limit the impact of post-accident debris accumulation on SIS performance, summarizes the performance evaluations and component test program, and compares the design to the regulatory positions of RG 1.82 and the information requested in GL 2004-02.

06.02.02-20

Performance of the strainers is enhanced by cleanliness programs that limit debris in the containment. A COL applicant that references the U.S. EPR design certification will describe the containment cleanliness program which limits debris within containment. This program consists of the following elements:

- Controls of permanent and temporary modifications so that changes to analytical inputs and assumptions confirm that the ECCS remains in compliance with 10 CFR 50.46, related regulatory requirements, and is consistent with guidance in RG 1.82 and GL 2004-02.
- Controls for foreign material exclusion to limit the introduction of foreign material and debris sources into containment.
- Controls to assess and manage maintenance activities, including associated temporary changes, to confirm that ECCS function is not reduced by associated changes in analytical inputs or assumptions, or other activities that could introduce debris or potential debris sources into containment.
- Controls on the introduction of coating materials into containment and to address deficiencies of coating materials used in containment.

Coolant pH adjustment baskets containing granulated trisodium phosphate dodecahydrate (TSP-C) are strategically placed in the inlet flow path to the IRWST within the boundary perimeter of the weirs at the four heavy floor openings of the RB. Flow through the baskets dissolves the TSP-C into the coolant that returns to the IRWST to passively neutralize entrained acids and maintain the alkalinity of the coolant. The pH of the recirculated coolant is maintained above 7.0. The control of pH in the recirculated coolant reduces the potential for stress-corrosion cracking of the austenitic stainless steel components, limits the generation of hydrogen attributable to corrosion of containment metals, and minimizes the re-evolution of iodine in post-LOCA containment solution, maintaining the radioiodine in solution to reduce radioactive releases to the environment. The minimum amount of granulated

TSP-C for this pH control is 12,200 lb_m. Section 15.0.3.12 provides an evaluation of post-accident water chemistry control.

The IRWST is connected to the molten core spreading area by pipes that are closed during normal operation and accident conditions. If a severe accident occurs and molten material reaches the spreading area, an actuation device melts, flooding valves open, and IRWST water flows into the spreading area to support the operation of the SAHRS. The IRWST is located at a higher elevation than the core spreading area to provide gravity flooding of the spreading area with the IRWST water inventory. The core spreading area and the SAHRS are described in Section 19.2.3.3.

6.3.2.3 Applicable Codes and Classifications

The SIS design complies with applicable industry codes and standards, and regulatory requirements, commensurate with the appropriate safety function for each of the individual components. Refer to Section 3.2 for seismic and system quality group classifications for the SIS components. Sections 3.9, 3.10, 3.11, 7.3, and 8.1.4 further address these requirements and their implementation for the U.S. EPR.

6.3.2.4 Material Specifications and Compatibility

Material selection for the SIS is based on the expected service conditions for the various components, the design life of the unit, and the materials strength and service requirements as further described in Section 3.9.3. SIS components that transport or come into contact with borated water, which are the majority of the pressure retaining, fluid bearing components, are constructed of austenitic stainless steel. The specific materials of construction for the SIS and their compatibility with system fluids are described in Section 6.1.1.

6.3.2.5 System Reliability

The instrumentation and controls (I&C) that initiate the SIS and are used to manage its operation are separated. They are independently powered from the same normal and emergency sources that power the associated motive equipment of the train. The process variables for the I&C, such as RCS pressure and pressurizer level, derive their input from independent sources. The design of the SIS I&C, including its quality, redundancy, and protection against the effects of single failure, is presented in Section 7.3.

The SIS trains meet Seismic Category I criteria for earthquake protection. Each of the four SIS trains is housed in a separate Seismic Category I structure. The buildings also protect the SIS against damage from other natural phenomena, such as floods, severe weather, and external hazards such as missiles. The design of the SBs is described in Section 3.8.4.