ArevaEPRDCPEm Resource

From: WELLS Russell D (AREVA NP INC) [Russell.Wells@areva.com]
Sent: Monday, August 31, 2009 4:19 PM
To: Tesfaye, Getachew
Cc: Pederson Ronda M (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 263, FSAR Ch 9
Attachments: RAI 263 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 263 Response US EPR DC.pdf" provides a technically correct and partial response to 1 of the 2 questions.

The following table indicates the respective pages in the response document, "RAI 263 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 263 — 09.01.01-24	2	3
RAI 263 — 09.05.08-11	4	4

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

Question #	Response Date
RAI 263 — 09.01.01-24 (Parts 3 and 6)	November 20, 2009
RAI 263 — 09.05.08-11	November 20, 2009

Sincerely,

(Russ Wells on behalf of)
Ronda Pederson
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New Plants Deployment
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From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Friday, July 17, 2009 7:14 PM
To: ZZ-DL-A-USEPR-DL
Cc: Poehler, Jeffrey; Terao, David; Wolfgang, Robert; Segala, John; Hearn, Peter; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: Draft - U.S. EPR Design Certification Application RAI No. 263(3237,3068), FSAR Ch. 9

Attached please find draft RAI No. 263 regarding your application for standard design certification of the U.S. EPR. If you have any question or need clarifications regarding this RAI, please let me know as soon as possible, I will have our technical Staff available to discuss them with you.

Please also review the RAI to ensure that we have not inadvertently included proprietary information. If there are any proprietary information, please let me know within the next ten days. If I do not hear from you within the next ten days, I will assume there are none and will make the draft RAI publicly available.

Thanks,
Getachew Tesfaye
Sr. Project Manager
NRO/DNRL/NARP
(301) 415-336

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 774

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Subject: Response to U.S. EPR Design Certification Application RAI No. 263, FSAR Ch 9
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From: WELLS Russell D (AREVA NP INC)

Created By: Russell.Wells@areva.com

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Files	**Size**	**Date & Time**
MESSAGE	2256	8/31/2009 4:19:27 PM
RAI 263 Response US EPR DC.pdf	70385	

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

Response to

Request for Additional Information No. 263 (3237, 3068), Revision 1

7/30/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 09.01.01 - Criticality Safety of Fresh and Spent Fuel Storage and Handling
SRP Section: 09.05.08 - Emergency Diesel Engine Combustion Air Intake and Exhaust System

Application Section: FSAR Ch. 9

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects) (CIB1)
QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

Question 09.01.01-24:

Background

Topical Report No. UN-TR-08-001(P) and the applicant's response to RAI 200 Supplement 1 Question 09.01.01-18 identify the single effects testing performed on the Metamic™. Additionally, the RAI response identifies that a test facility does not exist in which the Metamic™ can be tested with simultaneous exposure to chemical, heat and radiation factors. Therefore, a robust in-service coupon surveillance program is needed to compensate for the limitations of the pre-service qualification testing. Section 3.4 of the Topical Report No. UN-TR-08-001(P) describes the proposed coupon surveillance program for the Metamic material. The surveillance program described includes testing for neutron attenuation, thickness, dimensional measurements, and visual examination for general and crevice corrosion.

It is not clear to the staff whether the Metamic coupons will be sheathed in stainless steel to simulate the as-installed configuration of the Metamic panels, which could be important for detection of any adverse interaction between the stainless steel and Metamic.

The potential dissolution of Metamic™ putting aluminum into solution would be a chemistry concern for the fuel cladding surfaces as aluminum is a zeolite (aluminum silicate) former. Early detection of any potential problems with this material is essential in that it can potentially affect the SFP and fuel corrosion film chemistry and it provides the primary neutron moderating capability. One means to detect any potential problems would be through monitoring the spent fuel pool water for dissolved aluminum.

The proposed program in the Topical Report identifies a "tree" of corrosion coupons, with one removed at two-year intervals for the first ten years and five-year intervals thereafter until the end of the 40-year life. However, this schedule does not account for license renewal or continued fuel storage after shutdown of the reactor.

Requested Information:

The applicant is requested to supply the following information:

1. How will the Metamic coupons be constructed to simulate the as-installed configuration in the fuel racks? For example, do the coupons include stainless steel sheathing like the actual Metamic panels?
2. Describe the location of the coupon tree in the spent fuel pool. Verify that the coupons will receive a bounding dose rate for all Metamic in the pool.
3. A schedule identifying the frequency of inspection of the Metamic™ coupons, and the number of coupons to be tested at each interval (similar to that in the Topical Report).
4. Discuss how the coupon withdrawal schedule accounts for potential license extensions and post-shutdown fuel storage.
5. How will the spent fuel pool water chemistry be monitored for dissolved aluminum that could potentially form harmful deposits on fuel in the reactor?
6. How will the description of the Metamic coupon monitoring program be incorporated in the U.S. EPR DCD?

Response to Question 09.01.01-24:

1. The Metamic coupons are made by excising a portion of the sheet of material from which the actual panels for the racks are cut. In the process of making the neutron absorber panels for the racks, the Metamic material is rolled into a sheet of the correct thickness but that is wider and longer than the panels needed for the racks. The coupons are cut from this overage. Thus, the coupons are not merely representative of the panels in the racks but are actual pieces of the same stock material.

   The coupons are not encased in sheathing. This is necessary so the coupons receive a bounding gamma radiation dose. The coupon tree (the structure onto which the coupons are mounted) is installed in a rack cell which is surrounded by fuel, thus the coupons are separated from the fuel by both the steel rack structure and other neutron absorber panels. Adding more steel sheathing around the coupons would further attenuate the gamma radiation, preventing them from receiving a bounding gamma flux.

   An area on each coupon (where the coupon tree's mounting stud attaches) is faced by steel washers. This provides a region of intimate contact between the coupons and steel, allowing for galvanic corrosion and crevice corrosion monitoring.

   This configuration for mounting the test coupons has been used on nearly all Boral and Metamic (both aluminum-based) coupon trees in pressurized water reactor pools for over fifteen years.

2. As described in Section 3.4.2.2 of the Holtec Topical Report UN-TR-08-001, the coupon tree installed in the Region I racks will be continuously surrounded by recently discharged fuel assemblies. At each refueling outage, these surrounding fuel assemblies are replaced by more recently discharged assemblies. This process maximizes the dose rates to the coupons.

3. See the response to Item 6.

4. The tests performed on the coupons are non-destructive. After each coupon is measured and tested it can be reinstalled onto the coupon tree and used for future monitoring.

5. As stated in the response to RAI 86, Question 09.01.01-19, contaminants to be analyzed in the spent fuel pool (SFP) on a routine basis are chloride, fluoride and sulfate at a frequency of four times per year (quarterly). Aluminum in the SFP water will also be analyzed quarterly.

6. A response to this question will be provided by November 20, 2009, as the response depends upon the response to RAI 204, Question 09.01.01-19, which is due on November 20, 2009.

FSAR Impact:

Neither the U.S. EPR FSAR nor Holtec Technical Report UN-TR-08-001(P) will be changed as a result of this question.

Question 09.05.08-11:

In response to RAI No. 09.05.08-8, the applicant stated that FSAR Tier 1 Section 2.5.4 and Table 2.5.4-4 will be revised to add item 3.15: "Each EDG exhaust path has a bypass exhaust path."

a. The staff noted that Table 2.5.4-4 on EDG ITAAC (Item 3.15) shows the acceptance criteria for the bypass exhaust device as "each EDG exhaust path bypass device provides an exhaust path when actuated." The saff is concerned that this acceptance criteria does not adequately demonstrate the bypass feature. Specifically, once the disk ruptures, a bypass will be provided.

   Confirm that the design of the EDG exhaust prevents a seismic event from causing reduced exhaust flow with elevated backpressure (but not high enough to acutate the bypass path).

b. In addition to the above concern, FSAR Tier 2 Section 9.5.8.6, "Instrument Requirements," provides the following statements:

   "When a high-high setpoint is reached, the bypass valve is actuated. The rupture disk is the actuator used to perform this function."

   This wording would tend to imply that the bypass device may be something more than a standard rupture disk. However, reviews of Figures 2.5.4-3 and 9.5.8-1 indicate that the bypass path is controlled by a single rupture disk.

   Provide further clarification of the operation of the bypass device and ITAAC acceptance criteria that best demonstrates proper functioning of the bypass path in the event of full or partial failure of the normal exhaust path. If the bypass device is a standard rupture disk, the wording in Section 5.4.8.6 should be clarified. If the bypass device is some combination of an active valve with a rupure disk, the acutation of this device, along with ITAAC acceptance criteria, should be described.

Response to Question 09.05.08-11:

A response to this question will be provided by November 20, 2009.