ArevaEPRDCPEm Resource

From: Getachew Tesfaye
Sent: Tuesday, May 19, 2009 9:49 PM
To: 'usepr@areva.com'
Cc: Fred Forsaty; John Budzynski; Shanlai Lu; Joseph Donoghue; Jason Carneal; Joseph Colaccino; ArevaEPRDCPEm Resource
Subject: Draft - U.S. EPR Design Certification Application RAI No. 231 (2869, 2870), FSAR Ch. 4
Attachments: Draft RAI_231_SRSB_2869_2870.doc

Attached please find draft RAI No. 231 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: 502

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From: Getachew Tesfaye

Created By: Getachew.Tesfaye@nrc.gov

Recipients:
"Fred Forsaty" <Fred.Forsaty@nrc.gov>
Tracking Status: None
"John Budzynski" <John.Budzynski@nrc.gov>
Tracking Status: None
"Shanlai Lu" <Shanlai.Lu@nrc.gov>
Tracking Status: None
"Joseph Donoghue" <Joseph.Donoghue@nrc.gov>
Tracking Status: None
"Jason Carneal" <Jason.Carneal@nrc.gov>
Tracking Status: None
"Joseph Colaccino" <Joseph.Colaccino@nrc.gov>
Tracking Status: None
"ArevaEPRDCPEm Resource" <ArevaEPRDCPEm.Resource@nrc.gov>
Tracking Status: None
"'usepr@areva.com'" <usepr@areva.com>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

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Request for Additional Information No. 231 (2869, 2870), Revision 0

5/19/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 04.03 - Nuclear Design
SRP Section: 04.04 - Thermal and Hydraulic Design
Application Section: FSAR Ch. 4

QUESTIONS for Reactor System, Nuclear Performance and Code Review (SRSB)

04.03-19

In reference to RAI 134, Question 04.03-10: Summarize the current fuel manufacturing practices that reduce in-reactor densification of US EPR fuel material.

04.03-20

In reference to RAI 134, Question 04.03-10: Summarize the gamma scan fuel column gap measurements taken at the McGuire station, including identification of the maximum measured pellet stack gap and explanation of whether the measurements represent the burnup at maximum expected net densification.

04.03-21

In reference to RAI 134, Question 04.03-14: FSAR Tier 2 Section 4.3.2.7 states that Technical Specifications require periodic comparison of measured versus calculated power distributions throughout cycle lifetime. Provide explicit reference to said requirement in the Technical Specifications.

04.03-22

In reference to RAI 134, Question 04.03-14: Explain how the AMS flux mapping process performs a comparison of measured versus calculated power distributions.

04.04-48

In reference to RAI 134, Question 04.04-24: The Question Response states that because the BWU-N correlation is used for the bottom-most spacer grid, the bundle length is not as important. Explain this statement, considering the BWU-N correlation is applicable to the HMP spacer design, and that the fuel assembly upper-most spacer is a HMP design spacer.

04.04-49

In reference to RAI 134, Question 04.04-26: Identify the design basis accident conditions evaluated to ensure that the top and bottom nozzles maintain engagement.

04.04-50

In reference to RAI 134, Question 04.04-26: Explain how the statistical holddown methodology addresses the condition of relaxed holddown spring to demonstrate that holddown capability is not exceeded for the worst case loads during normal operation.

04.04-51

In reference to RAI 134, Question 04.04-27: Identify the fuel manufacturing tolerances that are explicitly treated in the COPERNIC analysis of the US EPR fuel.

04.04-52

In reference to RAI 134, Question 04.04-27: Provide the calculated effect of each of the fuel manufacturing tolerances on the key fuel rod performance parameters, e.g., internal rod pressure, fuel pellet temperature, gap conductance, and cladding stress level.

04.04-53

In reference to RAI 134, Question 04.04-27: Describe how pellet chipping is treated.

04.04-54

In reference to RAI 134, Question 04.04-29: The Question Response states that while fuel rod surface crud slightly reduces cladding surface heat transfer and increases cladding surface temperature, the probability of a steam film between the rod surface and coolant does not increase. Explain why an increase in cladding surface temperature does not increase the probability of the formation of a vapor film.

04.04-55

In reference to RAI 134, Question 04.04-29: Describe how the effects of crud are accounted for in the DNB correlations.

04.04-56

Summarize the applicability of the Juliette test loop to the US EPR, including physical configuration, scale, coolant mass flow, coolant system temperature and pressure, and core representation. This question is a follow-up item from the reactor systems audit held in Lynchburg on April 21 to April 24, 2009.

04.04-57

Provide a comparison of the core inlet flow distributions between the US EPR and previous design 14-foot cores that had experienced fuel assembly bow attributable to core flow mal-distribution. This question is a follow-up item from the reactor systems audit held in Lynchburg on April 21 to April 24, 2009.

04.04-58

Assess the effects of the FDD and US EPR fuel assembly design improvements relative to flow-induced fuel assembly bow. This question is a follow-up item from the reactor systems audit held in Lynchburg on April 21 to April 24, 2009.