

ArevaEPRDCPEm Resource

From: RYAN Tom (AREVA) [Tom.Ryan@areva.com]
Sent: Friday, August 16, 2013 7:52 AM
To: Snyder, Amy
Cc: Miernicki, Michael; ANDERSON Katherine (EXTERNAL AREVA); DELANO Karen (AREVA); LEIGHLITER John (AREVA); LEWIS Ray (EXTERNAL AREVA); ROMINE Judy (AREVA); SHEPHERD Tracey (AREVA); WILLIFORD Dennis (AREVA); HOTTLE Nathan (AREVA); LOSEKE Brian (AREVA)
Subject: Advanced Response to U.S. EPR Design Certification Application FINAL RAI 587, Chapter 3, Question 03.07.02-79
Attachments: Advanced Response to RAI 587 Question 03.07.02-79 US EPR DC.pdf

Amy,

To support a final response date of September 30, 2013, an Advanced Response for RAI No. 587, Question 03.07.02-79 is provided in the attached file, "Advanced Response to RAI 587 Question 03.07.02-79 US EPR DC.pdf".

To keep our commitment to send a final response to this question by the commitment date, we need to receive all NRC staff feedback and comments no later than **September 18, 2013**.

Please let me know if NRC staff has any questions or if this response can be sent as final.

Sincerely,

Tom Ryan

Manager, US EPR DCD

Regulatory Affairs

AREVA NP

An AREVA and Siemens company

7207 IBM Drive - CLT2B

Charlotte, NC 28262

Phone: 704-805-2643, Cell : 704-292-5627

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From: WILLIFORD Dennis (RS/NB)
Sent: Tuesday, July 23, 2013 6:17 PM
To: Amy.Snyder@nrc.gov
Cc: Michael.Miernicki@nrc.gov; ANDERSON Katherine (External AREVA NP INC.); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); MONTAGUE Kelvin (External AREVA NP INC.)
Subject: Response to U.S. EPR Design Certification Application FINAL RAI 587, Chapter 3

Amy,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 587 Response US EPR DC.pdf," provides a schedule since a technically correct and complete response to the single question cannot be provided at this time.

The following table indicates the respective pages in the response document, "RAI 587 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 587 — 03.07.02-79	2	2

The schedule for a technically correct and complete response to the question is provided below.

Question #	Advanced Response Date	NRC Comment Request Date	Final Response Date
RAI 587 — 03.07.02-79	August 30, 2013	September 18, 2013	September 30, 2013

Sincerely,

Dennis Williford, P.E.
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.

7207 IBM Drive, Mail Code CLT 2B

Charlotte, NC 28262

Phone: 704-805-2223

Email: Dennis.Williford@areva.com

From: Snyder, Amy [<mailto:Amy.Snyder@nrc.gov>]

Sent: Tuesday, June 25, 2013 8:16 AM

To: ZZ-DL-A-USEPR-DL

Cc: Miernicki, Michael; Segala, John; Xu, Jim

Subject: U.S. EPR Design Certification Application FINAL RAI 587, Chapter 3

Attached please find the subject request for additional information (RAI). A draft RAI was provided to you on June 25, 2013. On June 24, 2013, you informed us that the draft RAI does not contain proprietary information and that the draft RAI is clear and no further clarification is needed. As result, the RAI was not changed.

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 or July 25, 2013**, 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.

Thank You,

Amy

Amy Snyder, U.S. EPR Design Certification Lead Project Manager
Licensing Branch 1 (LB1)
Division of New Reactor Licensing

Office of New Reactors
U.S. Nuclear Regulatory Commission

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Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 4648

Mail Envelope Properties (88F9B30A3139B1498DA89BEBA7B31B9017D2A0)

Subject: Advanced Response to U.S. EPR Design Certification Application FINAL RAI 587, Chapter 3, Question 03.07.02-79
Sent Date: 8/16/2013 7:51:40 AM
Received Date: 8/16/2013 7:51:50 AM
From: RYAN Tom (AREVA)

Created By: Tom.Ryan@areva.com

Recipients:

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Post Office: FUSLYNCMX03.fdom.ad.corp

Files	Size	Date & Time	
MESSAGE	3680	8/16/2013 7:51:50 AM	
Advanced Response to RAI 587 Question 03.07.02-79 US EPR DC.pdf			593668

Options

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

Advanced Response to

Request for Additional Information No. 587, Question 03.07.02-79

8/5/2013

**U.S. EPR Standard Design Certification
AREVA NP Inc.**

Question 03.07.02-79:

Follow Up to RAI 370, Question 03.07.02-64:

In its review of AREVA's response to RAI 370 Question 03.07.02-64, Supplement 24, the staff has identified a number of technical errors as described below.

1. In Attachment B of the response, there is an error on page 28 of 39. In the equation for allowable bearing capacity where shear wave velocities exceed 500 m/sec, a term s_v has been left out which results in an over-prediction on page 29 of the allowable bearing capacity for soil type 4ue. AREVA should also check the allowable bearing capacity for soil case 2sn4ue. In addition, the bearing capacity upper limit of 30.6 times the unit weight is applicable when V_s exceeds 2000 m/sec not 500 m/sec.
2. In the FSAR markup on page 3.7-123, the third paragraph states:

"Bounding analysis cases, using the Table 3.7.1-6 soil cases, are performed for sliding and overturning using the model previously described to demonstrate that..."

It requires that COLs should perform bounding analyses using DC generic soil cases in Table 3.7.1-6. This is inconsistent with the requirements for COL site-specific analysis to demonstrate structural stability.

A suggested revision to this paragraph is:

"Bounding analysis cases, ~~using the Table 3.7.1-6 soil cases,~~ are to be performed for sliding and overturning using the model previously described to demonstrate that..."

The staff requests that the applicant provide corrections of these technical errors in the response to RAI 370 Question 03.07.02-64 and associated FSAR markup.

Response to Question 03.07.02-79:

Item 1:

Allowable bearing pressure for soil case 4uem and 2sn4uem are recalculated based on the revised equations. The Nuclear Auxiliary Building (NAB) stability analyses for these soil cases are done with updated allowable bearing pressures to calculate the stability parameters described in the Response to RAI 370, Question 03.07.02-64. Factor of safety against seismic interaction between the Nuclear Island and the NAB are recalculated for these soil cases. The Response to RAI 370, Question 03.07.02-64, Supplement 25 has been revised for the stability parameters and factor of safety against seismic interaction, and will be transmitted by a separate letter.

Item 2:

U.S. EPR FSAR Tier 2, Section 3.7, page 3.7-123 describes the design certification analysis activities performed for the standard soil cases in U.S. EPR FSAR Tier 2, Table 3.7.1-6. U.S. EPR FSAR Tier 2, Section 2.5.4.10.1, COL Item 2.5-13 requires the COL applicant to perform a site-specific analysis to determine the bearing pressure demand and peak displacement of the NAB. U.S. EPR FSAR Tier 2, Table 1.8-2, COL Item 2.5-13 will be revised to remove the reference to U.S. EPR FSAR Tier 2, Section 3.7.2.8. No changes are required to the NAB overturning analysis description on U.S. EPR FSAR Tier 2, Section 3.7, page 3.7-123.

FSAR Impact:

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

U.S. EPR Final Safety Analysis Report Markups



**Table 1.8-2—U.S. EPR Combined License Information Items
Sheet 7 of 40**

Item No.	Description	Section
2.5-9	A COL applicant that references the U.S. EPR design certification will reconcile the site-specific soil and backfill properties with those used for design of U.S. EPR Seismic Category I structures and foundations described in Section 3.8	2.5.4.2
2.5-10	A COL applicant that references the U.S. EPR design certification will investigate and determine the uniformity of the soil layer(s) underlying the foundation basemats of Seismic Category I structures.	2.5.4.10.3
2.5-11	Deleted.	Deleted
2.5-12	A COL applicant that references the U.S. EPR design certification will provide an assessment of predicted settlement values across the basemat of Seismic Category I structures during and post construction. The assessment will address both short term (elastic) and long term (heave and consolidation) settlement effects with the site-specific soil parameters, including the soil loading effects from adjacent structures.	2.5.4.10.2
2.5-13	A COL applicant that references the U.S. EPR design certification will perform a site-specific analysis to determine the bearing pressure demand and peak displacement of the NAB. The foundation soils beneath the NAB foundation basemat shall have the capacity to support the bearing pressure with a factor of safety of 3.0 under static conditions, or 2.0 under combined static and dynamic conditions, whichever is greater. The minimum required separation distance is a factor of two times the calculated absolute sum of the maximum combined site-specific NAB and U.S. EPR NI design displacements, but not less than 30 inches.	2.5.4.10.1 3.7.2.8
3.1-1	A COL applicant that references the U.S. EPR design certification will identify the site-specific QA Program Plan that demonstrates compliance with GDC-1.	3.1.1.1.1
3.2-1	A COL applicant that references the U.S. EPR design certification will identify the seismic classification of applicable site-specific SSC that are not identified in Table 3.2.2-1.	3.2.1
3.2-2	A COL applicant that references the U.S. EPR design certification will identify the quality group classification of site-specific pressure-retaining components that are not identified in Table 3.2.2-1.	3.2.2