CCNPP3COLA PEmails

From: Arora, Surinder
Sent: Wednesday, September 02, 2009 3:05 PM
To: Poche, Robert; katie.thurstin@unistarnuclear.com; Jennifer.McQueeney@unistarnuclear.com; michael.stevenson@unistarnuclear.com
Cc: CCNPP3COL Resource; Chakrabarti, Samir; Chakravorty, Manas; Colaccino, Joseph; Miernicki, Michael; Biggins, James; Simon, Marcia; Vrahoretis, Susan
Subject: CCNPP3 - DRAFT RAI 159 SEB2 3254
Attachments: Draft RAI 159 SEB2 3254.doc

Rob,

Attached is DRAFT RAI No. 159 (eRAI No. 3254). You have until September 17, 2009 to review it and decide whether you need a conference call to discuss it before the final issuance. After the call or after September 17, 2009, the RAI will be finalized and sent to you for response. You will then have 30 days to respond.

Thanks.

SURINDER ARORA, PE
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US Nuclear Regulatory Commission

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Subject: CCNPP3 - DRAFT RAI 159 SEB2 3254
Sent Date: 9/2/2009 3:05:25 PM
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From: Arora, Surinder

Created By: Surinder.Arora@nrc.gov

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Post Office: HQCLSTR01.nrc.gov

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MESSAGE	555	9/2/2009 3:05:27 PM
Draft RAI 159 SEB2 3254.doc	31738	

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

Request for Additional Information No. 159 (eRAI 3254)
Draft
9/2/2009

Calvert Cliffs Unit 3
UniStar
Docket No. 52-016
SRP Section: 03.07.02 - Seismic System Analysis
Application Section: FSAR 3.7.2

QUESTIONS for Structural Engineering Branch 2 (ESBWR/ABWR Projects) (SEB2)

03.07.02-30

Follow-up Question to RAI No. 65, Question No. 03.07.02-10:

The staff reviewed the applicant's response and requests the applicant to provide the following additional information in order for the staff to complete its review:

1. The applicant stated in its response that the entire water mass was conservatively considered in determining the impulsive load acting perpendicular to each wall for the equivalent static analysis. In the next sentence of the response, the applicant stated that the impulsive masses of contained water inside each chamber of the Ultimate Heat Sink (UHS) Makeup Water Intake Structure (MWIS) are calculated in accordance with Equation (9-1) of Section 9.2.1 in ACI 350.3-06. The applicant is requested to clarify why two different methods are referred for calculation of impulsive water mass, and how the above two methods were used.

2. The applicant stated in the response that "Westergaard Added Mass" methodology was used for calculating the impulsive water mass associated with the fore bay water on the exposed side of the intake structure. The staff notes that the above methodology has limitations on its application, and may not be appropriate for intake structures having complex geometry like the UHS MWIS. Further, the added mass representation of hydrodynamic pressure ignores the effects of water compressibility and water-foundation interaction which may be significant in certain instances. The applicant is, therefore, requested to provide justification why the Westergaard Added Mass methodology is considered adequate either by comparing the results with those from a more refined analysis, or providing results of any existing comparative analysis that may be considered applicable to this case, or by any other suitable means.

3. The applicant did not provide enough information in the response about how the impulsive water mass was included in the soil-structure-interaction analysis of the UHS MWIS in order for the staff to review if the guidance provided in the SRP 3.7.2 Acceptance Criteria 14 were met. The applicant is, therefore, requested to describe how the analysis of the UHS MWIS for hydrodynamic loads meets the guidance provided in SRP 3.7.2 Acceptance Criteria 14.A through 14.J, or provide justification for not doing so.

03.07.02-31

Follow-up Question to RAI No. 65, Question No. 03.07.02-14:

The staff reviewed the applicant's response to question 03.07.02-14, and requests the applicant to provide the following additional information to complete its review:

1. In its response the applicant stated that 20 percent damping was used for soil driven modes. SRP 3.7.1, SAC-2 states that the maximum soil damping acceptable to the staff is 15 percent. In addition, no amplification factor was used in applying the maximum response from the input design spectra to the structure. However, as a soil-structure interaction (SSI) analysis using the SASSI code will be performed to confirm the design loads for the structure, this part of the response is acceptable pending the results of that analysis. Therefore, the applicant is requested to include in the FSAR a description of the proposed SASSI analysis along with a comparison of the preliminary design input used for design of the structure with the results obtained from the SASSI analysis.

2. At the end of the response the applicant stated that for the Ultimate Heat Sink (UHS) Electrical Building (EB), the design is governed by the probable maximum hurricane (PMH). According to the drawings the structure is almost completely buried. It is not readily apparent how the PMH controls the design. The applicant is requested to elaborate on how the PMH controls the design of the building.

3. In the applicants proposed write-up of FSAR Section 3.7.2.6, the copyright date for ASCE 4-98 should be corrected from ASCE 20001-986 to ASCE 2000.