CCNPP3eRAIPEm Resource

From: Arora, Surinder
Sent: Monday, May 23, 2011 1:57 PM
To: Robert.Poche@unistarnuclear.com; 'cc3project@constellation.com'
Cc: CCNPP3eRAIPEm Resource; Jeng, David; Hawkins, Kimberly; Colaccino, Joseph; Miernicki, Michael; Wilson, Anthony; Vrahoretis, Susan
Subject: Final RAI 308 SEB2 5748
Attachments: FINAL RAI 308 SEB2 5748.doc

Rob,

Attached please find the subject request for additional information (RAI). The draft of this RAI was sent to you on May 11, 2011. In a phone call on May 23, 2011, you informed us that no clarification phone call was required by UniStar to discuss the draft questions and the RAI can be issued as "Final".

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, it is expected that a schedule date for submitting your technically correct and complete response will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the review schedule of the applicable FSAR Chapter.

Your response letter should also include a statement confirming that the response does or does not contain any sensitive or proprietary information.

Thanks.

SURINDER ARORA, PE
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Request for Additional Information No. 308 (eRAI 5748)

5/23/2011

Calvert Cliffs Unit 3
UniStar
Docket No. 52-016
SRP Section: 03.08.05 - Foundations
Application Section: FSAR 3.8.5

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

03.08.05-7

SRP acceptance criteria 3.8.5.II.5 discusses the allowable design limits for the foundation design. In RAI number 03.08.05-1, the staff requested that the applicant provide additional information on how to address the U.S. EPR FSAR Section 3.8.5.5 COL item regarding site-specific methods for shear transfer under the foundation basemats.

The staff reviewed the RAI response to Question 03.08.05-1 provided in UniStar Letter UN#10-193 dated July 23, 2010 (ML102100480), and also reviewed Rev. 7 of Calvert Cliffs Unit 3 FSAR Sections 1.1, 1.2, 1.8.2, 2.5.4, and 3.8. As indicated in Item 5 of the RAI response, the coefficients of friction given in CCNPP Unit 3 FSAR Table 3.8-1 for the interfaces of concrete-soil/soil-soil are based on laboratory tests described in updated CCNPP Unit 3 FSAR Section 2.5.4. However, the staff cannot correlate the values in Table 3.8-1 with Section 2.5.4. For example, Table 2.5.58 shows coefficients of 0.4 and 0.45, which do not appear in Table 3.8-1. Therefore, explain how the coefficients of friction given in Table 3.8-1 for the interfaces of concrete-soil/soil-soil correlate with the corresponding coefficients shown in Table 2.5-58. Also, provide references to the laboratory test reports and the specific locations in the reports that provide the technical basis for the coefficients of friction and adhesion values provided in Table 3.8-1, in case that the staff needs to review the reports in a future audit. The staff needs the information to be able to conclude in the SER that there is reasonable assurance that the foundation design of the Seismic Category I structures sufficiently meets SRP Acceptance Criteria 3.8.5 II.5 and has been adequately addressed in the CCNPP Unit 3 FSAR.

03.08.05-8

SRP Acceptance Criteria 3.8.5.II.4 discusses information on the design and analysis procedures for Seismic Category I foundations, including the consideration of settlement. In RAI number 03.08.05-2, the staff requested that the applicant provide additional information on the site-specific settlement analysis for the Nuclear Island (NI) common basemat structure, since Rev. 3 of the CCNPP Unit 3 FSAR indicated that the site-specific differential settlements of the NI foundation basemat exceed the EPR differential settlement limit.

The staff reviewed the RAI response to Question 03.08.05-2 provided in UniStar Letter UN#11-085 dated February 22, 2011 (ML110560307). The RAI response addressed most of the staff's original questions. However, the staff notes that the issue of differential settlements of Seismic Category I structures is still under discussion as part

of the U.S. EPR Design Certification (DC) review, and the most recent draft RAI response submittal for Question 03.08.05-22 by AREVA provides updated information on settlement evaluations of Seismic Category I structures. Therefore, the staff requests that the applicant, after the official publication of the new COL items proposed by the AREVA draft submittal, explain how the new and updated COL Items regarding settlements of the NI common basemat structure will be addressed. Confirm also that the same U.S. EPR models, methodology, and procedures will be used for the site-specific analysis. Also explain what site-specific conditions will be considered and how the site-specific soil case is compared to the soil cases considered in U.S. EPR's settlement evaluation for the NI common basemat structure. The staff needs the information to be able to conclude in the SER that there is reasonable assurance that the foundation design of the Seismic Category I structure is consistent with SRP Acceptance Criteria 3.8.5.II.4, and has been adequately addressed in the CCNPP Unit 3 FSAR.

03.08.05-9

SRP Acceptance Criteria 3.8.5.II.4 discusses information on the design and analysis procedures for Seismic Category I foundations, including the consideration of settlement. In RAI number 03.08.05-4. The staff requested that the applicant quantify and explain some differences obtained from the U.S. EPR structural analysis results due to site-specific settlements and groundwater conditions for the Nuclear Island (NI) common basemat structure, the Emergency Power Generating Buildings (EPGBs), and the Essential Service Water Buildings (ESWBs).

The staff reviewed the RAI response to Question 03.08.05-4 provided in two parts: Part one in UniStar letter UN#10-193 dated July 23, 2010 (ML102100480) and Part two in UniStar letter UN#11-085 dated February 22, 2011 (ML110560307). The RAI response addressed most of the staff's original questions. However, the staff notes that the issue of differential settlements of Seismic Category I structures is still under discussion in the U.S. EPR Design Certification (DC) review, and the most recent draft EPR RAI response submittal for Question 03.08.05-22 by AREVA provides updated information on settlement evaluations of Seismic Category I structures. Therefore, the staff requests that the applicant, after the official publication of the new COL items proposed by the AREVA draft submittal, explain how the new and updated COL Items regarding settlements of the EPGBs and the ESWBs will be addressed, for example, whether the same U.S. EPR models, methodology and procedures will be used, what site-specific conditions will be considered, and how the site-specific soil case is compared to the soil cases considered in U.S. EPR's settlement evaluation of the EPGBs and the ESWBs. If not the same, explain the difference(s) and quantify the differences in structural results. The staff also notes that the new Common Basemat Intake Structure (CBIS) foundation is comparable in size with the foundations of the EPGBs and the ESWBs. In light of the new and updated COL items for Seismic Category I structures, explain whether the methodology and procedures used for the settlement evaluation of the CBIS foundation will be comparable to those used for the EPGB and the ESWB foundations. If not, explain the difference(s) and provide the technical basis for the difference(s). The staff needs the information in order to be able to conclude in the SER that there is reasonable assurance that the foundation design of the Seismic Category I structures is consistent with SRP Acceptance Criteria 3.8.5.II.4, and has been adequately addressed in the CCNPP Unit 3 FSAR.