CCNPP3COLA PEmails

From: Steckel, James
Sent: Thursday, June 23, 2011 2:50 PM
To: CCNPP3COLA PEmails
Subject: FW: RAI No 101 RHEB 2092.doc (PUBLIC)
Attachments: RAI No 101 RHEB 2092.doc

From: John Rycyna
Sent: Monday, April 20, 2009 4:37 PM
To: Poche, Robert; McQueeney, Jennifer; katie.thurstin@unistarnuclear.com
Cc: CCNPP3COL Resource; Henry Jones; Richard Raione; Joseph Colaccino; James Biggins; Adam Gendelman
Subject: RAI No 101 RHEB 2092.doc (PUBLIC)

Rob,

Attached please find the subject request for additional information (RAI). A draft of the RAI was provided to you on April 3, 2009. No conference call was requested to discuss this RAI. 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 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.

John Rycyna, PE
Sr. Project Manager
Division of New Reactor Licensing
Office of New Reactors
U.S. Nuclear Regulatory Commission
301-415-4122

Hearing Identifier: CalvertCliffs_Unit3Cola_Public_EX
Email Number: 2409

Mail Envelope Properties (0AA17736E4C4154CA37233EEBFC8DEB27400C0E1EA)

Subject: FW: RAI No 101 RHEB 2092.doc (PUBLIC)
Sent Date: 6/23/2011 2:50:14 PM
Received Date: 6/23/2011 2:50:14 PM
From: Steckel, James

Created By: James.Steckel@nrc.gov

Recipients:
"CCNPP3COLA PEmails" <CCNPP3COLA.PEmails@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	1062	6/23/2011 2:50:14 PM
RAI No 101 RHEB 2092.doc	34414	

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

Request for Additional Information No. 101
4/20/2009

Calvert Cliffs Unit 3
UniStar
Docket No. 52-016
SRP Section: 02.04.12 - Groundwater
Application Section: FSAR Section 2.4

QUESTIONS for Hydrologic Engineering Branch (RHEB)

02.04.12-1

Legends of some FSAR figures in the electronic version are unreadable at any magnification (e.g., 2.4-68 and 2.4-70). Figures in Calculation No. 25237-103-KOC-HMMG-00001, Groundwater Flow Model of Surficial Aquifer, provided to Staff via the reading room, are in black and white and are less informative than they would have been if they had been in color and they are unreadable in some cases. Provide legible, color copies of all figures in FSAR section 2.4 and in Calculation No. 25237-103-KOC-HMMG-00001.

02.04.12-2

FSAR Section 2.5.4 refers to the hydrogeologic units at the site as Terrace Sand, Chesapeake Clay/Silt (IIa and IIc), and Chesapeake Cemented Sand (IIb). Different titles for the units are used in FSAR Section 2.4.12. Resolve discrepancies between FSAR Sections 2.4.12 and 2.5.4 in the descriptions of the hydrogeologic units at the CCNPP site and in the elevations of the unit contacts. This resolution should include any applicable changes to the FSAR 2.4.13 transport analysis.

02.04.12-3

FSAR Section 2.4.12.4 states both that (1) water for operation of CCNPP Unit 3 would come from a desalination plant and (2) water for construction and operation of Unit 3 will be met from desalination **or** by appropriating ground water from Units 1 and 2. Clarify the CCNPP Unit 3 ground water use projections given these ambiguous statements. Also, state in this section whether projected future on-site and off-site groundwater use, and the resulting reduction in groundwater heads, will affect plant safety (e.g., through subsidence). At the site hydrology audit, the applicant stated that additional groundwater modeling would be undertaken to address this issue. Provide a description of this additional modeling and provide electronic copies of the model input files used.

02.04.12-4

The FSAR refers to groundwater head observations made between July 2006 and July 2007, although observations presented in FSAR Tables 2.4-35 and 2.4-26 only extend through March 2007. Provide the additional data referred to in the FSAR.

02.04.12-5

Provide a description of the water budget at the site. This description should include estimates of recharge to the surficial aquifer, recharge to the Chesapeake units from the surficial aquifer, and recharge to the Piney Point-Nanjemoy aquifer from the Chesapeake. Regional information can be used in developing these estimated recharge values. Provide a three-dimensional conceptual description of groundwater flow within and between these units (Surficial aquifer, Chesapeake units, and Piney-Point Nanjemoy aquifer), provide an interpretation of the available groundwater head data (particularly from well OW-744) within the context of the three-dimensional conceptual description, and discuss the potential for a groundwater pathway from the CCNPP facility to the Piney-Point Nanjemoy aquifer.

02.04.12-6

Groundwater heads and estimated hydraulic gradients were observed to be variable in time. Given the limited number of observations (one year of monthly head data) provide a discussion of the potential impact of temporal variability in head on the estimated groundwater velocities and travel times.

02.04.12-7

In FSAR Section 2.4.12.4, provide specific details of the anticipated groundwater monitoring programs during CCNPP Unit 3 construction and operation, including monitoring objectives, monitoring locations, what quantities will be measured, and the frequency of monitoring.

02.04.12-8

Provide an electronic copy of the Visual MODFLOW input files used in the groundwater modeling discussed in FSAR Section 2.4.12.5.

02.04.12-9

The DCD requirement on subsurface hydrostatic loading states that the maximum groundwater level is 1.0 m below grade. The results of the groundwater modeling described in FSAR Section 2.4.12.5 and Calculation No. 25237-103-KOC-HMMG-00001, Groundwater Flow Model of Surficial Aquifer, show that the DCD requirement is not satisfied at several locations and that the predicted groundwater level is very close to the DCD requirement (within one meter) over a relatively large area. Provide a discussion of the degree of conservatism of the model results and the reliability of meeting the DCD requirement on maximum groundwater level considering the following issues:

The observed average fluctuation in the surficial aquifer was 1.2 m over the year of observation;

The calibration errors reported in Calculation No. 25237-103-KOC-HMMG-00001: root mean squared residual of 0.8 m, correlation coefficient of 0.525;

The use of the pre-construction, calibrated recharge value of 8.7 in/yr for post-construction conditions;

Other model errors, such as not accounting for the presence of building foundations and the surface of cut areas prior to filling;

Clarify the locations of and other names for the buildings identified in Calculation No. 25237-103-KOC-HMMG-00001, Groundwater Flow Model of Surficial Aquifer, as having a depth to groundwater of less than 1.0 m: buildings 1UQB, 1URB, 1UBP, and 2UBP. A figure was provided as Attachment 3 to the Calculation that was indicated to identify these buildings. However, only 1URB could be identified on this figure, the easternmost building in the nuclear island.

02.04.12-10

Calculation No. 25237-103-KOC-HMMG-00001, Groundwater Flow Model of Surficial Aquifer, concludes with the following statement: “To explain the area around the power block where the saturated thickness of the surficial aquifer is zero, detailed modeling should be conducted. This should account for the building foundations, which will act as barriers to groundwater flow, potentially raising the water-table. The other feature that should be incorporated is the surface of the cut areas prior to filling. This will provide a more accurate representation of the base of the fill/top of the surficial aquifer.” Provide a discussion describing how the issues raised in these conclusions are being addressed. If additional modeling has been conducted, describe this modeling and provide electronic versions of the model input files used.

02.04.12-11

At the site hydrology audit the applicant stated that a new modeling effort will be looking at post-construction effects to the Upper Chesapeake unit. This was in reference to a question about alternative pathways considered and consistency between FSAR 2.4.12 and 2.4.13. If this new modeling has been conducted, describe this modeling and provide electronic versions of the model input files used.

02.04.12-12

Clarify whether the electrical manholes referred to in the last paragraph of FSAR Section 2.4.12.5 are safety-related.