

From: Christian Araguas
To: <JTDAVIS@southernco.com>
Date: 5/16/2007 10:48:44 AM
Subject: Discussion Topics for Phone Call

Jim,

Attached are the issues the staff would like to discuss during the phone call. They cover section 2.5.1, 2.5.2, 2.5.4. It looks like we are ready to discuss 2.5.4 tomorrow. The attached only covers the issues and is not broken down into what are OIs, COL action items, and unresolved items. I would rather focus on what the staff needs before we draw conclusion on the current issues. Lets talk later today about how best to address these.

Christian Araguas

Hearing Identifier: Vogtle_Non_Public
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Mail Envelope Properties (466048CD.HQGWDO01.TWGWPO04.200.2000007.1.90999.1)

Subject: Discussion Topics for Phone Call
Creation Date: 5/16/2007 10:48:44 AM
From: Christian Araguas

Created By: CJA2@nrc.gov

Recipients
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Post Office
TWGWPO04.HQGWDO01

Route
nrc.gov

Files	Size
MESSAGE	474
Section 2.5 RAI supplemental info.wpd	
4:26:53 PM	

Date & Time	
5/16/2007 10:48:44 AM	
21699	6/1/2007

Options
Priority: Standard
Reply Requested: No
Return Notification: None
None

Concealed Subject: No
Security: Standard

Discussion Topics for May 17, 2007 Phone Call

2.5.1-17 To supplement discussion of the fluvial terrace investigation, please describe results of the various other morphometric analyses also conducted by Geomatrix (1993) leading to the conclusion that morphometric signatures which could be related to either long-term tectonic effects or non-tectonic factors likewise indicate the Pen Branch Fault is not a capable tectonic structure.

Discuss in particular results of the drainage basin studies performed by Geomatrix (1993) since Hanson et al (1993) stated these studies suggested rejuvenation of stream drainage patterns along the trace of the Pen Branch Fault. Based on data from Geomatrix (1993) indicating [1] longitudinal profiles of fluvial terrace surfaces show no evidence of obvious warping within a resolution limit of about 3m and [2] the estimated age of terrace surfaces is 350ka to 1Ma, Hanson et al (1993) also stated that the Pleistocene slip rate for the Pen Branch Fault, if it is active, is very low (i.e., 0.002 to 0.009 mm/yr).

2.5.2-3 In response to this RAI, soil hazard curves were provided at three annual exceedence frequencies (10^{-4} , 10^{-5} , and 10^{-6}). However, in order for the staff to verify the adequacy of the SSE, soil hazard curves are requested at additional annual exceedence frequencies (i.e. at values between 10^{-4} , 10^{-5} , and 10^{-6}).

2.5.2-4 Supplemental information needed. Please provide the questions that each of the experts involved in the SSHAC Level 2 study were asked. In addition, please provide the ranges of expert opinions related to key aspects of the UCSS model (i.e. recurrence, geometry, and maximum magnitude). Please also describe, with examples, the process used to combine the experts' opinions and resolve any conflicting opinions.

2.5.2-8 Please supplement RAI response by providing written documentation, in the form of a letter, of personal communication provided by Mr. Stephen Obermeier, to clarify negligible probability for large inland earthquakes.

2.5.2-12 The response to this RAI states that "The degree of completeness for the entire ~5,000-yr record for paleoliquefaction events is uncertain. It is possible that all paleoliquefaction events in this time period have been preserved and recognized in the geologic record. Alternatively, it is possible that events are missing from the ~5,000-yr record". However, the model only considers a complete 5,000-yr record with a weight of 0.2. Please provide a justification for not sharing this weighting of 0.2 with the alternative scenario of an incomplete 5,000-yr record.

2.5.2-16 Please provide the probabilities of activities for the EPRI sources that are not already provided in Tables 2.5.2-2 through 2.5.2-7.

2.5.2-18 Please provide justification for the selection of the geometries shown in SSAR Figure 2.5.2-16 as well as RAI Figure 2.5.2-18A. Specifically, why were these particular geometries selected over other possible geometries? In addition, please justify the exclusion of the recent seismicity associated with the Helena Banks fault zone from all of the selected geometries.

2.5.2-19 Supplement the RAI with additional information related to STEP 5. Please include a definition, and a figure (or table), of the envelope motion. The response to this RAI states “The AFs represent the mean spectral acceleration (SA) at the control point, divided by input SA at hard rock, at each frequency. At each frequency, the soil envelope motion [at the control point horizon (86’ depth’)] is determined. This is the motion (HF or LF) that gives the higher mean soil motion, for that structural frequency. At frequencies above 8 Hz, this is always the HF motion. At frequencies below 2 Hz, this is always the LF motion”. However, it is not clear if the envelope motion refers to the envelope of the mean AFs or envelope of the mean response spectra at the control point?

2.5.2-22 The response to this RAI states that “For a given suite of 30 time histories, the spectral matching criteria given in NUREG/CR-6728 were followed. Specifically, item (e) of the general criteria recommended for evaluating the adequacy of the artificially developed ground motions ...”

Please explain whether the additional criteria listed in NUREG/CR-6728 were also satisfied. If these additional criteria were not satisfied, please provide justification for not doing so.

2.5.4-7

The applicant used empirical relationships to justify why the shear strength value of 10000 psf can be used as a design value for the new units. The applicant needs to provide more information on the applicability of those empirical correlations to the soil shear strength calculation for the Blue Bluff Marl. In addition, the applicant needs to recalculate the value using the new correlation from the Laval University, recommended by Mayne.

2.5.4-18

Although the general description of the allowable bearing capacity formulation is based on gross shear failure of the soils under the foundation, this formulation is typically inappropriate for use in nuclear foundation design. The allowable contact pressure for such large structures is typically controlled not by such general shear failure, but by (a) settlements, (b) allowable pressures that are used in design of the wall/basemat intersection, and c) toe pressures developed during potential overturning and sliding of the foundation. The applicant needs to take these factors into its consideration as the governing issues controlling the site evaluation. Besides, Equation 3.11 p.128 of Vesic 1975, is not consistent with the applicant's equation. The applicant needs to explain the equation 3.11 in Vesic 1975.