From: "Davis, James T." <JTDAVIS@southernco.com>
To: "Christian Araguas" <CJA2@nrc.gov>
Date: 3/21/2007 11:25:37 AM
Subject: AR-07-0639 RAI Resp comments.doc

Christian,

Please review and give me a call

Jim

<<AR-07-0639 RAI Resp comments.doc>>

Hearing Identifier: Vogtle_Public
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From: "Davis, James T." <JTDAVIS@southernco.com>

Created By: JTDAVIS@southernco.com

Recipients
"Christian Araguas" <CJA2@nrc.gov>

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Section 2.4 Hydrologic Engineering

2.4.4-1 During the January site safety audit (1/10-11/2007) the NRC staff requested and the applicant provided a narrative (AR-07-0302, 2/13/2007) describing the process used to compute the maximum stage due to a cascade failure of upstream dams, including the sensitivity of the initial water surface elevations in each reservoir, and showed how the calculations provide the bounding case. The narrative included a summary of all dam breach analysis parameters. Please update the site safety analysis report (SSAR) to incorporate the information and data contained in the narrative.

Response: Will incorporate appropriate information from AR-07-0302.

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2.4.1-1 Please revise the SSAR by incorporating Environmental Report (ER) Section 2.3.2, and Tables 2.3.2-12 and 2.3.2-13, which report the rates of total water demand. The values for the total water demand should be included in the SSAR.

Response: Will provide

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2.4.7-1 Please revise the SSAR by providing a reference in SSAR Sections 2.3.1.3.4 through 2.4.10 to clarify the method for determining the intensity of short term rainfall for roof drainage and probable maximum winter precipitation that combines with the snow accumulation for roof loading of all safety-related structures.

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Response: Will provide reference. [What does this mean. The previous draft question said we should provide a reference in SSAR 2.4.10 to refer to 2.3.1.3.4. (which we can do).]

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2.4.12-1 a. Discuss the reasons why OW-1001 and OW-1001A present questionable results regarding water table elevations for the unconfined or Water Table aquifer. Are there alternate interpretations that suggest either (1) they are invalid data and the Water Table aquifer does not see any impact from the fractured and faulted Blue Bluff Marl above the Pen Branch fault, or (2) they are valid data revealing a perhaps local hydraulic connection between the Water Table aquifer and the Tertiary aquifer?

Response: Will provide. Previously provided in RAI E2.3-3

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b. Provide an explanation in the SSAR regarding the nomenclature used to denote an abandoned well, especially OW-1001A, which is denoted as abandoned in Appendix 2.4A, and OW-1001A, which is apparently denoted as a functioning well in Appendix 2.5A.

Response: Will provide. Previously provided in RAI E2.3-3

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c. In the formulation of alternate conceptual models, as well as the design of monitoring programs, describe how the OW-1001 and OW-1001A data and the remarks of Summerour et al. (1998) are taken into account regarding the potential for communication between the Water Table aquifer and the Tertiary aquifer in the vicinity of fractures and faulting in the confining unit separating these two aquifers. The authors (Summerour et al. (1998)) state, "It is unclear whether the fractures also cut the Gordon aquitard. The large number of fractures and the fact that they appear to cut most of the aquitards in the stratigraphic sequence suggests that there may be leakage between aquifers near the Pen Branch fault. Therefore, both the Pen Branch fault and the associated fracture system may provide pathways for the movement of tritium from the Upper Three Runs aquifer into deeper, normally confined aquifers." If data from either well are identified as not being applicable to tables and/or figures in the ESP application, then revision of the tables, figures, and potentially of the text is required. For a postulated liquid radioactive release at the proposed site, any potential for leakage into the confined Tertiary aquifer should be addressed in the SSAR.

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Response: Will provide. Previously provided in RAI E2.3-3. SNC understood (c) would be combined with (a). above. Discussed tritium is an Environmental Report impact issue, not a safety (SSAR) issue.

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2.4.12-2 **Figure 2.4.12-4 indicates that Water Table Aquifer recovery to an asymptotic value following cessation of dewatering requires 1.5 to 2 years. However, there is no record of the period preceding the dewatering activity in the figure. Also Figures 2.4.12-4, -5 & -6 show that the groundwater levels in the Water Table Aquifer vary significantly from year to year or even from season to season for some periods of time and not for others. These facts indicate that the Water Table Aquifer is able to undergo substantial change in water table elevation (with a corresponding movement of water) while not undergoing substantial local stress (pumping), and being isolated from the underlying confined Tertiary aquifer that is stressed by Unit 1 & 2 operations. It is essential that the underlying conceptual model of the unconfined aquifer and key parameters describing the aquifer should be in agreement with this known system behavior, (e.g., that the hydraulic conductivity, storativity, and porosity, should be consistent with the ability of the unconfined aquifer to respond to dewatering, severe drought, and the return to a normal precipitation level) in order to identify potential contamination pathways in the ground and to estimate corresponding travel times.**

Provide and incorporate into the SSAR a discussion of the process used to develop the site hydrologic conceptual model. Discuss the various conceptual models considered in developing the final conceptual model, and how your model contrasts with the conceptual models of the Vogtle Electric Generating Plant (VEGP) Updated Final Safety Analysis Report, and United States Geological Survey (USGS) studies (Clark and West 1997; Cherry 2006). Describe the data sets and rationale used to establish the final conceptual model. This discussion of the conceptual model should cover the continuity or discontinuity of the hydrogeologic units, and their connectivity to the other surface water features, and then to the Savannah River.

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Information for the paragraph above was provided in AR-07-0302 item # 3 and AR-07-0061 RAI response E2.3-1. SSAR will be updated to incorporate relevant information. The 2nd paragraph is the expansion NRC said they would provide to focus their question. This

paragraph came from Draft Q2.4.12-4a. SNC understood this question would be reworked to provide a more focused question. This is the "defense of our model" question and why south flows to Telfair Pond or other pathways are not more limiting.

Discuss the reasons why the temporal variability of the water levels in the Water Table Aquifer during the period from 2005 to 2006 (Figure 2.4.12-6) were reduced substantially compared to those before 2005 (Figures 2.4.12-4&5).

Response: Highlighted parts were expected to be revised to communicate why this is essential or be replaced with question that addressed possibility of groundwater flow to the south.

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2.4.12-3 **Include in the SSAR all available information and data (including the historical groundwater levels at the Water Table aquifer near the ESP site, such as those at the 179, 809, 803A, and 804 observation wells), and update the contour maps depicting (i) the thickness of the Utley Limestone layer, and (ii) the top and (iii) the bottom elevations of the Blue Bluff Marl of the Lisbon Formation in the ESP site area. Please depict as much of the area as possible in the vicinity of the ESP site in the contour map(s), (i.e., include the area from the southern drainages to Telfair Pond, the northern drainage to Mallard Pond, and the eastern drainage to Savannah River).**

In conjunction with the above information, data, and plots, include a discussion of the continuity of the Utley Limestone, the composition and integrity of the Utley Limestone relative to Huddlestun and Summerour report (1996), and the presence or absence of Karst characteristics. Please incorporate the discussion into the subsurface conceptual model.

Response: (highlighted) New data request was not previously communicated may take more time than 30 days to evaluated it, unless you just want copies of field data sheets. These wells are located a significant distance from Units 3 & 4, what is the purpose for this request and its relevance to the question? If this is just an expansion of previous request to update historical U1/2 FSAR data and plots, we can do that.

Contour maps will be updated with available information as appropriate.

Last paragraph was previously provided in AR-07-0061 RAI response E2.3-1 and will be provided

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2.4.13-1 **Provide and incorporate into the SSAR a discussion of the process used to establish that the conceptual model for the transport pathways and travel times presented in the SSAR represents the most conservative of the various other feasible alternative estimates by considering other pathways from the south of a proposed plant where a radwaste holding tank might be located. For example, a potential pathway might consist of travel of contaminants towards the west and then to the north towards the Mallard Pond.**

Provide and incorporate into the SSAR a discussion of the process used to conservatively bound the hydraulic properties (gradient, hydraulic conductivity, porosity, etc.) used in safety related calculations. Provide a summary data set utilizing

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data from the ER and SSAR that presents the bounding hydraulic properties of soil/sediment overlying the Blue Bluff Marl of the Lisbon Formation.

Provide and incorporate into the SSAR new calculations of the accidental release from the effluent hold-up tank that utilize the above described and supported conceptual model and data.

Response: Information above was provided in AR-07-0302 items 3 & 4 and appropriate detail will be incorporated in the next revision to the application. [This appears to be the new information they want based on the telcon (was Q2.4.12-4b, c, d). The highlighted phrase regarding the potential location of a radwaste holding tank was not discussed and is confusing.]

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2.4.13-2 Discuss the process used to evaluate the potential for and the impact of chelation and complexation agents (e.g. organic acids) to mix with radiological liquid effluents either within the facility or along the transport pathway in the environment outside the facility. In this discussion, make a clear statement regarding whether or not it is possible for any chelation agents to be mixed with radiological liquid effluents within the ESP facility.

Response: Response will be provided.

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2.4.13-3 The SSAR should include a description of the process followed, and the bases used, to estimate the groundwater outflow to Mallard Pond from the accidental release, and the estimate of the minimum discharge from Mallard Pond.

As discussed during the March 9, 2007, conference call, please revise the SSAR to correct the typographical error reporting a value of 0.7 gpm (2.65 lpm) as the groundwater outflow to the pond from the accidental release. Please include a redacted version of the calculation package showing all parameters, measurements, and assumptions used in the calculation of the 0.07 gpm (0.26 lpm) rate. Also please include a redacted version of the calculation package showing all parameters, measurements, and assumptions leading to the minimum discharge flow rate estimate of 250 gpm (946 lpm) for Mallard Pond. In both of these cases, the redaction should simply remove final calculated values.

Response: Description of process was provided in AR-07-0302 item # 3, along with acknowledgement of typo. This information will be updated in SSAR as appropriate.

Calc. Package - discuss level of detail a summary would need.

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Deleted: [RWP-they clearly want more detailed info. Whether that is by a cut and paste of the appropriate sections of the calc, a redacted version, or a "withhold from public disclosure" is SNC's call. We will not get by just referencing our previous answer.]

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