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**To:** "Amy G. Aughtman" <AGAUGHTM@SOUTHERNCO.COM>,<JTDAVIS@SOUTHERNCO.COM>
**Date:** 12/15/2006 2:43:33 PM
**Subject:** Resend: January 10-12 2007 Vogtle Site Audit
**cc:** "Stephanie Coffin" <SMC1@nrc.gov>,"Clifford Munson" <CGM1@nrc.gov>,"Mark Notich" <mdn@nrc.gov>,"Yong Li" <YXL1@nrc.gov>,"Gerry Stirewalt" <GLS3@nrc.gov>,"Stephen Raul Monarque" <SRM2@nrc.gov>

Jim/Amy,

Please disregard my previous email. After talking with the team lead for Seismology/Geology he would prefer to do things differently and stray away from the information needs/audit questions. Therefore attached are the resend of the agenda for the Health Physics guys and a new file with discussion topics to prepare for. The goal is to use the discussion topics as a tool to focus on what the staff feels is important and then develop questions as the discussion progresses. I should still be getting a list of information needs from our Hydrologists on Monday and will be sure to send it as soon as I get it. Let me know if yo have any additional questions.

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**Subject:** Resend: January 10-12 2007 Vogtle Site Audit
**Creation Date:** 12/15/2006 2:43:33 PM
**From:** Christian Araguas

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| Jan-2007 Health Physics Agenda.wpd | 31959 | 3/26/2007 1:03:49 PM |

**Options**
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None

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# Vogtle Geologic Site Audit: Jan 10-12, 2007

## Possible Geologic/Geotechnical Features or Items to View on Site

1. Monoclinal flexure in the Blue Bluff Marl.
2. Straight, incised river channel in the site area and stratigraphic units along that part of the river.
3. Youngest fluvial terrace, Qty, in the site area.

4. Small-scale "deformation structures" in walls of the garbage trench or other trenches.
5. Cores from ESP site investigation.
6. Other features which demonstrate conclusions drawn in application with regard to Pen Branch or other faults.

## Discussion Topics for Vogtle ESP Site Visit

Geology and Surface Faulting (2.5.1 and 2.5.3)

1. Discuss fault geometry, characteristics, and displacement history of the Pen Branch fault. In particular,
   a. Since SRS subsurface data on characteristics of the Pen Branch fault (as referred to under SSAR Sections 2.5.1.2.4.1 through 2.5.1.2.4.3) were used to draw the conclusion that the Pen Branch is a non-capable fault, information on the following aspects of the fault are important to review
      i. Age and type of youngest displacement.
      ii. Location of projected surface trace of the fault at SRS.
      iii. Physical characteristics of the fault surface.
   b. Seismic logs imaging the Pen Branch fault in regard to fault orientation and location of projected surface trace of the fault in the site area.
   c. Descriptions of the monoclinal flexure in the Blue Bluff Marl (as referred to under SSAR Section 2.5.1.2.4.2 and illustrated in SSAR Figure 2.5.1-40) since this feature is interpreted to have developed due to reverse (Eocene) slip on the Pen Branch fault and consequently is tectonic in origin.
   d. Descriptions of the straight, incised river channel in the site area (as referred to under SSAR Section 2.5.1.2.1).
   e. Descriptions of the youngest fluvial terrace, Qty, in the site area (as shown in SSAR Figure 2.5.1-29).

2. Discuss small-scale "deformation structures" in walls of a garbage trench (as referred to under SSAR Section 2.5.3.8.2 and illustrated in SSAR Figures 2.5.3-1 and 2.5.3-2, referencing Bechtel, 1984b). Features are currently interpreted as non-tectonic in origin and unrelated to faulting.

3. Describe how the following information was used to determine site stratigraphy
   a. Cores and/or trenches
   b. seismic logs

Ground Motion (2.5.2)

1. Rationale for not updating other EPRI source models in addition to the Charleston seismic source with regard to post-EPRI PSHA studies (USGS, TIP, SCDOT).

2. Discuss update of the Charleston seismic zone. Specifically, describe
   a. process used to elicit expert opinion
   b. use of other post-EPRI studies as part of update (USGS, TIP, SCDOT)
   c. rationale for new Charleston source geometries
   d. combining updated source configurations with original EPRI configurations and potential for gaps in coverage
   e. rationale for maximum magnitude range and weights used for maximum magnitudes
   f. rationale for recurrence models
   g. combined weighting of different magnitudes, recurrence, and source configurations

3. Discuss method used for site response analysis, in particular, randomization of site properties.

4. Discuss method used to determine control point site specific UHRS. Provide rationale for smoothing spectral shapes.

5. Discuss method used to determine vertical SSE.

Stability of Subsurface Materials (2.5.4)

1. Discuss potential for weak zones (i.e, dissolution, collapse) within the three soil groups as indicated by other local and regional investigations. Discuss evidence that would indicate the presence of weak zones within the soil units underlying the ESP site, such as low SPT N-values or shear wave velocities, and the adequacy of the ESP site investigation (geophysical and geotechnical) to detect these zones and map their extent.

2. Discuss the basis for not conducting dynamic testing of the site soils to verify suitability of EPRI and SRS shear modulus and damping curves.

3. Discuss potential for site liquefaction and results of previous analyses done for Units 1 and 2.

4. Discuss the wide range in undrained shear strength values for the Blue Bluff Marl and justification for the selected design value of 10,000 psf.

5. Discuss in greater detail the variability in soil properties across the site as demonstrated by each of the borings. Information in the ESP application focuses primarily on the ranges of the different values (i.e., N-values, P- and S-wave velocities, etc.)

6. Discuss combined use of EPRI and SRS shear modulus and damping curves for the site response analysis.

# Discussion Items for the Vogtle ESP Site Visit
# Health Physics Branch
# January 10-12, 2007

**The staff requests that the documentation listed below be made available during the site visit. The staff will make a determination after the site visit regarding what additional documentation should be submitted, as part of the RAI process, on the Vogtle Early Site Permit (ESP) application docket to support its review and assessment.**

***Subjects to be discussed***

Review the following information used in demonstrating compliance with 10 CFR Part 52.17, as it relates to 10 CFR Part 20, Appendix B, Table 2, effluent concentration limits; 10 CFR Parts 20.1301 and 20.1302 dose limits to members of the public; and 10 CFR Part 50.34a and 10 CFR Part 50 Appendix I dose objectives.

1. Dose model assumptions, and input parameters used for the GASPAR II and LADTAP II codes in assessing doses to dose receptors and populations described in the application.

2. Use of the AP1000 Design Control Document (Rev. 15, November 2005) in supporting the development of the radiological source terms for liquid and gaseous effluents.

3. Basis in demonstrating of compliance with liquid and gaseous effluent concentration limits of Part 20, Appendix B, Table 2, Columns 1 and 2.

4. Exclusion of potential exposure pathways (for liquid and gaseous effluents), such as boating, shoreline activity, crop and pasture irrigation, and cow and goat milk production, including a review of trends in land-use census results.

5. Internal inconsistencies in referencing information and parameters used in calculating doses to the maximally exposed individual. For example, such inconsistencies include:

    a. basis for the dilution factor given in ER Section 5.4, as applied to liquid effluents.
    b. basis for atmospheric dispersion factors between SSAR Section 2.3.5 and ER Section 2.7.6 versus that cited in ER Section 5.4 (ODCM for existing plants).
    c. designations of wind sectors and distances for the maximally exposed individual and nearest site boundary for gaseous effluents between ER Sections 5.4 and 2.7.6 and SSAR Section 2.3.5.
    d. location of the maximally exposed individual for liquid effluents within ER Section 5.4.
    e. basis of total population within the 50-mile radius used in assessing collective doses between ER Sections 2.5.1 and 5.4.
    f. operational radiological monitoring program of onsite ground water wells stated to be used for potable water in light of the information presented in ER Sections 2.3.3, 6.2.3, and 6.3.3 and SSAR Section 2.4.12.

6. Identification of current REMP program augmentation and any proposed changes associated with NEI and/or industry initiative and NRC Liquid Radioactive Release

Lessons Learned Task Force Report on contamination of ground and surface water (ADAMS Accession No. ML062650312).

7. Placement of safety assessment results in appropriate sections of the SSAR in demonstrating compliance with Part 20 requirements.

8. The staff may identify other topics for discussion following the site tour.

***Time Required***

Approximately 1 to 1½ day

***Expert Functional Area(s)***

1. Health Physics

***Documents or Information Required***

1. Southern Nuclear Operating Company, Offsite Dose Calculation Manual for Southern Nuclear Operating Company, Vogtle Electric Generating Plant, Ver. 22, June 25, 2004. (ODCM), including current ODCM version if updated since Rev. 22.

2 Southern Nuclear Operating Company, Vogtle Electric Generating Plant - Unit 1 and 2, Annual Radioactive Effluent Release Report for January 1, 2003 to December 31, 2003. (Effluent Release Report).

3. Annual Radioactive Effluent Release Reports for the last 4 years.

4. Annual Radiological Environmental Operating Reports for the last 4 years.

5. Electronic files with atmospheric dispersion and deposition parameters used as input for the GASPAR II dose assessment.

6. The staff may identify and request additional documents following discussions related to the topics noted above.

***Places to see***

1. Walk-down of site building and facilities, current and proposed locations, including the exclusion area and low population zone.
2. Walk-down of current and proposed locations of liquid effluent discharge points.
3. Walk-down of current and proposed ground and surface water monitoring stations.
4. Walk-down/drive-by of DOE liquid effluent discharge point(s) into the Savannah River.
5. Walk-down/drive-by of nearest or key REMP stations.
6. Walk-down/drive-by of ODCM defined dose receptors, maximally exposed individual and for 40 CFR 190, if different.

***Special Needs***

1. Meeting room
2. Internet access