



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
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October 18, 2005

MEMORANDUM TO: William D. Beckner, Program Director
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Office of Nuclear Reactor Regulation

THRU: Victor M. McCree, Director \\RA\\
Division of Reactor Safety

FROM: Caudle A. Julian, Senior Project Manager
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SUBJECT: PRE-APPLICATION SITE VISIT TO VOGTLE NUCLEAR PLANT TO
OBSERVE EARLY SITE PERMIT (ESP) PRE-APPLICATION
SUBSURFACE INVESTIGATION ACTIVITIES (PROJECT NO. 737)

On September 13, 2005, Region II Inspector Tomy Nazario and I conducted a site visit to the Vogtle Nuclear Plant with Mr. Christian Araguas, Project Manager, and four other members of the NRR staff. The purpose of the visit was to observe early site permit (ESP) pre-application subsurface investigation activities conducted to obtain geotechnical/seismic data. These observations will provide background information for NRC's future review of the expected ESP application for Vogtle.

A summary of the site visit is attached, that includes a list of NRC participants and persons with whom discussions were held.

Attachment: As stated

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2

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3

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4

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PRE-APPLICATION SITE VISIT TO VOGTLE ELECTRIC GENERATING PLANT TO
OBSERVE EARLY SITE PERMIT (ESP) PRE-APPLICATION
SUBSURFACE INVESTIGATION ACTIVITIES
PROJECT NUMBER 737

Purpose of Visit:

The information gathering visit was conducted by staff of the Nuclear Regulatory Commission (NRC), Region II and the Office of Nuclear Reactor Regulation (NRR), to observe early site permit (ESP) pre-application subsurface investigation activities conducted to obtain geotechnical and seismic data at the proposed location of the new units. This visit was not termed an NRC inspection however the staff employed the guidance of the following documents.

NRC Inspection Manual Chapter 2501, Nuclear Reactor Inspection Program - Early Site Permit
NRC Inspection Procedure 35004, Pre-Docketing Early Site Permit Quality Assurance Controls Inspection
NRC Inspection Procedure 45051, Geotechnical/Foundation Activities Procedure Review

Principal Persons Contacted:

J. Ealick, Southern Nuclear Operating Co. (SNC) Quality Assurance Manager
J. Fagan, Quality Assurance Representative, MACTEC Engineering and Consulting, Inc.
D. Gunning, Site Superintendent, MACTEC
A. Lancaster, Project Manager (PM), MACTEC
L. Matthews, Geologist, Bechtel Power Corporation (BPC)
T. McCallum, Early Site Permit (ESP) Technical PM, SNC.
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Z. Cruz-Perez, NRR
C. Julian, Team Leader, RII
Y. Li, NRR
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Background:

During a public meeting at NRC Headquarters, between NRC and Southern Nuclear Operating Company, on September 8, 2005, SNC informed the staff that it had selected the Vogtle site for an ESP application, with the intent of submitting the application in August 2006. An ESP

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provides for resolution of site safety, environmental protection, and emergency preparedness issues, independent of a specific nuclear plant design review. SNC has contracted Bechtel to conduct the site studies required for the ESP application and MACTEC to perform the sample accumulation and testing.

Overview of subsurface investigation activities discussed and/or observed:

SNC plans to use the subsurface investigations described below to provide data to determine site suitability for an ESP. Southern's current subsurface investigation activities included areas which would be the site of cooling towers, yard structures and the reactor sites. SNC recognizes that additional subsurface investigation may be necessary at the combined license stage after a specific reactor type has been identified.

The scope of the site characterization activities includes the following:

- Cone Penetrometer Testing (CPT)
 - Static CPT(7 locations)
 - Dynamic shear wave measurements (3 locations)
 - Pore Pressure dissipation tests (by Bechtel direction)

- Standard Penetration Testing (SPT)
 - Disturbed sampling
 - Undisturbed sampling
 - Suspension P-S logging
 - Geophysical logging
 - Ultrasonic imaging

- Laboratory Testing

- Field Permeability Testing

Drilling and sampling observations - On September 13, 2005, members of NRR and Region II team toured the locations where twenty two boreholes were being drilled within the ESP boundary. The boreholes were being drilled under direction of MACTEC using rotary drill rig equipment mounted on all-terrain carriers. The CPTs were conducted by a subcontractor, Advanced Research Associates (ARA), under the supervision of the MACTEC Site Supervisor, using a truck mounted electric cone penetrometer probe. The drilling was conducted by a subcontractor, Graves Drilling Service Inc., under the supervision of the MACTEC Site Supervisor. Boreholes were drilled to a depth of 74 to 125 ft. with one being drilled to approximately 1000 ft.

The team was unable to observe any CPT operations as this work had been completed ahead of schedule; however, Bechtel personnel confirmed that pore pressure dissipation and shear wave velocities were recorded in three of the holes. Since the processed data was not yet available from ARA, no further discussions were held on this issue.

The team observed the boring operation at the deep hole. This hole will penetrate the Cape Fear formation and into the Triassic Dunbarton Basin Fill to an estimated depth of 1000 + feet. At the time of observation the hole was to a depth of approximately 600 feet. The hole is being advanced using rotary mud drilling operation. The hole will be cased for the first 80 feet to prevent the hole from caving in. The mud is expected to stabilize below this elevation. Standard Penetration blow counts are recorded continuously for the first fifteen feet and at five feet intervals there after. Standard ASTM D1586 standard test method for penetration test and split-barrel sampling of soils methods are being used for the conduct of the standard penetration tests (SPT) operation.

Subsequently the team observed a SPT operation for one of the shallower holes. At the time the hole was being prepared for the next SPT cycle. The team was able to observe the switching of the rods and the installation of the split spoon sampler, the marking of the drill rods, and the seating of the split spoon and subsequent driving for the next two 6 inch intervals. The sample was extracted and pocket penetrometer readings taken and recorded in the drill log. The jar samples were collected and the remainder of the samples were boxed and stored.

The locations of various other additional borings were visited. The team considered all observations of work adequate.

During the field visit the staff discussed a number of issues with the Bechtel field personnel. One of the issues was related to the utilization of companion boring for correlating CPT data with actual soil sampling information. Another topic of discussion was the ESP site characterization program. The activities being performed were based on the premise that the geotechnical properties between the existing and new site would be similar. The current program does not have any provisions to address the issue if the existing and future site's characterization results are different. Discussions also indicated that there were areas with low blow counts and rod drops which need further examination. Finally, a question was raised on how the current program would define the areal extent of the layers from so few borings and CPTs. Bechtel indicated that if needed, additional characterization will be undertaken at a later stage.

Disturbed samples are collected from this operation using a split-barrel sampler. Jar samples are collected, and stored in accordance with ASTM D4220 standard practices for preserving and transporting soil samples. Undisturbed sampling operations were not witnessed; however, the team verified that the one undisturbed sample collected prior to the team's arrival was properly stored and sealed in accordance with ASTM D4220. The team examined the MACTEC undisturbed sample field log document for that sample and found it adequate. The team examined samples of the MACTEC Field Boring Logs and found them adequate.

The team also obtained applicable procedures for review, discussed technical aspects of the testing with the Bechtel and MACTEC staff performing the testing. The team inspected the sample storage facility that had been established in a locked general construction warehouse within the owner controlled area and found samples being adequately stored along with samples from previous original Vogtle site characterization work.

MACTEC informed the team that equipment calibration records for the two CME auto hammers, used for soil sampling, contained identical serial numbers for the two hammers being used onsite. Once the contract is complete MACTEC stated that they plan to verify the serial number of each hammer and assign the correct calibration record. This issue did not meet the threshold for a nonconformance per MACTEC's Quality Assurance Project Document (QAPD) since the records can be easily verified and corrected accordingly. The team examined the current QAPD and noted that it contains provisions for documenting nonconformances and corrective actions. The team inquired if any nonconformances had yet been identified and were told by MACTEC QA representatives that none had occurred on this job.

All testing activities appeared to be controlled by adequate procedures and standards, with an appropriate level of supervisory and MACTEC Quality Assurance oversight. The team examined two surveillance reports conducted by MACTEC QA and found them adequate.

In earlier presentations SNC had stated that the SNC QA program would be applied to the project. The team inquired what involvement there had been from SNC QA and were told none to date. In a subsequent phone conversation of September 16, 2005, SNC stated that SNC QA staff will begin to audit the ongoing site characterization being performed by Bechtel and its contractors and will perform surveillance on sample storage and the upcoming logging equipment calibrations.