



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

June 26, 2006

Mr. Henry B. Barron, Group VP
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SUBJECT: PRE-APPLICATION SITE VISIT TO CHEROKEE NUCLEAR PLANT
SITE TO OBSERVE COMBINED LICENSE PRE-APPLICATION
SUBSURFACE INVESTIGATION ACTIVITIES (PROJECT NO. 742)

Dear Mr. Barron:

On May 15 - 16, 2006, Region II Inspectors conducted a site visit to the Cherokee Nuclear Plant site accompanied by members of the Nuclear Reactor Regulation (NRR) staff. The purpose of the visit was to observe Combined License (COL) pre-application subsurface investigation activities being conducted to obtain geotechnical/seismic data to support a COL application for new nuclear power plants. These observations will provide background information for NRC's future review of the expected COL application for the Cherokee site.

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

Sincerely,

/RA/

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Mr. Henry B. Barron, Group VP
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SUBJECT: PRE-APPLICATION SITE VISIT TO CHEROKEE NUCLEAR PLANT
SITE TO OBSERVE COMBINED LICENSE PRE-APPLICATION
SUBSURFACE INVESTIGATION ACTIVITIES (PROJECT NO. 742)

Dear Mr. Barron:

On May 15 - 16, 2006, Region II Inspectors conducted a site visit to the Cherokee Nuclear Plant site with members of the Nuclear Reactor Regulation (NRR) staff. The purpose of the visit was to observe Combined License (COL) pre-application subsurface investigation activities being conducted to obtain geotechnical/seismic data to support a COL application for new nuclear power plants. These observations will provide background information for NRC's future review of the expected COL application for Cherokee.

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

Sincerely,
/RA/
Mark S. Lesser, Chief
Engineering Branch 3
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Enclosure: As stated

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ADAMS: ☒ Yes ACCESSION NUMBER: _____

OFFICE	RII:DRS	RII:DRS	RII:DRS	HQ:NRR	HQ:NRR	RII:DRP
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DATE	6/9/06	6/12/06	6/19/06	6/22/06	6/22/06	6/8/06
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PRE-APPLICATION SITE VISIT TO CHEROKEE SITE
TO OBSERVE COMBINED LICENSE (COL) PRE-APPLICATION
SUBSURFACE INVESTIGATION ACTIVITIES
PROJECT NUMBER 742

Purpose of Visit:

This site visit was conducted on May 15 and 16, 2006, by staff of the Nuclear Regulatory Commission (NRC), Region II and the Office of Nuclear Reactor Regulation (NRR). Region II inspectors observed combined license (COL) pre-application subsurface investigation activities being conducted to obtain geotechnical and seismic data at the proposed siting location of two new nuclear power plants. Although this visit was not an official NRC inspection the inspectors utilized the following documents for guidance:

NRC Inspection Manual Chapter 2502, Construction Inspection Program: Pre-Combined License (PRE-COL) Phase
NRC Inspection Procedure 45051, Geotechnical/Foundation Activities Procedure Review
NRC Inspection Procedure 35005, Pre-Docketing Combined License Quality Assurance Controls Inspection

Principal Persons Contacted:

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Enclosure

Background:

By letters of March 4, 2005, October 10, 2005, and March 16, 2006, Duke Energy informed the NRC staff that it had selected the Cherokee site to be the subject for a COL application, with the intent of submitting the application in late 2007 or early 2008. A COL is a combined construction permit and operating license with conditions for a nuclear power facility pursuant to 10 CFR Part 52 Subpart C. Duke Energy has contracted Enercon Services, Inc. as a nuclear services provider, and with MACTEC Engineering and Consulting, along with William Lettis and Associates (WLA) to conduct the geotechnical site studies required for the COL application.

Overview of subsurface investigation activities discussed and/or observed:

Duke Energy plans to use the subsurface investigations described below to provide data to determine site suitability for a COL. Duke Energy's current subsurface investigation activities included areas which would be the site of cooling towers, yard structures, and the reactor sites.

The scope of the site characterization activities includes the following:

Field Exploration Methods

- Standard Penetration Testing (SPT)
- Rock coring
- Borehole Goodman Jack testing
- Seismic downhole velocity measurements (P-S logging)
- Borehole televiewer profiles
- Cone Penetration Test (CPT)
- Observation wells
- Geologic mapping
- Test pit excavation and mapping

Geotechnical Laboratory Testing

- Age dating
- Geotechnical index measurement
- Geotechnical strength testing
- Dynamic testing

Drilling and sampling observations - On May 15 and 16, 2006, a team, consisting of NRR and Region II personnel, toured the locations where approximately 70 borings were being drilled within the site characterization boundary. The team verified that NRC Regulatory Guide 1.132, "Site Investigations for Foundations of Nuclear Power Plants," was being used as guidance for site investigation activities. The boreholes were being drilled under direction of MACTEC and WLA using rotary drill rig equipment and drilled to a depth of 15 ft to approximately 50 ft.

The team observed the boring operation at locations B-1004 and B-1014. Goodman Jack testing was observed being performed at location B-1014 during the site visit. Calibration records were also reviewed for the testing equipment. The Goodman Jack is used for in-situ investigations of the deformability of rock masses. The team determined that the test was being performed in accordance with ASTM D 4971-02, "Standard Test Method for Determining the In

Situ Modulus of Deformation of Rock Using the Diametrically Loaded 76-mm (3-in.) Borehole Jack.” The team also reviewed calibration records for the porepressure calibrator performed by Applied Technical Services. The locations of various other additional borings were also visited.

The team also reviewed applicable procedures, and discussed technical aspects of the site investigation with individuals from WLA, MACTEC, and subcontractors performing the site investigation. The team inspected the sample storage facility that had been established in a general construction warehouse within the owner controlled area and found samples being adequately stored. Disturbed samples are collected from this operation using a split-barrel sampler. The team observed that jar samples were being collected, and stored in accordance with ASTM D4220-95, “Standard Practices for Preserving and Transporting Soil Samples”. Undisturbed sampling operations were not witnessed. The team examined samples of the MACTEC Field Boring Logs and found them adequate.

The team inquired about the use of historical site investigation data for current licensing purposes. This data would have been collected to support the original construction licensing of the Cherokee site in the 1970s. Duke representatives stated that use of the historical data was a possible course of action but that final decisions have not been made on the topic. Much of the resulting historical data exists but the soil and rock samples are no longer available, and the quality assurance records for previous work may have to be redeveloped for use in the current effort.

The team inquired about the quality assurance (QA) measures being applied to the current work. Duke representatives explained that Duke Energy has previously qualified Enercon Services as a nuclear services provider under the Duke QA program. Work by Enercon to prepare the COL application is performed under the Enercon Quality Assurance Project Plan Document. Duke representatives explained that Enercon has qualified the MACTEC Quality Assurance Project Document and geotechnical field and laboratory testing is being performed under the MACTEC Quality Assurance Project Document. The team examined the MACTEC Quality Assurance Project Document and found it thorough and comprehensive. The team reviewed examples of self-audits and nonconformance reports which had been performed prior to the NRC visit. All testing activities appeared to be controlled by adequate procedures and standards, with an appropriate level of supervisory and quality assurance oversight. The team considered all observations of work adequate.