



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
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January 11, 2008

Mr. Kenneth A. Ainger  
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Exelon Generation Company  
4300 Winfield Road  
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SUBJECT: SITE VISIT TO OBSERVE COMBINED LICENSE PRE-APPLICATION  
SUBSURFACE INVESTIGATION AT EXELON VICTORIA COUNTY, TEXAS,  
(PROJECT NO. 761)

Dear Mr. Ainger:

On December 13, 2007, Region II and IV inspectors conducted a visit to the Exelon Victoria County, Texas, site accompanied by members of the Office of New Reactors (NRO) staff. The purpose of the site 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 a new nuclear power plant. These observations will provide background information for the NRC's future review of a potential COL application for the Victoria County site.

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

Sincerely,

**/RA/**

Mark S. Lesser, Chief  
Construction Inspection Branch 1  
Division of Construction Inspection

Project No. 761

Enclosure: As stated

cc w/encl: (See next page)

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Letter to K. Ainger from Mark S. Lesser dated January 11, 2008

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SUBSURFACE INVESTIGATION AT VICTORIA COUNTY, TEXAS,  
(PROJECT NO. 761)

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PUBLIC

COMBINED LICENSE (COL) PRE-APPLICATION  
SUBSURFACE INVESTIGATION AT EXELON VICTORIA COUNTY, TEXAS, SITE  
PROJECT NUMBER 761

Purpose of Site Visit:

The visit was conducted on December 13, 2007, by a team from the Nuclear Regulatory Commission (NRC) Region II and IV offices and the Office of New Reactors (NRO). The team consisted of construction inspection personnel; and specialists in geology, engineering geology, and geotechnical engineering. The team attended a presentation on regional and site geology, current site characterization efforts (consisting primarily of a drilling program at this stage), results of testing already conducted, and future site characterization plans. The team also observed in-progress COL pre-application subsurface investigation activities conducted to obtain geotechnical and seismic data at the potential location of a new nuclear power plant at Exelon's Victoria County, Texas, site. This visit was an on-site observation and information gathering trip in which the team used the following inspection manual chapter and procedures as guidance:

NRC Inspection Manual Chapter 2502, Construction Inspection Program: Pre-Combined License (pre-COL) Phase

NRC Inspection Procedure 35004, Pre-Docketing Early Site Permit Quality Assurance Controls Inspection

NRC Inspection Procedure 45051, Geotechnical/Foundation Activities Procedure Review

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Enclosure

### Background:

By letters dated May 31, 2007 and September 5, 2007 Exelon informed the NRC of its proposed schedule for geophysical testing intended to support a COL application for one of two potential greenfield sites under consideration. 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. Exelon contracted Bechtel to prepare the COL application. Bechtel has contracted MACTEC to conduct the site studies and perform the soil sampling and testing required for the application.

### Overview of Subsurface Investigation Activities Discussed and/or Observed:

The NRC team visited the proposed alternative COL application site of Exelon in Victoria County, Texas, to observe pre-COL activities related to geotechnical field investigations being conducted at the site. Following a brief presentation on regional and site geology and site safety procedures, team members examined sampling location maps; observed sample collection efforts for soils, including standard penetration test (SPT) split-spoon sampling and Pitcher sampler (Shelby tube) undisturbed sampling; visited the sample storage trailer; toured the site to view topographic features in the area of the potential water retention pond; reviewed geophysical borehole logs, reviewed quality assurance (QA) surveillances done by Exelon and its contractors, and reviewed selected calibration records. The team also discussed storage and handling of soft-rock and soil materials, the potential for growth faults in the site area, variation in shear wave velocities measured in subsurface materials, and the potential for subsidence due to petroleum extraction in the site area.

Exelon planned to use the subsurface investigations to provide data to determine site suitability for a COL application. The scope of the site characterization activities included various field geotechnical and geophysical investigation techniques, such as: soil borings (disturbed and undisturbed samples), cone penetrometer testing, geophysical testing (down-hole logging and suspension P-S velocity measurements), observation well installation, test pit installation, and field permeability tests. The site investigation included 77 borings, and 14 observation wells. The depths of the boreholes varied from 100 to 600 feet. It was noted that continuous sampling was being performed in 2 of the borings.

Field work was being performed under the MACTEC QA program which consisted of the MACTEC QA manual supplemented by a QA project document. A MACTEC QA representative performed surveillances and monitored the project for compliance. There was also a full time onsite Bechtel representative to provide continuous oversight. Periodic surveillances were performed by Bechtel management and Exelon QA personnel. The team observed appropriate quality control and technical site characterization procedures and verified that the following attributes were adequate:

- Approved and documented instructions, procedures, and drawings were in use for site characterization activities.
- Measures were implemented for test control and control of special processes and engineering direction was readily available.
- Measures existed to identify and resolve non-conformances and conditions adverse to quality.

- For site characterization activities performed by vendors, appropriate oversight and procurement controls were implemented.
- Site safety and hazard analysis documents were in place.

The team reviewed the following surveillance reports:

- Quality Surveillance Report 25352-QSSS-07-004, Bechtel Surveillance of MACTEC
- Surveillance Number SR-2007-091, Exelon Surveillance of MACTEC
- Surveillance Report Numbers (ExelonV Sv1 – Sv3), MACTEC internal surveillances

#### Drilling and Sampling Observations:

Drilling and sampling operations were witnessed by team members during the visit. The team verified that work was being performed in accordance with standard methodologies. The team also observed drilling activities at 3 different locations, including one at which undisturbed samples were being taken. The observations included drilling operations (including appropriateness of equipment, skill and care of the drillers, driller's helper and rig geologist), the standard penetration test blow count measurement, sample retrieval from the SPT split-spoon assembly and the preparation of the Shelby tube undisturbed sample for storage, evaluation and classification of the sample, and preparation and storage of the samples for transport back to the storage facility. Each drilling operation was controlled by a MACTEC rig geologist and each rig worked to an individual work instruction. The team interviewed 2 of the geologists who were responsible for providing technical oversight of drilling operations, including classifying soil samples, recording data on boring logs, and providing assurance that subsurface drilling activities were performed in accordance with applicable procedure requirements and standard geotechnical engineering practices. The team also found that all personnel were pre-qualified for specific work activities and concluded that the site staff were knowledgeable in drilling operations and appropriate controls were in place for the drilling and sampling activities.

The team observed the sample storage process. Samples were collected and stored in accordance with standard practices for preserving and transporting samples. The sample storage facility was located in a locked security trailer located in close proximity to the boring operations. The team also reviewed sample identification information on the sample packaging and examined warehouse storage location sample logs and found them to be adequate. The team also reviewed the MACTEC soil sample inventory sheet to confirm that the boring samples were being properly stored and logged in a controlled manner.

The inspectors observed that work at the site was being performed in accordance with NQA-1 Subpart 2.20, Quality Assurance Requirements for Subsurface Investigations for Nuclear Power Plants and project specifications. Inspectors also observed that MACTEC had posted 10 CFR Part 21 information in the appropriate work locations.

The team reviewed the quality assurance measures being applied to the work. The team reviewed the calibration records for the weights (automatic hammers) used for the standard penetration tests. The team also reviewed surveillance reports and audits conducted for COL project site activities relative to the installation and data collection processes for geotechnical activities in accordance with specifications for compliance with the Quality Assurance program.



The team concluded that the geotechnical subsurface investigation activities were being adequately controlled with an appropriate level of supervisory and quality assurance oversight and in accordance with procedural requirements and industry standards.