

July 5, 2006

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SUBJECT: PRE-APPLICATION SITE VISIT TO CALVERT CLIFFS SITE TO  
OBSERVE COMBINED LICENSE PRE-APPLICATION SUBSURFACE  
INVESTIGATION ACTIVITIES (PROJECT NO. 746)

Dear Mr. Krich:

On June 12 -13, 2006, Region I and II inspectors conducted a visit to the Calvert Cliffs site accompanied by members of 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 and 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 Calvert Cliffs 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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Enclosure: Summary of Site Visit

cc w/encl: (See next page)

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## **ENCLOSURE**

### **PRE-APPLICATION VISIT TO CALVERT CLIFFS SITE TO OBSERVE COMBINED OPERATING LICENSE (COL) PRE-APPLICATION SUBSURFACE INVESTIGATION ACTIVITIES PROJECT NUMBER 746**

#### Purpose of Visit:

The site visit was conducted on June 12 and 13, 2006, by staff of the Nuclear Regulatory Commission (NRC), Region I and II and the Office of Nuclear Reactor Regulation (NRR). Region I and II inspectors observed combined license (COL) pre-application subsurface investigation activities conducted to obtain geotechnical and seismic data at the proposed siting location of two new nuclear power plants. This visit was an on-site observation and information gathering trip in which the staff 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 45051, Geotechnical/Foundation Activities Procedure Review  
NRC Inspection Procedure 35005, Pre-Docketing Combined License Quality Assurance Controls Inspection

#### Background:

By letter dated November 4, 2005, Constellation Energy informed the NRC staff that it had selected the Calvert Cliffs site to be the subject for a COL application, with the intent of submitting the application by June 2008. The COL is a combined construction permit and operating license with conditions for a nuclear power facility pursuant to 10 CFR Part 52, Subpart C. UniStar Nuclear, the Constellation and AREVA/Framatome ANP partnership, has contracted Bechtel Power Corporation (Bechtel) as a nuclear services provider, and Schnabel Engineering, along with GeoVision, to conduct geotechnical site studies required for the COL application.

#### Overview of Subsurface Investigation Activities:

UniStar plans to use the subsurface investigations described below to provide data to determine site suitability for a COL. UniStar's current subsurface investigation activities include areas which would locate the proposed site cooling towers, yard structures, and the reactor sites.

The scope of planned site characterization activities includes various field exploration methods and geotechnical laboratory tests. Field exploration methods addressed in UniStar's site characterization plan include standard penetration tests (SPT), cone penetration tests (CPT), seismic downhole velocity measurements (P-S logging), observation wells, and geologic mapping. Proposed geotechnical laboratory tests will include soil classification, moisture content, direct and triaxial shear tests, consolidation tests, and dynamic tests. Laboratory testing had not commenced on any samples at this stage of the project.

## Drilling and Sampling Observations

Drilling and sampling observations by team members during the June 12 and 13 site trip included locations to be 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 and implemented as guidance for UniStar's site investigation activities. The boreholes were being drilled under the direction of Bechtel and geotechnical engineering subcontractor Schnabel Engineering, using rotary drill rig equipment. Borehole planned depths range from 40 to 400 ft with the 400 ft holes being drilled under reactor center-line locations. The team discussed the methods used to locate the drill holes which included discussion on the series of surveying monuments established on the site to locate and determine the elevation of the borings.

The team observed the drilling at boring B-423 (200 ft boring), which included drilling from approximately 150 - 175 ft and performance of five standard penetration tests obtained at 5 ft intervals. The team observed the field inspector retrieving split-barrel samples at the drilling site, which included classification, logging, and labeling of the disturbed samples in accordance with ASTM standards. The team inspected the operations of the drill team and included a review of drilling and sampling procedures on hand at the drilling site. The observation also included discussion with the field inspector of what results and insights were being obtained throughout the depth of this boring.

The team observed P-S suspension logging in-progress at boring B-323 (200 ft boring), which included equipment setup and calibration for this activity. The team reviewed and discussed applicable procedures and data collection during the activity with the worksite geophysicist that included discussion of data interpretation and verification.

Undisturbed sampling operations were not witnessed; however, the team verified that the undisturbed samples collected prior to the team's arrival were properly stored and sealed. The team reviewed the test boring log for boring B-301 alternate which was completed prior to the team's arrival. Boring B-301 is located at the centerline of the proposed Unit 3 reactor and was drilled to a depth of 403 ft.

The team reviewed training records, qualifications, and experience of the Schnabel geotechnical personnel. This review encompassed four Schnabel engineers/geologists who provide the technical oversight of drilling operations and provide assurance that subsurface drilling activities are performed in accordance with procedural requirements.

The team reviewed quality plans and interviewed personnel about what specific quality assurance (QA) measures were being applied to the site characterization work. These interviews included discussion with Bechtel, Schnabel, and UniStar quality assurance personnel and their specific roles including the in-field oversight of the geological inspectors and the drill teams. The team reviewed QA surveillances performed by Bechtel and Schnabel and the four non-conformance reports issued up to the date of the site visit.

All drilling and field activities observed by the team appeared to be adequately controlled by procedures and standards, with an appropriate level of supervisory oversight. The team considered all observations of work to be adequate with an appropriate level of quality assurance being implemented for Calvert Cliffs site characterization activities. No issues were identified.

## **KEY POINTS OF CONTACT**

### Principal Persons Contacted:

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## **DOCUMENTS REVIEWED**

### Procedures:

25237-103-GQP-GAP-00001, Quality Plan For Subsurface Investigation for CCNPP Site,  
 Revision 0  
 25237-103-3PC-C100-00001, Technical Specification for Subsurface Testing and Laboratory  
 Testing, Revision 2  
 25237-000-V14-CY00-00023, CCNPP Subsurface Investigation Project Required Training  
 Matrix, Revision 1  
  
 G-02-CC, Training, Revision 0  
 G-03-CC, Document Control, Revision 0  
 G-04-CC, Calibration and Control of Testing Equipment, Revision 0  
 G-05-CC, Field Change Requests, Revision 0  
 G-08-CC, Nonconformance Identification and Resolution, Revision 0



25237-000-V14-CY00-00015, T01: Drilling and Sampling, Revision 2  
25237-000-V14-CY00-00016, T02: Classification and Logging of Samples, Revision 0  
25237-000-V14-CY00-00027, T06: Suspension P-S Velocity Logging, Revision 2  
25237-000-V14-CY00-00019, WP-T01: Drilling and Sampling, Revision 0  
25237-000-V14-CY00-00016, WP-T02: Classification and Logging of Samples, Revision 0  
25237-000-V14-CY00-00033, WP-T06: Suspension P-S Velocity Logging, Revision 0

Quality Assurance Surveillance/Audits:

25237-Q555-06-001 (Bechtel)  
25237-Q555-06-002 (Bechtel)  
25237-QSHS-06-001 (Bechtel)  
06120048-SR-005 (Schnable)  
0612048-SR-006 (Schnable)

Non-Conformance Reports (NCR):

25237-NCR-001	25237-NCR-002	25237-NCR-003	25237-NCR-004
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